



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

"RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN001
RYN001
Revised 14-JUL-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"RYNITE" is a registered trademark of DuPont.

Tradenames and Synonyms

- "RYNITE" 530 BK503,
- "RYNITE" 530 BK606,
- "RYNITE" 530 BN640,
- "RYNITE" 530 GY738, 530 GYB836,
- "RYNITE" 530 NC010,
- "RYNITE" 530 RD527,
- "RYNITE" 530L BK503, 530L BK605,
- "RYNITE" 530L NC010,
- "RYNITE" 740 BK505,
- "RYNITE" RE5220 BK503, RE5220 BK533,
- "RYNITE" RE5220 NC010,
- "RYNITE" RE5252 NC010,
- "RYNITE" RE5281 BK503, RE5281 NC010;
- "RYNITE" RE15005 BK503, RE15005 NC010,
- "RYNITE" RE15015 BK503,
- "RYNITE" RE15030 BK503,
- "RYNITE" RXJ5031 BK503, RXJ5031 NC010

#

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYETHYLENE TEREPHTHALATE	25038-59-9	>50
FIBERGLASS		<50
PLASTICIZERS, LUBRICANTS, STABILIZERS,		<10
ANTIOXIDANTS		0-5
PIGMENTS, ETC	1333-86-4	0-1
CARBON BLACK		

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "Rynite" Molding Guide before using this product.

During drying, purging and molding, small amounts of hazardous gases and/or particulate matter may be released. These may be irritating to the eyes, upper respiratory tract and lungs. Cutting, sawing, similar processing can release respirable fibers and respirable dusts.

POLYETHYLENE TEREPHTHALATE

Eye contact with Polyethylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Patch tests with humans resulted in no skin irritation or skin sensitization.

Decomposition products caused by overheating Polyethylene Terephthalate may cause skin, eye or respiratory tract irritation.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

(HAZARDS IDENTIFICATION - Continued)

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material
CARBON BLACK

IARC NTP OSHA ACGIH
2B

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

(FIRST AID MEASURES - Continued)

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Will not burn without external flame. Hazardous gases/vapors produced in fire are carbon monoxide.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Initial Containment

If molten, allow to solidify before cleaning up.

Spill Clean Up

Recover undamaged and minimally contaminated material for reuse and reclamation.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a clean, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

RESPIRATORS

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

During grinding, sanding, or sawing operations use a NIOSH/MSHA approved air purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

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(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Wear leather or cotton gloves when sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
 "RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN001
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYETHYLENE TEREPHTHALATE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

FIBERGLASS

PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-
 respirable fiber (> 3 microns in
 diameter) non-fibrous particulate.

CARBON BLACK

PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 Includes Channel, Lamp, and Thermal
 Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 250-255 C (482-491 F)
 Solubility in Water : Negligible
 Odor : None
 Form : Pellets
 Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Reacts with other polymers such as polycarbonate, polyacetal, etc., at melt temperatures.

Decomposition

Decomposes with heat.

Decomposition temperature: 329 C (624 F)

Hazardous gases or vapors can be released, including carbon monoxide, and, aldehydes, including, acetaldehyde.

TOXICOLOGICAL INFORMATION

Animal Data

Polyethylene Terephthalate
Oral ALD: > 10,000 mg/kg in rats

Polyethylene Terephthalate is not a skin irritant, but is a mild eye irritant.

Toxic effects from short exposures by inhalation resulted in no adverse effects.

Toxic effects from short exposures by ingestion resulted in no adverse effects.

Animal testing indicates that Polyethylene Terephthalate does not have carcinogenic, mutagenic, developmental or reproductive effects.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

(TOXICOLOGICAL INFORMATION - Continued)

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM - None.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
 : DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
 : WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product: CLOROX® DISINFECTING WIPES - ORANGE SCENT

Description: FRAGRANCED, MOISTENED TOWELETTE

Other Designations EPA Reg. No. 5813-58	Distributor Clorox Sales Company 1221 Broadway Oakland, CA 94612	Emergency Telephone Nos. For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300
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II Health Hazard Data

Eye Contact: Can cause moderate eye irritation.
Ingestion: Liquid should be practically non-toxic if ingested.
Skin Contact: Prolonged skin contact may produce minor irritation.

FIRST AID: EYES- Flush with plenty of water. Call a physician if irritation persists. IF SWALLOWED- Drink a glassful of water. Call a physician or poison control center. SKIN- Wash thoroughly with soap and water after handling. INHALATION- If breathing is effected, move to fresh air.

Under normal consumer use conditions the likelihood of any adverse health effects are low.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
n-Alkyl (C14, 60%; C16, 30% C12, 5%; C18, 5%) dimethylbenzyl ammonium chloride	0.145%	Not established
n-Alkyl(C12, 68%, C14, 32%) Dimethyl Ethylbenzyl ammonium chloride	0.145%	Not established
Isopropanol CAS #67-63-0	1- 5%	200 ppm/400 ppm ¹ 400 ppm ²

¹TLV-TWA- Threshold Limit Value-Time Weighted Average.
STEL- Short Term Exposure Limit
²PEL- OSHA Permissible Exposure Limit

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.

IV Special Protection and Precautions

No special protection or precautions have been identified for using this product under directed consumer use conditions.

The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.

Hygienic Practices: Wear safety glasses. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.
Engineering Controls: Use general ventilation to minimize exposure to vapor or mist.
Work Practices: Avoid eye and skin contact and inhalation of vapor or mist. Avoid contact with food. Not for personal cleansing.

KEEP OUT OF THE REACH OF CHILDREN

V Transportation and Regulatory Data

U.S. DOT, IATA, IMDG Hazard Class: Not restricted.

U.S. DOT Proper Shipping Name: None

EPA- SARA Title III/CERCLA: Product may be regulated under Sections 311/312. This product contains no chemicals regulated under Section 304/CERCLA or Section 313.

TSCA/DSL: All chemicals in this product are listed on the TSCA Inventory. The DSL status for some components has not been determined.

VI Spill Procedures/Waste Disposal

Spill Procedures: Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed down material.

Waste Disposal: Disposal must be made in accordance with applicable federal, state and local regulations.

VII Reactivity Data

Stability: Mixing with sodium hypochlorite may release small amounts of formaldehyde gas.

Storage/Disposal: Do not use or store near heat or open flame.

VIII Fire and Explosion Data

Flashpoint: >119°F Method: Closed cup.
Unusual Fire and Explosion Hazards: None

IX Physical Data

Flashpoint..... >119°F
Specific Gravity..... 0.99 g/cc.
pH..... 5.0-6.0
Solubility in Water..... Liquid is completely dispersible



The Clorox Company
 1221 Broadway
 Oakland, CA 94612
 Tel. (510) 271-7000

Material Safety Data Sheet

Product: CLOROX® DISINFECTING WIPES, - LEMON FRESH		
Description: CLEAR, COLORLESS, THIN, FRAGRANCED LIQUID ABSORBED INTO WHITE, NON-WOVEN WIPES		
Other Designations	Distributor	Emergency Telephone Nos.
EPA Reg. No. 5813-79	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014. For Transportation Emergencies, call 1-800-424-9300 (Chemtrec).

II Health Hazard Data

May cause moderate eye irritation. Prolonged skin contact may result in minor irritation.

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. If irritation persists, call a doctor.

SKIN CONTACT: Wash thoroughly with soap and water. If irritation persists, call a doctor.

INGESTION: Drink a glassful of water. Call a doctor or poison control center.

INHALATION: Move person to fresh air. If breathing problems develop, call a doctor.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
n-Alkyl (5% C ₁₂ , 60% C ₁₄ , 30% C ₁₆ ; 5% C ₁₈) dimethyl benzyl ammonium chloride CAS # 68391-01-5	0.1 - 0.2%	Not established.
n-Alkyl (68% C ₁₂ , 32% C ₁₄) dimethyl ethylbenzyl ammonium chloride CAS # 68956-79-6	0.1 - 0.2%	Not established.
Isopropyl alcohol CAS # 67-63-0	0.5 - 2%	200 ppm - TLV-TWA* 400 ppm - PEL ^b 400 ppm - TLV-STEL ^c

*ACGIH Threshold Limit Value - Time Weighted Average
^bOSHA Permissible Exposure Limit - Time Weighted Average
^cACGIH Threshold Limit Value - Short Term Exposure Limit

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash hands after direct contact.

Engineering Controls: Use general ventilation to minimize exposure to product mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves for sensitive skin or if there is the potential for repeated or prolonged skin contact. In situations where exposure limits may be exceeded, a NIOSH-approved respirator is advised.

Avoid contamination of food. A potable water rinse is required for surfaces that may come into contact with food. Not for cleaning or sanitizing skin. Do not use as a diaper wipe or for personal cleansing.

V Transportation and Regulatory Data

DOT: Not restricted per 49 CFR 173.120(a)(5).

IMDG: Not restricted per IMDG Code Section 2.3.1.3.3.

IATA: Not restricted per IATA D.G.R. Section 3.3.1.3(c).

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals that are regulated under Section 313 or under Section 304/CERCLA.

TSCA 8(b): All components of this product are either on the TSCA 8(b) inventory or otherwise exempt from listing.

TSCA 12(b): This product is not subject to TSCA 12(b) reporting requirements.

VI Spill Procedures/Waste Disposal

Spill Procedures: Containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

Do not store near heat or open flame.

VIII Fire and Explosion Data

Flash Point (liquid): 58°C (closed cup)

Fire Extinguishing Agents: Dry chemical, carbon dioxide (CO₂), foam, or water spray.

IX Physical Data

pH (liquid) 5 - 7

Specific gravity (liquid) ~1.0

Solubility in water (liquid) Soluble

To insure proper protection when handling

Item 4F968 – Oil Hydraulic

the following Precautions & P.P.E. are required:

Ventilation – If mists are generated, use adequate ventilation, local exhaust or enclosures to control below exposure limits.

Respiratory Protection - If mists are generated, and/or when ventilation is not adequate, wear approved respirator.

Skin Protection – Not normally required. When splashing or liquid contact can occur frequently, wear oil resistant gloves and/or other protective clothing. Good personal hygiene practices should always be followed.

Eye Protection – If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

Anyone found not following this procedure will be subject to disciplinary action up to and including termination

In the event of exposure to,

Item 4F968 – Oil Hydraulic

the following First Aide procedures are to be followed:

Inhalation

Not expected to be a problem. However, if respiratory irritation, dizziness, nausea or unconsciousness occurs due to excessive vapor or mist exposure, seek immediate medical assistance. If breathing has stopped assist ventilation with a mechanical device or mouth-to-mouth resuscitation.

Skin Contact

Wash contact areas with soap and water. Remove and clean oil soaked clothing fully and wash affected area.

Eye Contact

Flush thoroughly with water. If irritation occurs, call a physician.

Ingestion

Not expected to be a problem. Seek immediate medical attention if discomfort occurs. Do not induce vomiting.

Injection Injury Warning – If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high-pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

ITEM: 4F968 - Oil Hydraulic

PICK REQ: 1053296169

MATERIAL SAFETY DATA SHEET (MSDS)

MSDS: A496

This MSDS should be attached or kept with the respective product with which it is associated.

AL SAFETY DATA SHEET - 44967

Associated Grainger Item: 4F968 - Oil Hydraulic

602623-00 MOBIL DTE 24

MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBIL DTE 24

SUPPLIER: EXXONMOBIL CORPORATION 3225 GALLOWAY RD. FAIRFAX, VA 22037

24 - HOUR HEALTH AND SAFETY EMERGENCY (CALL COLLECT): 609-737-4411

24 - HOUR TRANSPORTATION EMERGENCY: CHEMPREC: 800-424-9300 202-483-7616

LOBES AND FUELS: 281-834-3296

PRODUCT AND TECHNICAL INFORMATION:

LUBRICANTS AND SPECIALTIES: 800-662-4525 800-443-9966

FUELS PRODUCTS: 800-947-9147

MSDS FAX ON DEMAND: 613-228-1467

MSDS INTERNET WEBSITE: HTTP://EMSDS.IHSSOLUTIONS.COM/

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: PET. HYDROCARBONS AND ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS: NONE.

SEE SECTION 8 FOR EXPOSURE LIMITS (IF APPLICABLE).

3. HAZARDS IDENTIFICATION

UNDER NORMAL CONDITIONS OF USE, THIS PRODUCT IS NOT CONSIDERED HAZARDOUS ACCORDING TO REGULATORY GUIDELINES (SEE SECTION 15).

EMERGENCY OVERVIEW: AMBER LIQUID.

NOTE: PRESSURIZED MISTS MAY FORM A FLAMMABLE MIXTURE.

DOT ERG NO.: NA

POTENTIAL HEALTH EFFECTS:

UNDER NORMAL CONDITIONS OF INTENDED USE, THIS PRODUCT DOES NOT POSE A RISK TO HEALTH. EXCESSIVE EXPOSURE MAY RESULT IN EYE, SKIN OR RESPIRATORY IRRITATION.

FOR FURTHER HEALTH EFFECTS/TOXICOLOGICAL DATA, SEE SECTION 11.

4. FIRST AID MEASURES

EYE CONTACT: FLUSH THOROUGHLY WITH WATER. IF IRRITATION OCCURS, CALL A PHYSICIAN.

SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. REMOVE AND CLEAN OIL SOAKED CLOTHING DAILY AND WASH AFFECTED AREA.

INJECTION INJURY WARNING: IF PRODUCT IS INJECTED INTO OR UNDER THE SKIN, OR INTO ANY PART OF THE BODY, REGARDLESS OF THE APPEARANCE OF THE WOUND OR ITS SIZE, THE INDIVIDUAL SHOULD BE EVALUATED IMMEDIATELY BY A PHYSICIAN AS A SURGICAL EMERGENCY. EVEN THOUGH INITIAL SYMPTOMS FROM HIGH PRESSURE INJECTION MAY BE MINIMAL OR ABSENT, EARLY SURGICAL TREATMENT WITHIN THE FIRST FEW HOURS MAY SIGNIFICANTLY REDUCE THE ULTIMATE EXTENT OF INJURY.

INHALATION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF RESPIRATORY IRRITATION, DIZZINESS, NAUSEA, OR UNCONSCIOUSNESS OCCURS DUE TO EXCESSIVE VAPOR OR MIST EXPOSURE, SEEK IMMEDIATE MEDICAL ASSISTANCE. IF BREATHING HAS STOPPED, ASSIST VENTILATION WITH A MECHANICAL DEVICE OR MOUTH-TO-MOUTH RESUSCITATION.

INGESTION: NOT EXPECTED TO BE A PROBLEM. SEEK MEDICAL ATTENTION IF DISCOMFORT OCCURS. DO NOT INDUCE VOMITING.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG.

FIRE FIGHTING PROCEDURES: FIRE OR FOAM MAY CAUSE FROTHING. USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURE. PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS, SEWERS, OR DRINKING WATER SUPPLY.

SPECIAL PROTECTIVE EQUIPMENT: FOR FIRES IN ENCLOSED AREAS, FIRE FIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NOTE: PRESSURIZED MISTS MAY FORM A FLAMMABLE MIXTURE.

COMBUSTION PRODUCTS:

FUMES, SMOKE, CARBON MONOXIDE, SULFUR OXIDES, ALDEHYDES AND OTHER DECOMPOSITION PRODUCTS, IN THE CASE OF INCOMPLETE COMBUSTION.

FLASH POINT C (F): >200(392) (ASTM D-92) .

FLAMMABLE LIMITS (APPROX. % VOL. IN AIR) -

LEL: 0.9%

UEL: 7.0%

NFPA HAZARD ID:

HEALTH: 0

FLAMMABILITY: 1

REACTIVITY: 0

6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES:

REPORT SPILLS/RELEASES AS REQUIRED TO APPROPRIATE AUTHORITIES. U.S. COAST GUARD AND EPA REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS/RELEASES THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL/RELEASE TO COAST GUARD NATIONAL RESPONSE CENTER TOLL FREE NUMBER (800 424-8802. IN CASE OF ACCIDENT OR ROAD SPILL NOTIFY CHEMPREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

LAND SPILL: SHUT OFF SOURCE TRACING NORMAL SAFETY PRECAUTIONS. TAKE MEASURES TO MINIMIZE THE EFFECTS ON GROUND WATER. RECOVER BY PUMPING OR CONTAIN SPILLED MATERIAL WITH SAND OR OTHER SUITABLE ABSORBENT AND REMOVE MECHANICALLY INTO CONTAINERS. IF NECESSARY, DISPOSE OF ADSORBED RESIDUES AS DIRECTED IN SECTION 13.

WATER SPILL:

CONFINE THE SPILL IMMEDIATELY WITH BOOMS. WARN OTHER SHIPS IN THE VICINITY. NOTIFY PORT AND OTHER RELEVANT AUTHORITIES. REMOVE FROM THE SURFACE BY SKIMMING OR WITH SUITABLE ABSORBENTS. IF PERMITTED BY REGULATORY AGENCIES THE USE OF SUITABLE DISPERSANTS SHOULD BE CONSIDERED WHERE RECOMMENDED IN LOCAL OIL SPILL PROCEDURES.

ENVIRONMENTAL PRECAUTIONS:

PREVENT MATERIAL FROM ENTERING SEWERS, WATER SOURCES OR LOW LYING AREAS; ADVISE THE RELEVANT AUTHORITIES IF IT HAS, OR IF IT CONTAMINATES SOIL/VEGETATION.

PERSONAL PRECAUTIONS: SEE SECTION 8

7. HANDLING AND STORAGE

HANDLING:

HIGH PRESSURE INJECTION UNDER THE SKIN MAY OCCUR DUE TO THE RUPTURE OF PRESSURIZED LINES. ALWAYS SEEK MEDICAL ATTENTION. NO SPECIAL PRECAUTIONS ARE NECESSARY BEYOND NORMAL GOOD HYGIENE PRACTICES. SEE SECTION 8 FOR ADDITIONAL PERSONAL PROTECTION ADVICE WHEN HANDLING THIS PRODUCT.

STORAGE:

KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT STORE IN OPEN OR UNLABELLED CONTAINERS. STORE AWAY FROM STRONG OXIDIZING AGENTS AND COMBUSTIBLE MATERIALS. DO NOT STORE NEAR HEAT, SPARKS, FLAME OR STRONG OXIDANTS.

SPECIAL PRECAUTIONS: PREVENT SMALL SPILLS AND LEAKAGES TO AVOID SLIP HAZARD.

EMPTY CONTAINER WARNING:

EMPTY CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. DO NOT ATTEMPT TO REFILL OR CLEAN CONTAINER SINCE RESIDUE IS DIFFICULT TO REMOVE. EMPTY DROPS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY RETURNED TO A DRAIN RECONDITIONER. ALL CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

WHEN MISTS/AEROSOLS CAN OCCUR, THE FOLLOWING ARE RECOMMENDED: 5 MG/M3 (AS OIL MIST) - ACGIH THRESHOLD LIMIT VALUE (TLV) 10 MG/M3 (AS OIL MIST) - ACGIH SHORT TERM EXPOSURE LIMIT (STEL) 5 MG/M3 (AS OIL MIST) - OSHA PERMISSIBLE EXPOSURE LIMIT (PEL)

VENTILATION:

IF MISTS ARE GENERATED, USE ADEQUATE VENTILATION, LOCAL EXHAUST OR ENCLOSURES TO CONTROL BELOW EXPOSURE LIMITS.

RESPIRATORY PROTECTION:

IF MISTS ARE GENERATED, AND/OR WHEN VENTILATION IS NOT ADEQUATE, WEAR APPROVED RESPIRATOR.

EYE PROTECTION:

IF EYE CONTACT IS LIKELY, SAFETY GLASSES WITH SIDE SHIELDS OR CHEMICAL TYPE GOGGLES SHOULD BE WORN.

SKIN PROTECTION:

NOT NORMALLY REQUIRED. WHEN SPLASHING OR LIQUID CONTACT CAN OCCUR FREQUENTLY, WEAR OIL RESISTANT GLOVES AND/OR OTHER PROTECTIVE CLOTHING. GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

9. PHYSICAL AND CHEMICAL PROPERTIES

TYPICAL PHYSICAL PROPERTIES ARE GIVEN BELOW. CONSULT PRODUCT DATA SHEET FOR SPECIFIC DETAILS.

APPEARANCE: LIQUID

COLOR: AMBER

ODOR: MILD

ODOR THRESHOLD-PPM: NE

pH: NA

FLASH POINT C (F): >316 (600)

FLASH POINT C (F): NA

FLASH POINT C (F): >200 (392) (ASTM D-92)

FLAMMABILITY (SOLIDS): NE

AUTO FLAMMABILITY C (F): NA

EXPLOSIVE PROPERTIES: NA

OXIDIZING PROPERTIES: NA

VAPOR PRESSURE-MM HG 20 C: <0.1

VAPOR DENSITY: >2.0

EVAPORATION RATE: NE

RELATIVE DENSITY, 15/4 C: 0.871

SOLUBILITY IN WATER: NEGLIGIBLE

PARTITION COEFFICIENT: >3.5

VISCOSITY AT 40 C, CST: 32.0

VISCOSITY AT 100 C, CST: 5.3

POUR POINT C (F): <-18(0)

FREEZING POINT C(F): NE

VOLATILE ORGANIC COMPOUND: NE

INSD EXTRACT, IP-346 (WT. %): <3, FOR MINERAL OIL ONLY

NA=NOT APPLICABLE
NE=NOT ESTABLISHED
D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): STABLE.

CONDITIONS TO AVOID: EXTREME HEAT AND HIGH ENERGY SOURCES OF IGNITION.

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS.

HAZARDOUS DECOMPOSITION PRODUCTS:
PRODUCT DOES NOT DECOMPOSE AT AMBIENT TEMPERATURES.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

11. TOXICOLOGICAL DATA

ACUTE TOXICOLOGY:

ORAL TOXICITY (RATS):

PRACTICALLY NON-TOXIC (LD50: GREATER THAN 2000 MG/KG).
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS):

PRACTICALLY NON-TOXIC (LD50: GREATER THAN 2000 MG/KG).
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS):

PRACTICALLY NON-TOXIC (LC50: GREATER THAN 5 MG/L).
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS):

PRACTICALLY NON-IRRITATING. (DRAIZE SCORE: GREATER THAN 6 BUT 15 OR LESS).
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS):

PRACTICALLY NON-IRRITATING. (PRIMARY IRRITATION INDEX: GREATER THAN 0.5 BUT LESS THAN 3).
BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

OTHER ACUTE TOXICITY DATA:

ALTHOUGH AN ACUTE INHALATION STUDY WAS NOT PERFORMED WITH THIS PRODUCT, A VARIETY OF MINERAL AND SYNTHETIC OILS, SUCH AS THOSE IN THIS PRODUCT, HAVE BEEN TESTED. THESE SAMPLES HAD VIRTUALLY NO EFFECT OTHER THAN A NONSPECIFIC INFLAMMATORY RESPONSE IN THE LUNG TO THE AEROSOLIZED MINERAL OIL. THE PRESENCE OF ADDITIVES IN OTHER TESTED FORMULATIONS (IN APPROXIMATELY THE SAME AMOUNTS AS IN THE PRESENT FORMULATION) DID NOT ALTER THE OBSERVED EFFECTS.

SUBCHRONIC TOXICOLOGY (SUMMARY):

NO SIGNIFICANT ADVERSE EFFECTS WERE FOUND IN STUDIES USING REPEATED DERMAL APPLICATIONS OF SIMILAR FORMULATIONS TO THE SKIN OF LABORATORY ANIMALS FOR 13 WEEKS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. THE ANIMALS WERE EVALUATED EXTENSIVELY FOR EFFECTS OF EXPOSURE (HEMATOLOGY, SERUM CHEMISTRY, URINALYSIS, ORGAN WEIGHTS, MICROSCOPIC EXAMINATION OF TISSUES ETC.).

REPRODUCTIVE TOXICOLOGY (SUMMARY):

ADVERSE EFFECTS WOULD BE EXPECTED FROM DERMAL EXPOSURE, BASED ON ACUTE DEVELOPMENTAL TOXICITY STUDIES OF MAJOR COMPONENTS IN THIS FORMULATION AND/OR MATERIALS OF SIMILAR COMPOSITION.

CHRONIC TOXICOLOGY (SUMMARY):

REPEATED AND/OR PROLONGED EXPOSURE MAY CAUSE IRRITATION TO THE SKIN, EYES OR RESPIRATORY TRACT. OVEREXPOSURE TO OIL MIST MAY RESULT IN OIL DROPLET DEPOSITION AND/OR GRANULOMA FORMATION.

FOR MINERAL BASE OILS:

BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. CHRONIC MOUSE SKIN PAINTING STUDIES OF SEVERELY TREATED OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS. THESE RESULTS ARE CONFIRMED ON CONTINUING BASIS USING VARIOUS SCREENING METHODS SUCH AS MODIFIED AMES TEST TP-346, AND/OR OTHER ANALYTICAL METHODS.

FOR SYNTHETIC BASE OILS:

THE BASE OILS IN THIS PRODUCT HAVE BEEN TESTED IN THE AMES ASSAY AND OTHER TESTS OF MUTAGENICITY WITH NEGATIVE RESULTS. THESE BASE OILS ARE NOT EXPECTED TO BE CARCINOGENIC WITH CHRONIC DERMAL EXPOSURES.

SENSITIZATION (SUMMARY):

NOT EXPECTED TO BE SENSITIZING BASED ON TESTS OF THIS PRODUCT, COMPONENTS, OR SIMILAR PRODUCTS.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

IN THE ABSENCE OF SPECIFIC ENVIRONMENTAL DATA FOR THIS PRODUCT, THIS ASSESSMENT IS BASED ON INFORMATION FOR REPRESENTATIVE PRODUCTS.

TOXICITY:

AVAILABLE TOXICITY DATA (L50 >1000 MG/L) INDICATES THAT ADVERSE EFFECTS TO AQUATIC ORGANISMS ARE NOT EXPECTED FROM THIS PRODUCT.

MOBILITY:

WHEN RELEASED INTO THE ENVIRONMENT, ADSORPTION TO SEDIMENT AND SOIL WILL BE THE PREDOMINANT BEHAVIOR.

PERSISTENCE AND DEGRADABILITY:

THIS PRODUCT IS EXPECTED TO BE INHERENTLY BIODEGRADABLE.

BIOACCUMULATIVE POTENTIAL:

BIOACCUMULATION IS IMPLIED DUE TO THE VERY LOW WATER SOLUBILITY OF THIS PRODUCT, THEREFORE BIOAVAILABILITY TO AQUATIC ORGANISMS IS MINIMAL.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FOR FUEL VALUE. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT AN APPROPRIATE GOVERNMENT WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL.

RCRA INFORMATION:

THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261), NOR IS IT FORMULATED TO CONTAIN MATERIALS WHICH ARE LISTED HAZARDOUS WASTES. IT DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSIVITY, OR REACTIVITY. THE UNUSED PRODUCT IS NOT FORMULATED WITH SUBSTANCES COVERED BY THE TOXICITY CHARACTERISTIC LEACHING PROCEDURES (TCLP). HOWEVER, UNUSED PRODUCT MAY BE REGULATED.

14. TRANSPORT INFORMATION

USA DOT: NOT REGULATED BY USA DOT.

RID/ADR: NOT REGULATED BY RID/ADR.

IMO: NOT REGULATED BY IMO.

IATA: NOT REGULATED BY IATA.

STATIC ACCUMULATOR (50 PICOSTEMENS OR LESS): YES

15. REGULATORY INFORMATION

US OSHA HAZARD COMMUNICATION STANDARD:

WHEN USED FOR ITS INTENDED PURPOSES, THIS PRODUCT IS NOT CLASSIFIED AS HAZARDOUS IN ACCORDANCE WITH OSHA 29 CFR 1910.1200.

EU LABELING:

PRODUCT IS NOT DANGEROUS AS DEFINED BY THE EUROPEAN UNION DANGEROUS SUBSTANCES/PREPARATIONS DIRECTIVES. EU LABELING NOT REQUIRED.

GOVERNMENTAL INVENTORY STATUS:

ALL COMPONENTS COMPLY WITH TSCA, EINECS/ELINCS, AICS, METI, AND DSL.

U.S. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III:
THIS PRODUCT CONTAINS NO "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES: NONE.

THIS PRODUCT CONTAINS NO CHEMICALS SUBJECT TO THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA (313) TOXIC RELEASE PROGRAM.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
ZINC (ELEMENTAL ANALYSIS) (0.08%)	7440-66-6	22
ZINC ALKYL DITHIOPHOSPHATE (0.67%)	68649-42-3	22

REGULATORY LISTS SEARCHED:

1-ACGIH ALL
2-ACGIH A1
3-ACGIH A2
4-NTP CARC
5-NTP SUS
6-IARC 1
7-IARC 2A
8-IARC 2B
9-OSHA CARC
10-OSHA 2
11-TSCA 4
12-TSCA 5A2
13-TSCA 5E
14-TSCA 6
15-TSCA 12B
16-CA P65 CARC
17-CA P65 REPRC
18-CA RTK

19-SL RTK
20-LL RTK
21-LA RTK
22-MI 293
23-MN RTK
24-MU RTK
25-PA RTK
26-PI RTK

KEY:
M CARCINOGEN
SL SUSPECTED CARCINOGEN
REPRO-REPRODUCTIVE

16. OTHER INFORMATION

USE: HYDRAULIC OIL

NOTE:

PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBs. HEALTH STUDIES HAVE SHOWN THAT MANY HYDROCARBONS POSE POTENTIAL HUMAN HEALTH RISKS WHICH MAY VARY FROM PERSON TO PERSON. INFORMATION PROVIDED ON THIS MSDS REFLECTS INTENDED USE. THIS PRODUCT SHOULD NOT BE USED FOR OTHER APPLICATIONS. IN ANY CASE, THE FOLLOWING ADVICE SHOULD BE CONSIDERED:

INDUSTRIAL LABEL:

UNDER NORMAL CONDITIONS OF INTENDED USE, THIS PRODUCT DOES NOT POSE A RISK TO HEALTH. EXCESSIVE EXPOSURE MAY RESULT IN EYE, SKIN OR RESPIRATORY IRRITATION. ALWAYS OBSERVE GOOD HYGIENE MEASURES. FIRST AID: WASH SKIN WITH SOAP AND WATER. FLUSH EYES WITH WATER. IF OVERCOME BY FUMES OR VAPOR, REMOVE TO FRESH AIR. IF INGESTED DO NOT INDUCE VOMITING. IF SYMPTOMS PERSIST SEEK MEDICAL ASSISTANCE. READ AND UNDERSTAND THE MSDS BEFORE USING THIS PRODUCT.

FOR INTERNAL USE ONLY:

MHC: 1* 1* 1* 1* 1*

MFEC: A

TRN: 602623-00

ELIS: 400431

CMCS97: 970972

REQ: US - MARKETING

SAFE USE: L

EHS APPROVAL DATE: 04NOV2002

LEGALLY REQUIRED INFORMATION IS GIVEN IN ACCORDANCE WITH APPLICABLE INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING ANY LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. USE OR RETRANSMISSION OF THE INFORMATION CONTAINED HEREIN IN ANY OTHER FORMAT THAN THE FORMAT AS PRESENTED IS STRICTLY PROHIBITED. MOBIL NEITHER REPRESENTS NOR WARRANTS THAT THE FORMAT, CONTENT OR PRODUCT FORMULAS CONTAINED IN THIS DOCUMENT COMPLY WITH THE LAWS OF ANY OTHER COUNTRY EXCEPT THE UNITED STATES OF AMERICA.

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MATERIAL SAFETY DATA SHEET



Windex Powerized Glass Cleaner (RTU)

HMIS		NFPA		Personal protective equipment None Required
Health	0	0	0	
Fire Hazard	1	1	1	
Reactivity	0	0	0	

Version Number: 3

Preparation date: 2005-05-20

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Windex Powerized Glass Cleaner (RTU)

MSDS #: 126011004

Product code: 90122, 90135, 90139, 90940, CB006722, CB807701, 3694044, 3694052

Recommended use: Cleaning product.

Manufacturer, importer, supplier:
Consumer Branded Professional Products, Div.
JohnsonDiversey, Inc.
8310 16th Street
Sturtevant, Wisconsin 53177-0902
Phone: (888) 352-2249

Emergency telephone number: 1-800-851-7145 (Prosar); 1-651-917-8133 (Int'l Prosar); 01-800-710-3400 (México)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

The product contains no substances which at their given concentration, are considered to be hazardous to health

Principle routes of exposure: Eyes. Skin. Inhalation. Ingestion.

Eye contact: None known.

Skin contact: None known.

Inhalation: None known.

Ingestion: None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

Ingredient(s)	CAS #	Weight %	LD50 Oral	LD50 Dermal	LC50 Inhalation
Isopropyl alcohol	67-63-0	1 - 5%	5000 mg/kg (rat)	12800 mg/kg (rabbit)	16000 ppm/8H (rat)

4. FIRST AID MEASURES

Eye contact: Rinse with plenty of water.

Skin contact: Rinse with plenty of water.

Inhalation: No specific first aid measures are required.

Ingestion: No specific first aid measures are required.

Aggravated Medical Conditions: None known.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, water spray, foam, carbon dioxide.

Specific hazards: Although this product has a flash point below 200 Deg. F, it is an aqueous solution containing an alcohol and does not sustain combustion.

Unusual hazards: None known

Specific methods: No special methods required

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Extinguishing media which must not be used for safety reasons: None.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment

Windex Powerized Glass Cleaner (RTU)

Environmental precautions and clean-up methods:

Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container.

7. HANDLING AND STORAGE

Handling:

Avoid contact with eyes. COMBUSTIBLE LIQUID AND VAPOR . Keep away from open flames, hot surfaces and sources of ignition. Handle in accordance with good industrial hygiene and safety practice. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.

Storage:

Keep tightly closed in a dry, cool and well-ventilated place. Protect from freezing. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:

No special ventilation requirements. General room ventilation is adequate.

Personal Protective Equipment

Eye protection:

No special requirements under normal use conditions

Hand protection:

No special requirements under normal use conditions

Skin and body protection:

No special requirements under normal use conditions

Respiratory protection:

No special requirements under normal use conditions

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice

Ingredient(s)	CAS #	ACGIH	OSHA	Mexico
Isopropyl alcohol	67-83-0	400 ppm (STEL) 200 ppm (TWA)	980 mg/m ³ 400 ppm	1225 mg/m ³ (STEL) 980 mg/m ³ (TWA)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

pH: 11.45

Appearance: Liquid

Color: Blue

Odor: Ammoniacal

Specific gravity: 0.996

Density: 0.996

VOC: 3.8

Flash point: 131 (°F) 55 (°C)

Solubility: Soluble

Bulk density:

No information available

Dilution pH:

No information available.

Vapor density:

No information available

Evaporation rate:

No information available

Boiling point/range:

Not determined

Melting point/range:

Not determined

Decomposition temperature:

Not determined

Autoignition temperature:

No information available

Viscosity:

No information available

Partition coefficient (n-octanol/water): No information available

Solubility in other solvents:

No information available

10. STABILITY AND REACTIVITY

Stability:

The product is stable

Polymerization:

Hazardous polymerization does not occur.

Hazardous decomposition products:

None reasonably foreseeable.

Conditions to avoid:

Do not freeze.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50 estimated to be greater than 5000 mg/kg. Dermal LD50 estimated to be > 2000 mg/kg. See Section 3

Component Information:

Chronic toxicity:

None known

Specific effects

Carcinogenic effects:

None known

Mutagenic effects:

None known

Reproductive toxicity:

None known

Target organ effects:

None known

12. ECOLOGICAL INFORMATION

Environmental Information:

When used for its intended purpose this product should not cause adverse effects in the environment

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
 Dispose of according to all federal, state and local applicable regulations

14. TRANSPORT INFORMATION

DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information

15. REGULATORY INFORMATION

International Inventories

All components of this product are listed on the following inventories: U.S.A. (TSCA).

U.S. Regulations

California Proposition 65: This product is not subject to the reporting requirements under California's Proposition 65

STATE RIGHT TO KNOW

Ingredient(s)	CAS #	MARTK:	NJRTK:	PARTK:	RIRTK:	ILRTK:	CTRTK:
Hexyloxyethanol	112-25-4	-	Listed	Listed	-	-	-
Ammonium hydroxide	1336-21-6	Listed	Listed	Listed	-	Listed	Listed
Water	7732-18-5	-	-	-	-	-	-
Isopropyl alcohol	67-63-0	Listed	Listed	Listed	Listed	Listed	Listed

CERCLA / SARA

Ingredient(s)	CAS #	Weight %	CERCLA/SARA RQ (lbs)	Section 302 TPQ (lbs)	Section 313
Hexyloxyethanol	112-25-4	0.1 - 1.5%			Listed.
Ammonium hydroxide	1336-21-6	0.1 - 1.5%	1000		Listed.
Isopropyl alcohol	67-63-0	1 - 6%	100		Listed.

SARA 311/312 Hazard Categories

Immediate: N
 Delayed: N
 Fire: Y
 Reactivity: N
 Sudden Release of Pressure: N

Canada

WHMIS hazard class: Not for sale in Canada.

Ingredient(s)	CAS #	NPRI
Isopropyl alcohol	67-63-0	Listed

16. OTHER INFORMATION

Reason for revision: Not applicable
 Prepared by: NAPRAC
 Additional advice: None

Notice to Reader: This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

To insure proper protection when handling

Poly (Vinyl Chloride,) 353-355

the following Precautions & P.P.E. are required:

Ventilation – Local exhaust.

Respiratory Protection –If needed, NIOSH/MSHA approved respirator appropriate for exposure of concern.

Gloves – Impervious Gloves.

Eye Protection – Chemical Safety Goggles (FP N.)

Anyone found not following this procedure will be subject to disciplinary action up to and including termination.

**In the event of exposure to,
Poly (Vinyl Chloride)**

the following First Aide procedures are to be followed:

IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL ASSISTANCE.

Inhalation

If affected, remove from exposure. If breathing stops, begin mouth to mouth.

Skin Contact

Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

Eye Contact

Flush eyes with large amounts of water for 15 minutes. Get medical attention

Ingestion

Get medical attention immediately.


**Material Safety
Data Sheets**

Division of Facilities Services

**DOD Hazardous Material Information (ANSI Format)
For Cornell University Convenience Only**

POLY (VINYL CHLORIDE), 353-355

<u>Section 1 - Product and Company Identification</u>	<u>Section 9 - Physical & Chemical Properties</u>
<u>Section 2 - Composition/Information on Ingredients</u>	<u>Section 10 - Stability & Reactivity Data</u>
<u>Section 3 - Hazards Identification Including Emergency Overview</u>	<u>Section 11 - Toxicological Information</u>
<u>Section 4 - First Aid Measures</u>	<u>Section 12 - Ecological Information</u>
<u>Section 5 - Fire Fighting Measures</u>	<u>Section 13 - Disposal Considerations</u>
<u>Section 6 - Accidental Release Measures</u>	<u>Section 14 - MSDS Transport Information</u>
<u>Section 7 - Handling and Storage</u>	<u>Section 15 - Regulatory Information</u>
<u>Section 8 - Exposure Controls & Personal Protection</u>	<u>Section 16 - Other Information</u>

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**Section 1 - Product and Company Identification
POLY (VINYL CHLORIDE), 353-355**

Product Identification: POLY (VINYL CHLORIDE), 353-355
Date of MSDS: 11/01/1991 **Technical Review Date:** 10/16/1995
FSC: 9330 **NIIN:** LIIN: 00N044057
Submitter: N EN
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: SCIENTIFIC POLYMER PRODUCTS INC
Manufacturer's Address1: 6265 DEAN PARKWAY
Manufacturer's Address2: ONTARIO, NY 14519
Manufacturer's Country: US
General Information Telephone: 716-265-0413
Emergency Telephone: 716-265-0413
Emergency Telephone: 716-265-0413
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: 0MUG0
Special Project Code: N

Contractor Information

Contractor's Name: SCIENTIFIC POLYMER PRODUCTS INC
Contractor's Address1: 6265 DEAN PARKWAY
Contractor's Address2: ONTARIO, NY 14519
Contractor's Telephone: 716-265-0413
Contractor's CAGE: 0MUG0

Section 2 - Composition/Information on Ingredients POLY (VINYL CHLORIDE), 353-355

Ingredient Name: ETHYLENE, CHLORO-, POLYMER; (POLY(VINYL CHLORIDE))
(POLYVINYL CHLORIDE DUST)
Ingredient CAS Number: 9002-86-2 **Ingredient CAS Code:** M
RTECS Number: KV0350000 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 100
% Environmental Weight:
Other REC Limits: N/K
OSHA PEL: 5 MG/M3 RESP (MFR) OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 10 MG/M3 TDUST (MFR) ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview
POLY (VINYL CHLORIDE), 353-355

Health Hazards Acute & Chronic: IRRITATION TO EYES, NOSE & THROAT MAY BE CAUSED BY VAPORS. LONG TERM EXPOSURE TO VINYL CHLORIDE HAS CAUSED CANCER IN ANIMALS INCLUDING A RARE FORM OF LIVER CANCER. OTHER TARGET ORGANS INCLUDE BRAIN, LUNG, HEMO & LYMPHOPOIETIC.

Signs & Symptoms of Overexposure:
SEE HEALTH HAZARDS.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route of Entry Indicators:

Inhalation: YES
Skin: NO
Ingestion: NO

Carcinogenicity Indicators

NTP: NO
IARC: NO
OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT

Section 4 - First Aid Measures
POLY (VINYL CHLORIDE), 353-355

First Aid:

IN ALL CASES, IF IRRITATION DEVELOPS, SEEK MEDICAL ASSISTANCE. INGEST:CALL MD IMMEDIATELY (FP N). INHAL:REMOVE FROM EXPOSURE. IF BREATHING STOPS, BEGIN MOUTH TO MOUTH. EYES:FLUSH W/WATER FOR AT LEAST 15 MINUTES. SKIN:WASH AFFECTED AREA W/SOAP & WATER. REMOVE DIRTY CLOTHING.

Section 5 - Fire Fighting Measures
POLY (VINYL CHLORIDE), 353-355

Fire Fighting Procedures:

USE NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire or Explosion Hazard:

NONE KNOWN

Extinguishing Media:

WATER, DRY CHEMICAL, FOAM.

Flash Point: Flash Point Text: 735F,391C

Autoignition Temperature:

Autoignition Temperature Text: N/A
Lower Limit(s): N/A
Upper Limit(s): N/A

Section 6 - Accidental Release Measures
POLY (VINYL CHLORIDE), 353-355

Spill Release Procedures:
SWEEP UP & PLACE IN CONTAINER FOR DISPOSAL.

Section 7 - Handling and Storage
POLY (VINYL CHLORIDE), 353-355

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
POLY (VINYL CHLORIDE), 353-355

Respiratory Protection:
IF NEEDED. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation:
LOCAL EXHAUST.
Protective Gloves:
IMPERVIOUS GLOVES.
Eye Protection: CHEMICAL SAFETY GOGGLES (FP N).
Other Protective Equipment: NOT APPLICABLE
Work Hygenic Practices: GOOD HYGIENE SHOULD BE FOLLOWED.
Supplemental Health & Safety Information: NONE SPECIFIED BY MANUFACTURER.

Section 9 - Physical & Chemical Properties
POLY (VINYL CHLORIDE), 353-355

HCC: N1
NRC/State License Number:
Net Property Weight for Ammo:
Boiling Point: Boiling Point Text: N/A
Melting/Freezing Point: Melting/Freezing Text: N/A
Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/A **Vapor Density:** N/A
Percent Volatile Organic Content:
Specific Gravity: 1.4
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: N/P
Evaporation Weight and Reference: NOT APPLICABLE
Solubility in Water: INSOLUBLE

Appearance and Odor: WHITE POWDER; ODORLESS.
Percent Volatiles by Volume: N/A
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
POLY (VINYL CHLORIDE), 353-355

Stability Indicator: YES
Materials to Avoid:
ACETALS OR ACETAL COPOLYMERS.
Stability Condition to Avoid:
NONE KNOWN
Hazardous Decomposition Products:
HYDROGEN CHLORIDE, CO₂, CO.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT

Section 11 - Toxicological Information
POLY (VINYL CHLORIDE), 353-355

Toxicological Information:
N/P

Section 12 - Ecological Information
POLY (VINYL CHLORIDE), 353-355

Ecological Information:
N/P

Section 13 - Disposal Considerations
POLY (VINYL CHLORIDE), 353-355

Waste Disposal Methods:
INCINERATE OR LANDFILL I/A/W STATE, FEDERAL & LOCAL REGULATIONS.

Section 14 - MSDS Transport Information
POLY (VINYL CHLORIDE), 353-355

Transport Information:
N/P

Section 15 - Regulatory Information
POLY (VINYL CHLORIDE), 353-355

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
POLY (VINYL CHLORIDE), 353-355

Other Information:

N/P

HAZCOM Label Information

Product Identification: POLY (VINYL CHLORIDE), 353-355

CAGE: 0MUG0

Assigned Individual: N

Company Name: SCIENTIFIC POLYMER PRODUCTS INC

Company PO Box:

Company Street Address1: 6265 DEAN PARKWAY

Company Street Address2: ONTARIO, NY 14519 US

Health Emergency Telephone: 716-265-0413

Label Required Indicator: Y

Date Label Reviewed: 10/05/1993

Status Code: C

Manufacturer's Label Number:

Date of Label: 10/05/1993

Year Procured: N/K

Organization Code: G

Chronic Hazard Indicator: N

Eye Protection Indicator: YES

Skin Protection Indicator: YES

Respiratory Protection Indicator: YES

Signal Word: WARNING

Health Hazard: Slight

Contact Hazard: Moderate

Fire Hazard: Slight

Reactivity Hazard: None

8/9/2002 8:15:24 AM

To insure proper protection when handling

Antifreeze Permanent

the following Precautions & P.P.E. are required:

Ventilation – Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s)

Respiratory Protection If workplace exposure limit(s) of product or any component is exceeded, a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. Engineering or administrative controls should be implemented to reduce exposure.

Gloves – Wear resistant gloves such as: Neoprene, Nitrile Rubber, Polyvinyl Alcohol.

Eye Protection - Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses.

Anyone found not following this procedure will be subject to disciplinary action up to and including termination

In the event of exposure to,

Antifreeze Permanent

the following First Aide procedures are to be followed:

Inhalation

If affected, remove individual to fresh air.

Skin Contact

Thoroughly wash exposed area with soap and water. Remove contaminated clothing. Launder contaminated before re-use.

Eye Contact

Flush with large amounts of water, lifting upper and lower lids occasionally, get medical attention.

Ingestion

Immediately drink 2 glasses of water and induce vomiting be either giving Ipecac syrup or by placing finger at back of throat. Never give anything by mouth to an unconscious person, Get medical attention immediately.



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ANTIFREEZE PERMANENT

Page:

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: ANTIFREEZE PERMANENT

GATEHOOD PRODUCTS
 P.O. BOX 207
 PARKERSBURG, WV 26101

OS 93 020 8130124-752

Data Sheet No: 0016403-010.000
 Prepared: 09/09/91
 Supersedes: 08/29/91

PRODUCT:
 INVOICE: REEST
 INVOICE DATE: 02/08/93
 TO:

SECTION I - PRODUCT IDENTIFICATION

General or Generic ID: ANTI-FREEZE SOLUTION

DOT Hazard Classification: NOT APPLICABLE

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION. SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by WT)	PEL	TLV	Not
ETHYLENE GLYCOL CAS #: 107-21-1	84 - 94	50 PPM - CEILING	50 PPM - CEILING	(1
INHIBITOR PACKAGE	4 - 8			(2
DIETHYLENE GLYCOL CAS #: 111-46-6	1-10			(3

Notes:

- (1) THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.
- (2) THIS IS A PROPRIETARY INHIBITOR PACKAGE CONTAINING ORGANIC AND INORGANIC SALTS, AND WATER.
- (3) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

THE AIHA HAS ESTABLISHED A WORKPLACE ENVIRONMENTAL EXPOSURE LEVEL (WEEL) OF 50 PPM, 8-HOUR TWA FOR TOTAL VAPOR AND AEROSOL AND 10 MG/M5, 8-HOUR TWA FOR AEROSOL ONLY FOR DIETHYLENE GLYCOL.

SECTION III - PHYSICAL DATA

Boiling Point	for PRODUCT	388.00 Deg F 197.77 Deg C
Vapor Pressure	for PRODUCT	760.00 mm Hg
Specific Vapor Density	AIR = 1	0.05 mm Hg 68.00 Deg F 20.00 Deg C
Specific Gravity		2.1
Percent Volatiles		1.130 68.00 Deg F 20.00 Deg C
Evaporation Rate		>60%
Appearance		SLOWER THAN ETHER
State		FLUORESCENT GREEN
Form		LIQUID HOMOGENEOUS SOLUTION

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT 232.0 Deg F (111.1 Deg C)

EXPLOSIVE LIMIT (LOWEST VALUE OF COMPONENT) LOWER - 1.7%

EXTINGUISHING MEDIA: ALCOHOL FOAM OR WATER FOG OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

SPECIAL FIRE & EXPLOSION HAZARDS: NOT APPLICABLE

CONTINUED ON PAGE: 2

72-62-7925-61

MATERIAL SAFETY
DATA SHEET



Division of Ashland Oil, Inc.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

Emergency
Telephone
1 (800) 274-5263 or
1-800-ASHLAND

000011

ANTIFREEZE PERMANENT

Page: .

~~SECTION VIII - PROTECTIVE EQUIPMENT TO BE USED (Continued)~~

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS: , NATURAL RUBBER, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

~~SECTION IX - SPECIAL PRECAUTIONS OR OTHER COMMENTS~~

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

To insure proper protection when handling

Propane

the following Precautions & P.P.E. are required:

Ventilation – Use explosion-proof ventilation as required to control vapor concentrations.

Respiratory Protection-Use NIOSH approved respirator as required when airborne exposure limits are exceeded. In accord with 29 CFR 1910.134, use either an atmosphere supplying respirator or an air purifying respirator for organic vapors.

Gloves – Wear protective clothing as needed.

Eye Protection – Wear safety glasses or goggles as appropriate.

Anyone found not following this procedure will be subject to disciplinary action up to and including termination.

In the event of exposure to,

Propane

the following First Aide procedures are to be followed:

Inhalation

Remove victim to fresh air and provide oxygen if breathing is difficult. Seek Immediate medical attention if victim is not breathing. Give artificial respiration.

Skin Contact (with liquid)

Flush with water. If frostbite or burn occurs, get medical attention.

Eye Contact

Flush eyes with water. Get medical attention.

Ingestion

Not applicable to this product.

Ferrellgas Material Safety Data Sheet - Propane
 Ferrellgas One Liberty Plaza Liberty, MO 64068


Section 1: Emergency Information

24 Hour Emergency Number Call 1-800-424-9300 (Chemtrec) in case of emergencies involving propane.

Warning! Extremely flammable compressed gas.
 • Asphyxiant in high concentrations.
 • Skin contact with liquid causes burns similar to frostbite.
 • Ethyl mercaptan used as a warning agent may not be entirely effective in all situations.
 Read the warnings in section 9.

NFPA hazard rating Hazard ratings are in the following table

Health hazard = 1
 Fire hazard = 4
 Reactivity = 0



Where:
 0 = Least 3 = High
 1 = Slight 4 = Extreme
 2 = Moderate

General MSDS assistance Call 816-792-6916 for general assistance with questions about this MSDS.

Section 2: Hazardous Components/Identify Information

Product Propane (odorized)

Chemical name Propane

Chemical family Liquefied Petroleum Gas (Paraffinic Hydrocarbons)

Hazardous components Propane may contain various percentages of these hazardous components, depending on the source of supply.

Component	CAS Number	Percentage
Propane	74-98-6	85 - 100
Propylene	115-07-1	0 - 15
Butane and heavier	106-97-8	0 - 2.5
Ethane	74-84-0	0 - 5
Ethyl Mercaptan (Odorant)	75-08-1	<0.1

Section 3: Health Information

Purpose	The health effects are consistent with requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Eye contact	Direct contact with liquid propane can result in eye burns.
Skin contact	Direct contact with liquid propane can result in skin burns (frostbite).
Inhalation	This product is classified as a simple asphyxiant. High vapor concentrations may produce a reversible central nervous system depression (anesthesia). Higher concentrations may produce asphyxiation.
Ingestion	Ingestion is not likely.
Signs and symptoms	Eye or skin burns (frostbite) as noted previously. Early to moderate central nervous system depression may be evidenced by giddiness, headache, dizziness and nausea. In extreme cases, unconsciousness may occur. Asphyxiation may be noted by a sudden loss of consciousness. Death may quickly follow.
Aggravated medical conditions	Caution is recommended for personnel with pre-existing central nervous system or chronic respiratory diseases.
Acute toxicity data	Acute toxicity data is not applicable to this product.
Cardnogenicity	This product is not classified as a carcinogen.
Occupational exposure limits	Use this table to determine the allowable exposure limits for personnel.

OSHA		ACGIH	
PEL/TWA	PEL/Ceiling	TLV/TWA	TLV/STEL
Propane: 1,000 PPM	Not established	Butane: 800 PPM	Not established
Butane: 800 PPM			

Cardiac effects	While there is no evidence that exposure to industrially acceptable levels of hydrocarbons have produced cardiac effects in humans, animal studies have shown that inhalation of high vapor levels of the components of this product have produced cardiac sensitization. Such sensitization may cause fatal changes in heart rhythms. This latter effect was shown to be enhanced by hypoxia or the injection of adrenaline-like agents.
Effects of propylene	Laboratory animals exposed to high levels of propylene for prolonged periods of time showed evidence of effects in the liver, kidneys, and nasal cavity.

Section 4: Emergency and First Aid Procedures

Purpose	Follow these procedures in case of personal injuries resulting from use of this product.
Eye contact with liquid	Flush eyes with water. Get medical attention.
Skin contact with liquid	Flush with water. If frostbite or burn occurs, get medical attention.
Inhalation	Remove victim to fresh air and provide oxygen if breathing is difficult. Seek immediate medical attention if victim is not breathing. Give artificial respiration.
Ingestion	Not applicable to this product.

Section 5: Physical Data

Physical properties Refer to this table for the physical properties of this product.

Property	Value
Appearance and odor	Colorless gas, liquid under pressure. Mercaptan "rotten cabbage" odor
Boiling point	-44 degrees F.
Evaporation rate (Butyl Acetate = 1)	<1 (diffuses readily)
Flash point	-156 degrees F.
Liquid to vapor expansion ratio	1:270
Molecular weight	44.096
Solubility in water	Slight
Specific gravity (liquid)	0.500 - 0.510 (Water = 1)
Specific gravity (vapor)	1.52 (Air = 1)
Vapor pressure (maximum)	208 PSIG @ 100 degrees F.

Section 6: Fire and Explosion Hazards

Flammability limits	Flammability limits by volume in air. <ul style="list-style-type: none">• Lower 2.15 percent• Upper 9.6 percent
Ignition temperature	Auto Ignition temperature is 940 degrees, F.
Extinguishing media	Allow product to burn if source cannot be shut off safely. <ul style="list-style-type: none">• Class B-C or A-B-C dry chemical or halon extinguishers can be used on small fires.• Apply water from a safe distance to cool containers, surrounding equipment, and structures.

Continued on next page

Section 6: Fire and Explosion Hazards, Continued

Special fire fighting procedures and precautions	Extremely flammable. Containers may explode if not sufficiently cooled with water spray. Evacuate surrounding area of unprotected personnel and isolate. Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves, and rubber boots) and a positive pressure NIOSH approved self-contained breathing apparatus.
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Section 7: Reactivity

Stability and hazardous polymerization	This product is stable. Hazardous polymerization will not occur.
Conditions and materials to avoid	Avoid heat, sparks, flame and contact with strong oxidizing agents. Avoid buildups of static electricity. <ul style="list-style-type: none">• Prevent vapor accumulation.
Hazardous decomposition products	Carbon monoxide and unidentified organic products may be formed during combustion.

Section 8: Employee Protection

Respiratory protection	Use a NIOSH approved respirator as required when airborne exposure limits are exceeded. <ul style="list-style-type: none">• In accord with 29 CFR 1910.134, use either an atmosphere supplying respirator or an air purifying respirator for organic vapors.
Protective clothing	Avoid liquid contact with eyes or skin. <ul style="list-style-type: none">• Wear safety glasses or goggles as appropriate.• Wear protective clothing as appropriate.
Additional protective measures	Use explosion-proof ventilation as required to control vapor concentrations.

Section 9: Precautions For Safe Handling and Use

Release, spill or leak procedures	Warning! Extremely flammable. <ul style="list-style-type: none">• Eliminate sources of ignition.• Isolate hazard area and deny entry to unnecessary or unprotected personnel.• Stay upwind and keep out of low areas.• Notify local fire department.• Disperse vapor clouds with water spray.• Shut off source of leak only if it can be done safely.
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Continued on next page

Section 9: Precautions For Safe Handling and Use, Continued

Training	Train all personnel involved in handling propane in proper handling and operating procedures. <ul style="list-style-type: none">• Document all training.
Handling and storing	Handle and store propane in accordance with NFPA 58 and local fire codes. <ul style="list-style-type: none">• Keep containers away from heat sources or temperatures exceeding 130 degrees F.• Do not drop or roll any container.• Store and transport containers with relief valves in vapor space.• Keep all container valves closed when not in use.• Keep protective caps (if applicable) on containers when not in use.
DOT cylinders	Take these precautions when using DOT cylinders. <ul style="list-style-type: none">• Periodically inspect and requalify DOT cylinders in accordance with DOT and NFPA 58 codes and Compressed Gas Association Pamphlets C-6 and C-6a.• Store and use cylinders with valves off and the relief valves in the container vapor space.• Shut all valves and follow recommended procedures before exchanging cylinders.
Special precautions	Containers, even those that have been emptied, can contain explosive vapors. <ul style="list-style-type: none">• Do not cut, drill, grind, weld or perform similar operations on or near containers.
Propane odorization	<p>Warning! Any smell of odorant, even a faint one, may indicate a dangerous situation.</p> <p>Ethyl mercaptan is the preferred warning agent for propane. Although ethyl mercaptan has excellent warning properties, "It is recognized that no odorant will be completely effective as a warning agent in every circumstance" (NFPA 58 A-1-4.1, 1992 edition).</p> <p>Instances in which odorants may lose their effectiveness include, but are not limited to:</p> <ul style="list-style-type: none">• Odor may fade due to chemical oxidation in improperly prepared new tanks and cylinders or from rust, air, and water in used containers that have been allowed to stand open to the atmosphere.• Odor may be absorbed and adsorbed by the walls of containers and distribution systems.• Odor in the gas escaping from underground leaks may be absorbed by certain types of soils.• Effectiveness of the odorant may be reduced by cold temperatures.• Other odors, such as from cooking or from a musty basement, may mask or cover up the mercaptan odor in propane.• Exposure to the mercaptan odor of propane for extended periods of time may affect a person's ability to detect the odorant.• Physical disabilities or the use of alcohol, tobacco, or drugs may decrease a person's ability to detect the odorant.

Section 10: Transportation Requirements

DOT shipping name	Liquefied Petroleum Gas
DOT classification	Division 2.1 (Flammable Gas)
Other transportation requirements	UN 1075, Hazardous Materials Guide Number 115. North American Industrial Classification System (NAICS) Number 454312

Section 11: Other Regulatory Controls

EPA/TSCA The components of this product are listed on the EPA/TSCA inventory of chemical substances.

EPA Hazard Classification This product is classified by 40 CFR 372 (SARA Section 313) as:

Acute Hazard	Chronic Hazard	Fire Hazard	Pressure Hazard	Reactive Hazard
XXX		XXX	XXX	

Ozone depleting substances This product does not contain, nor was it directly manufactured with, any class I or class II ozone depleting substances.

RCRA Information This product is not subject to 40CFR 268.30 ban on the disposal of hazardous wastes. If this product becomes a waste material, it would be an ignitable hazardous waste, having a waste code number D0001. Refer to latest EPA or state regulations regarding proper disposal. Under EPA-RCRA, containers are considered hazardous unless depressurized to a pressure approaching atmospheric. Depressurize containers at a controlled rate to a flare.

State regulatory information The ingredients in this product are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements.

- Contact the appropriate agency in your state for details on your regulatory requirements.

Section 12: Supplemental Information

Disclaimer of liability The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness.

The conditions or methods of handling, storage, use and disposal of this product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.

Issue information This MSDS supersedes all previous editions.

- Issued March, 2004
- Issued by: C.C. Slisz, Manager of Safety
Ferrellgas
One Liberty Plaza
Liberty, MO 64068

Solutia Inc.

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: SAFLEX® WG Multiplastic interlayer

Reference Number: 00000000829

Date: 05/09/2005

Company Information:

United States:

Solutia Inc.
575 Maryville Center Drive, P.O. Box 66760
St. Louis, MO 63166-6760
Emergency telephone: Chemtrec: 1-800-424-9300
Non-Emergency telephone: 1-314-674-6661

Canada:

Solutia Canada Inc.
6800 St. Patrick Street
LaSalle, PQ H8N 2H3
Emergency telephone: CANUTEC: 1-613-996-6666
Non-Emergency telephone: 1-314-674-6661

Mexico:

Solutia MEXICO, S. DE R.L. DE C.V.
Paseo de la Reforma No. 2654 Piso 3-A
Col. Lomas Altas
C.P. 11950 Mexico D.F.
Emergency telephone: SETIQ: (in Mexico) 01-800-002-1400
Non-Emergency telephone: (in Mexico) 01-55-5259-6800

Brazil:

Solutia Brazil Ltd.
Avenue Carlos Marcondes, 1200
CEP: 12241-420-São José dos Campos/SP-Brazil
Emergency telephone: 55 12 3932 7100 (PABX)
Non-Emergency telephone: 55 11 3365 1800 (PABX)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Form: flexible plastic film
Colour: colourless
Odour: pungent

WARNING STATEMENTS

No significant hazards associated with this material

POTENTIAL HEALTH EFFECTS

Likely routes of exposure: eye and skin contact

Eye contact: No more than slightly irritating to eyes.

Skin contact: No more than slightly irritating to skin.
No more than slightly toxic if absorbed.

Inhalation: No more than slightly toxic if inhaled.

Ingestion: No more than slightly toxic if swallowed.
Significant adverse health effects are not expected to develop if only small amounts (less than a mouthful) are swallowed.

Refer to Section 11 for toxicological information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS No.</u>	<u>Average concentration</u>	<u>Concentration range</u>	<u>Units</u>
polyvinyl butyral	27360-07-2		>=75.0 - <=85.0	%
dihexyl adipate	110-33-8		>=15.0 - <=25.0	%

4. FIRST AID MEASURES

If in eyes: Immediate first aid is not likely to be required.
This material can be removed with water.

If on skin: Immediate first aid is not likely to be required.
This material can be removed with water.
Wash heavily contaminated clothing before reuse.

If inhaled: Immediate first aid is not likely to be required.
If symptoms occur, remove to fresh air.
Remove material from eyes, skin and clothing.

If swallowed: Immediate first aid is not likely to be required.
A physician or Poison Control Center can be contacted for advice.
Wash heavily contaminated clothing before reuse.

5. FIRE FIGHTING MEASURES

Hazardous products of combustion: acrolein; butyraldehyde; butyric acid; carbon monoxide (CO); crotonaldehyde; adipic acid; n-hexaldehyde; n-hexanoic acid; n-hexanol

Extinguishing media: Water spray, foam, dry chemical, or carbon dioxide

Unusual fire and explosion hazards: None known

Fire fighting equipment: Firefighters, and others exposed, wear self-contained breathing apparatus.
Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protection recommended in section 8.

Environmental precautions: Keep out of drains and water courses.

Methods for cleaning up: In case of spill, sweep, scoop or vacuum and remove. Flush residual spill area with

water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

Handling

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing.

Emptied containers retain vapour and product residue. Observe all recommended safety precautions until container is cleaned, reconditioned or destroyed. The reuse of this material's container for non industrial purposes is prohibited and any reuse must be in consideration of the data provided in this material safety data sheet.

Storage

Temperature: 5 - 10 C

General: Stable under normal conditions of handling and storage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits: (ml/m³ = ppm)

SAFLEX® WG No specific occupational exposure limit has been established.

Eye protection: Does not cause significant eye irritation or eye toxicity requiring special protection. Use good industrial practice to avoid eye contact.

Hand protection: Wearing protective gloves is recommended. Consult the glove/clothing manufacturer to determine the appropriate type glove/clothing for a given application.

Body protection: Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice. Wash thoroughly after handling.

Ventilation: No special requirement.

Components referred to herein may be regulated by specific Canadian provincial legislation. Please refer to exposure limits legislated for the province in which the substance will be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point: > 149 C

Pensky-Martens closed tester

Autoignition temperature: ~ 398 C
Specific gravity: 1.07 - 1.08

Softening point : 35 - 150 C

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Conditions to avoid:	None known
Materials to avoid:	Contact with strong oxidizing agents.
Hazardous reactions:	Hazardous polymerization does not occur.
Hazardous decomposition products:	acrolein; butyraldehyde; butyric acid; carbon monoxide (CO); crotonaldehyde; adipic acid; n-hexaldehyde; n-hexanoic acid; n-hexanol

11. TOXICOLOGICAL INFORMATION

This product has not been tested for toxicity, but data obtained on similar products are summarized below: Results of single exposure (acute) toxicity studies conducted on similar materials indicate that these products are practically nontoxic orally (rats) and after skin application (rabbits). Not irritating to skin.

Components

Data from Solutia studies and/or the available scientific literature on the components of this material which have been identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200) or the Canadian Hazardous Products Act are discussed below.

polyvinyl butyral	Practically nontoxic following oral administration. Practically nontoxic after skin application in animal studies. Slightly irritating to eyes (rabbit). Practically non irritating to skin (rabbit). The weight of the evidence indicates that this material is not mutagenic in in-vitro assays.
2,2'-ethylenedioxydiethyl bis(2-ethylbutyrate)	Results of single exposure (acute) toxicity studies conducted on similar materials indicate that these products are slightly toxic orally (rats) and after skin application (rabbits). Caused mortality in animal studies.

12. ECOLOGICAL INFORMATION

Solutia has not conducted environmental toxicity or biodegradation studies with this material.

13. DISPOSAL CONSIDERATIONS

US EPA RCRA Status:	This material when discarded is not a hazardous waste as that term is defined by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261.
Disposal considerations:	Incineration Landfill Recycle

Product name: SAFLEX® WG Multiplastic interlayer
Solutia Inc. Material Safety Data Sheet
Reference Number: 00000000829

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Date: 05/09/2005
Version 5.1/E

Miscellaneous advice: Local, state, provincial, and national disposal regulations may be more or less stringent. Consult your attorney or appropriate regulatory officials for information on such disposal.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

US DOT

Other:

Not regulated for transport.

Canadian TDG

Other:

Not regulated for transport.

ICAO/IATA Class

Other:

See DOT Information

15. REGULATORY INFORMATION

All components are in compliance with the following inventories:

U.S. TSCA, Canadian DSL, EU EINECS, Australian AICS, Korean, Phillipine PICCS, Chinese

Other chemical inventory information:

The polymer contained within this product is exempt from listing in the European Inventory. The monomers used to manufacture this polymer are listed as required, as are all other components of this product.

This material meets the criteria for a manufactured item under the Canadian Environmental Protection Act (CEPA), and therefore is not subject to the New Substances Notification Program in Canada.

Canadian WHMIS classification:

Not Controlled

SARA Hazard Notification:

Hazard Categories Under Title III Rules (40 CFR 370):

Not applicable

Section 302 Extremely Hazardous Substances:

Not applicable

Section 313 Toxic Chemical(s):

Not applicable

CERCLA Reportable Quantity:

Not applicable

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contains all the information required by the Canadian Controlled Products Regulation.

Product name: SAFLEX® WG Multiplastic interlayer
Solutia Inc. Material Safety Data Sheet
Reference Number: 00000000829

Page 6 / 6
Date: 05/09/2005
Version 5.1/E

Refer to Section 11 for OSHA/HPA Hazardous Chemical(s) and Section 13 for RCRA classification.

Safety data sheet also created in accordance with Brazilian law NBR 14725

16. OTHER INFORMATION

Product use: plastic interlayer

Reason for revision: Error correction, Section 16

	Health	Fire	Reactivity	Additional Information
Suggested NFPA Rating	0	1	0	
Suggested HMIS Rating:	0	1	0	B

Prepared by the Solutia Hazard Communication Group. Please consult Solutia @ 314-674-6661 if further information is needed.

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SOLUTIA is a trademark of Solutia Inc.

Responsible Care® is a registered trademark of the American Chemistry Council.

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The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

 BUT010 "BUTACITE" PVB FLAKE
 Revised 27-AUG-2003

 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"BUTACITE" is a registered trademark of DuPont.

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Packaging & Industrial Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYVINYL BUTYRAL RESIN	63148-65-2	100

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

 HAZARDS IDENTIFICATION

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

 FIRST AID MEASURES

First Aid

INHALATION

(FIRST AID MEASURES - Continued)

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation at ambient temperatures. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. Protect skin from contact with molten polymer or heated, molded parts by wearing chemical and heat-resistant gloves. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion. Consult a physician if necessary.

FIRE FIGHTING MEASURES

Flammable Properties

Fire and Explosion Hazards:

UNUSUAL FIRE, EXPLOSION HAZARDS The solid polymer can be combusted only with difficulty. An electrostatic charge can potentially build up when pouring pellets. Grounding of equipment is recommended.

Hazardous gases/vapors produced in fires may include carbon monoxide, carbon dioxide, and hydrocarbon oxidation products including acrolein, butyraldehyde, formic acid, acetic acid, and methanol, oxides of nitrogen.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus (SCBA) and full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Recover undamaged and minimally contaminated material for reuse and reclamation.

Accidental Release Measures

Pick up dropped resin to prevent slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a clean, dry place.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material.

RESPIRATORS

A NIOSH/MSEA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

OTHER

Local exhaust should be used during process operations at elevated temperatures.

Exposure Guidelines

Exposure Limits	
"BUTACITE" PVB FLAKE	
PEL (OSHA)	: None Established
TLV (ACGIH)	: None Established

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point	: Not Applicable
% Volatiles	: <1 %
Solubility in Water	: Insoluble
Odor	: Odorless.
Form	: Granular material.
Specific Gravity	: 1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 250 C (482 F) .

Incompatibility with Other Materials

None reasonably foreseeable.

Decomposition

Decomposes with heat.

Hazardous gases/vapors produced in fires may include carbon monoxide, carbon dioxide, and hydrocarbon oxidation products including acrolein, butyraldehyde, formic acid, acetic acid, and methanol, oxides of nitrogen.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

INGESTION

Low toxicity LD50 11,000 mg/kg, rats.

SKIN

Mild skin irritation.

INHALATION

During a fire or autoclave operations fumes are evolved which may cause irritation to the eyes and upper respiratory tract.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA

Not Regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

(REGULATORY INFORMATION - Continued)

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : T. P. PRICE
DUPONT PACKAGING & INDUSTRIAL POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4664

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont Teijin Films
Material Safety Data Sheet

Page 1

"MYLAR" POLYESTER FILM, POLYVINYLIDENE CHLORIDE (PVdC) COATED
MYL044 Revised 23-MAR-2009

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Mylar is a registered trademark of DuPont Teijin Films.

Product Use

OSHA Hazard Communication Standard (29 CFR 1910.1200) requirements for Material Safety Data Sheets do not apply to the product described in this information sheet. This product is excluded as an article.

Tradenames and Synonyms (Remarks)

This data sheet covers the following "Mylar" film types:
887, CKB4, CKB5, CKB5AF, CKFB, CKFB5, CS, CS2, CS5, D887,
DPC2C, DPC2S, FGC90, FGC140, FGC141, FGC142, FGC250, FGC313,
LXM, M30, M30W, M34, M34H, M34MR, M34N, M34W, MC2, MR3,
OB01, OB02, OB02AF, OB12, OB12AF, OB13, OB13AF OB22, RB43,
RB52, RB42AF, RL4, RL4T, RL31, RL31T, RL32, RL32T, RL33,
RL33T, RL42, RL42AF, RL42AT, RL42T, RL43, RL43AF, RL43AT,
RL43T, RL44, RL44T, RL51, RL51T, RL52, RL52AF, RL52T, RL53,
RL53AF, RL53T, RL63, SBL300, SN2, SN3, XCR61, XM, XM34H2,
XM38

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Teijin Films
U.S. Limited Partnership
1 Discovery Drive
P.O. Box 411
Hopewell, VA 23860 USA

PHONE NUMBERS

Product Information : (800) 635-4639 Fax: (804) 530-9867
Transport Emergency : CHEMTREC: 1-800-424-9300

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Oriented polyester film with polyvinylidene chloride (PVdC) coating. May contain a coextrusion layer. Various fillers or additives used to modify the physical appearance and/or surface properties may be present.		100

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Base Film:		
Polyethylene Terephthalate	25038-59-9	33-97
PVdC Coating:		
Poly(Vinylidene Chloride/Methyl Methacrylate)		3-25
Coextrusion/laminate layer (if present):		
Isophthalate Copolymer	24938-04-3	8-20
Polyethylene	9002-88-4	30-60

The following Fillers and/or Additives may be present in one or more film types:

Poly(Ethylene/Vinyl Acetate)		<25
Barium Sulfate	7727-43-7	<20
Titanium Dioxide	13463-67-7	<20
Polyterpene Polymer		<18
Acrylic Polymer		<5
Polypropylene	9003-07-0	<5
Polyvinyl Alcohol	9002-89-5	<5
Silica	7631-86-9	<1
Silicone		<1
Carbon Black (only in black films)	1333-86-4	<1
Aluminum	7429-90-5	<1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

Appearance: Solid film
Odor: Odorless

No known health hazards at ambient temperature.
Read the entire MSDS for a more thorough evaluation of the hazards.

Potential Health Effects

High temperature operations using "Mylar" Films can produce fumes or vapors of decomposition products of polyethylene terephthalate, isophthalate polymer and polyvinylidene chloride. The type and quantity of the fumes or vapors will vary based on temperature, time and other variables. These fumes or vapors may cause eye, nose, throat or respiratory irritation, or other effects such as headache.

Molten polymer can cause thermal burns.

(HAZARDS IDENTIFICATION - Continued)

Exposure to components used as fillers is not likely as these are encapsulated in the polymer and fully incorporated into the film.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
Titanium Dioxide	2B			
Carbon Black (only in black films)	2B			

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation.

However, if exposed to fumes from overheating or combustion, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician if necessary.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact but cleansing the skin after use is advisable.

If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Ingestion is not an expected route of exposure during normal use of the product. If ingested, consult a physician immediately.

Notes to Physicians

Prolonged eye irritation may occur from pieces of debris sticking to the eyeball or eyelids.

FIRE FIGHTING MEASURES

Flammable Properties

Non-metalized films can be combusted only by remaining in contact with flame. If flame source is stationary, non-metalized films will shrink away and self-extinguish. Non-metalized film remaining in contact with flame can continue to burn slowly, dropping flaming liquid which can spread the fire. Metalized films may support combustion if ignited.

Hazardous gases/vapors produced in fire are carbon dioxide, carbon monoxide, organic acids, aldehydes, alcohols, hydrogen chloride (HCl).

During processing, film may pick up a strong static charge. Avoid discharge into dust or solvent laden air as a flash fire or explosion may result.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

Do not breathe vapors or fumes that may be evolved during processing.

Avoid skin contact with sharp film edges.

(HANDLING AND STORAGE - Continued)

Handling (Physical Aspects)

Rolls of film may telescope. Use caution when handling.

Rolled film should be stored at intended processing temperature for approximately 24 hours prior to use.

Plastic packaging materials can pick up static charge. Polyester film rolls packaged with shrinkwrap (or other plastic overwrap) should be opened or unwrapped only in non-process areas where ignition sources such as solvents are not in use or in storage.

Storage

Store away from heat and sources of ignition. Do not store in direct sunlight. Avoid prolonged storage in high or low temperatures. Recommended storage temperatures are 20 F (-7 C) to 100F (38 C).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

General exhaust is acceptable except where overheating can occur during processing. High temperature operations may require use of local exhaust ventilation to keep employee exposure below recommended limits.

Movement of film over metal or rollers will produce a surface static charge on the film. Consider processing design and procedures that will reduce or dissipate this charge, and eliminate the possibility of unwanted electrical discharge to people, equipment and materials.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses.

RESPIRATORY PROTECTION

Respirators are not needed for normal use.

Where airborne concentrations are expected to exceed exposure limits, a NIOSH approved respirator should be selected based on the form and concentration of the contaminant in air and in accordance with OSHA Respiratory Protection Standard CFR 1910.134.

PROTECTIVE CLOTHING

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential for contact with hot/molten material, wear heat resistant impervious clothing and footwear.

Special protective clothing is not needed for normal use. Gloves are recommended as good industrial practice.

Exposure Guidelines

Applicable Exposure Limits

Polyethylene Terephthalate	
PEL (OSHA)	: None Established
TLV (ACGIH)	: None Established
AEI * (DuPont)	: 10 mg/m ³ , 8 Hr. TWA, total dust
	: 5 mg/m ³ , 8 Hr. TWA, respirable dust
Polyethylene	
PEL (OSHA)	: None Established
TLV (ACGIH)	: None Established
AEI * (DuPont)	: 10 mg/m ³ , 8 & 12 Hr. TWA, total dust
	: 5 mg/m ³ , 8 & 12 Hr. TWA, respirable dust

* AEI is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEI are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Form	: Transparent film
Color	: Colorless to black (depending on film type)
Odor	: Negligible
Melting Point	: ~260 C (~500 F) (Base Film)
	: ~117 C (~243 F) (When laminate layer is present)
Solubility in Water	: Insoluble
Specific Gravity	: 1.1-1.4
Vapor Pressure	: Negligible @ 20 C (68 F)

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Strong acids and bases may hydrolyze the film.

(STABILITY AND REACTIVITY - Continued)

Decomposition

Combustion can produce hydrogen chloride, carbon oxides and hydrocarbon oxidation products, including organic acids, aldehydes and alcohols.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polyethylene Terephthalate
Oral ALD: > 10,000 mg/kg in rats

Polyethylene Terephthalate is not a skin irritant, but is a mild eye irritant.

Toxic effects from short exposures by inhalation resulted in no adverse effects.

Toxic effects from short exposures by ingestion resulted in no adverse effects.

Animal testing indicates that Polyethylene Terephthalate does not have carcinogenic, mutagenic, developmental or reproductive effects.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT
Proper Shipping Name : Not regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

CLEAN AIR ACT STATUS: This product does not contain, and is not manufactured with ozone depleting chemicals as defined in 58 FR 8136, February 11, 1993 (final rule).

State Regulations (U.S.)

CONEG STATUS: All "Mylar" products are compliant with CONEG regulations; the sum of the concentrations of cadmium, chromium, lead and mercury does not exceed 100 ppm. None of these metals is used as an ingredient or processing aid.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCE LIST THAT MAY BE PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): Barium Sulfate; Titanium Oxide (TiO₂); Carbon Black (black films only).

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST THAT MAY BE PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): Barium Compounds; Titanium Dioxide; Carbon Black (black films only).

CALIFORNIA PROPOSITION 65 STATUS: WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: Toluene.

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 1
Flammability : 1
Reactivity : 0

NPCA-HMIS Rating
Health : 0
Flammability : 1
Reactivity : 0

(Continued)

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. E-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Polyester Films MSDS Coordinator
1007 Market St. Room D-6054A
Wilmington, DE 19898
302-773-0904

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

Material Safety Data Sheet

NORYL® Modified PPE Black

EMERGENCY TELEPHONE: 724-746-6050 or 856-227-0500
ISSUE DATE: October 1, 1985
REVISION DATE: June 28, 2011
TRADE NAME: NORYL®
PART NAME: Modified PPE
CHEMICAL NAME: Modified Polyphenylene ether

1. Information on Ingredients

MATERIAL	CAS Number	%
Polyphenylene ether	25134-01-4	
High impact polystyrene	9003-55-8	
Polystyrene	9003-53-6	Blend Commercial Product
Triphenyl phosphate	115-86-6	1 - 5
Carbon Black	1333-86-45	0.1 - 1.0

This product may contain proprietary ingredients.

This is a polymeric material. Any hazardous constituents are wetted by the polymer system, and therefore are unlikely to present exposure under normal conditions of processing, machining, and handling.

2. Hazard Identification

EMERGENCY OVERVIEW

- Stock shape products with slight or no odor
- Machining shavings may create a slipping hazard
- Can burn in a fire generating dense, toxic smoke
- Molten material in contact with skin can cause severe thermal burns
- Fumes produced during melt processing may cause eye, skin and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills and fever.
- Secondary operations such as grinding, sanding or cutting can generate dust which may present an explosion or respiratory hazard.

HMIS Rating

Health: 0

Flammability: 1

Reactivity: 0

POTENTIAL HEALTH EFFECTS

Immediate Effects

Inhalation	Dust irritating to the respiratory tract. Processing fumes from PPE resin are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. During the exposure periods (6 hour duration) signs of eye and nasal irritation were observed. These signs of irritation disappeared shortly after the animals were removed from the exposure chamber. No deaths or signs of toxicity were noted during the fume exposure period. There were no distinct or consistent treatment related tissue or organ changes noted in gross necropsies
Skin	Polymer particles may cause mechanical irritation. The molten product can cause serious burns.
Eyes	Dust and particles, like other inert materials, are mechanically irritating to eyes
Ingestion	Low toxicity by this route is expected based on the biological activity of high molecular weight polymers.
Other Info	OSHA, IARC and/or NTP have listed carbon, titanium dioxide, crystalline silica (quartz), respirable glass and certain heavy metals, present in some colorants and fillers, as carcinogens. If these materials are in this product at significant quantities, they are shown in Section 1. These materials are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

Medical conditions which may be aggravated by exposure:

There are no known health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

Processing vapors may cause irritation to the eyes, skin and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease-like processing vapor condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

3. First Aid Measures

INHALATION

Move to fresh air in case of accidental inhalation of vapors. Seek medical attention immediately if symptoms occur.



SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advised. If molten polymer contacts the skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Seek medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician if irritation persists.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion. If swallowed, do not induce vomiting – seek medical advice.

PRECAUTIONS

Processing fumes inhalation may be irritating to the respiratory tract. If symptoms are experienced removed victim from the source of contamination or move the victim to fresh air and obtain medical advice.

4. Fire Fighting Measures

FLAMMABLE PROPERTIES

Autoignition Temperature:

490°C (914°F), estimated

Explosive Limits

Upper:

Not determined

Lower:

Not determined

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.
Hazardous gases/vapors produced in fire are dense black smoke containing hazardous combustion products, carbon oxides, hydrocarbon fragments.

EXTINGUISHING MEDIA

Water spray mist, Foam

Unsuitable extinguishing Media for safety reasons: Carbon dioxide and dry chemical are not recommended because of their lack of cooling capacity may permit re-ignition

FIRE FIGHTING INSTRUCTIONS

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus and protective suit.

5. Handling and Storage

HANDLING

Protection – fire and explosion

Do not handle hot or molten material without appropriate protective equipment. Maintain good housekeeping in work areas. Do not exceed recommended process temperatures to minimize release of decomposition products.

STORAGE

Material Storage

Store in a cool dry place. Keep away from heat sources, sources of ignition and sunlight.

6. Exposure Controls / Personal Protection

ENGINEERING CONTROLS

VENTILATION: If hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting, grinding, or machining operations with this material, use local exhaust to control the concentration of dust below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact with molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

RESPIRATORS

When temperatures exceed 230°C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten materials, wear heat resistant clothing and footwear. Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

EXPOSURE GUIDELINES

EXPOSURE LIMITS

CARBON BLACK

PEL (OSHA): 3.5 mg/m³, 8 hr. TWA, total dust

TLV (ACGIH):	3.5 mg/ m ³ , 8 hr. TWA, respirable dust
TRIPHENYL PHOSPHATE PEL (OSHA):	3 mg/m ³ , 8 hr. TWA, total dust
TLV (ACGIH):	3 mg/ m ³ , 8 hr. TWA, respirable dust

7. Physical and Chemical Properties

PHYSICAL DATA

Melting Point:	This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures
Ignition Temperature:	490°C (914°F), estimated
Solubility in Water:	Insoluble
Odor:	None or Slight
Color:	Translucent Clear or Black
Form:	Rod, Plate, Sheet or Tube (stock shape product)
Specific Gravity:	>1; (water = 1)

8. Stability and Reactivity

CHEMICAL STABILITY

Stable at normal temperatures and storage conditions. Hazardous polymerization does not occur.

CONDITIONS TO AVOID

Avoid temperatures above 490°C (914°F). To avoid thermal decomposition, avoid elevated temperatures. Heating can result in the formation of gaseous decomposition products, some of which may be hazardous. Do not exceed melt temperature recommendations. In order to avoid Autoignition and hazardous decomposition of hot thick masses of plastic purgings should be collected in small, flat, thin shapes and quenched with water to allow for rapid cooling. Do not allow product to remain in barrel at elevated temperatures for extended periods of time: purge with a general purpose resin.

HAZARDOUS COMBUSTION OR DECOMPOSITION

Process vapors under recommended processing conditions may include trace levels of hydrocarbon fragments, alkylphenols, aldehydes, alcohols, aliphatic amines, dimethylcyclohexanone, trimethylanisole, dihydrobenzofuran

POLYMERIZATION

Polymerization will not occur.

9. Toxicological Information

ACUTE TOXICITY

LD50/oral/rat:	>15 g/kg estimated
LD50/dermal/rabbit:	>2 g/kg estimated
Inhalation:	Unlikely due to physical form. Processing fumes from PPE resin are not considered toxic. In acute inhalation tests, laboratory rats were exposed to processing fumes at concentrations exaggerating those that would likely occur in workplace situations. During the exposure periods (6 hour duration) signs of eye and nasal irritation were observed. These signs of irritation disappeared shortly after the animals were removed from the exposure chamber. No deaths or signs of toxicity were noted during the fume exposure period. There were no distinct or consistent treatment related tissue or organ changes noted in gross necropsies.
Eye Contact:	Particles, like other inert materials, are mechanically irritating
Ingestion:	Unlikely due to physical form
Chronic Toxicity:	No information available
Subchronic Toxicity:	In a 13 week dust inhalation study, laboratory rats were exposed to up to 50 mg/m ³ PPE dust for 6 hrs/day for 13 weeks with a 13 week non-exposure recovery period. There was no evidence of systemic toxicity at the highest dose. Localized toxicity was observed in the lungs and regional lymph nodes of the 50 mg/m ³ exposure group. These findings decreased in severity in the 7 and 1 mg/m ³ exposure groups. A no adverse effect level for PPE is estimated to be 7 mg/m ³ and a no observable effect level is 1 mg/m ³ .
Primary Irritation:	Does not generally irritate and is only mildly irritating to skin
IARC:	Not listed
OSHA:	Not regulated
NTP:	Not Tested

Special Studies: *Polyphenylene ether:* In two independent 2 year dietary studies, purebred beagles and laboratory rats were fed polyphenylene ether resin powder (up to 10% by weight in the animal diet). In both studies, there were no adverse effects on physical appearance, behavior, growth, food consumption, survival, clinical laboratory results, organ weights or gross or microscopic pathology. In a 6 month chronic inhalation study, rats and guinea pigs exposed 6 hrs/day to up to 300 mg/m³ PPE dust developed no physical, nutritional, hematologic, clinical or pathological reaction except to lung tissue changes which consisted of macrophage accumulation, many of which were degenerative in the pulmonary alveoli. Polyphenylene ether is

not a mutagen by Ames (Salmonella) Assay with and without activation.

Carbon Black: The International Agency for Research on Cancer (IARC) has determined that carbon black is a class 2B known animal and possible human carcinogen by the route of inhalation. Rats exposed to high doses of carbon black by inhalation developed statistically significant increases in lung fibrosis and lung tumors.

Triarylphosphate esters: The triarylphosphate esters contained in this product have undergone extensive toxicology testing. They are not acutely toxic via oral (LD50's >5 g/kg), dermal (LD50's >2 g/kg) or inhalation (LC50's >4.14 mg/L) routes of exposure. These triarylphosphate esters may be mild and transient skin and eye irritants and have not been shown to be sensitizers. They produce only minimal systemic effects at relatively high concentrations, consisting primarily of increase in liver and lung weight. The triarylphosphate were not mutagenic in bacterial and mammalian assays and did not produce chromosomal aberrations in either in vitro or in vivo test systems.

In recent acute and delayed neurotoxicity studies in hens, these triarylphosphate esters were not found to be neurotoxic and did not inhibit neurotoxic esterase (NTE) activity. In reproductive and developmental toxicity studies, no adverse effects have been observed. Consistent with aryl phosphates, these substances inhibit plasma acetylcholinesterase (AChE) and monocyte nonspecific esterase (MNSE). However, when tested in an extensive and validated immunotoxicity testing battery, MNSE staining inhibition showed no adverse effects on immune system function. This staining phenomenon has not been observed at exposures below 10 µg/m³.

10. Ecological Information

AQUATIC TOXICITY

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

ENVIRONMENTAL FATE/INFORMATION

This material is considered to be non-biodegradable

11. Disposal Considerations

WASTE DISPOSAL

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulation.

12. Transportation Information

SHIPPING INFORMATION

Not regulated in transportation by DOT/IMO/IATA.

13. Regulatory Information

U.S. FEDERAL REGULATIONS

TSCA Inventory Status: In compliance with TSCA Inventory requirements for commercial purposes.

SARA 313 Chemicals: Contains no substances at or above the reporting threshold under Section 313.

STATE REGULATIONS (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

WARNING – Substances known to the state of California to cause cancer, birth defects or other reproductive harm – Carbon Black.

CANADIAN REGULATIONS

WHMIS Classification:

Not a WHMIS controlled product.

WHMIS Ingredient Disclosure List:

This product does not contain substances required to be disclosed according to the Canada WHMIS Ingredient Disclosure List

WHMIS Classification:

Not a WHMIS controlled product.

RoHS EU Directive 2002/95/EC

This product complies with RoHS – it does not intentionally contain banned chemicals

14. Other Information

ADDITIONAL INFORMATION

MEDICAL USE: CAUTION -- Do not use in medical applications involving permanent implantation in the human body.

This Material Safety Data Sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe this information to be correct but cannot guarantee its accuracy or completeness. Health and safety precaution in this data sheet may not be adequate for all individuals and/or situations. It is the user's responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in the data sheet shall be construed as a permission or recommendation for the use of any product in a manner that may infringe existing patents. No warranty is made, either expressed or implied.

NORYL

EFFECTIVE DATE
 REVISED DATE
 TRADE NAME
 CHEMICAL FAMILY
 CHEMICAL FORMULA

March 24, 1989
 September 16, 2011
 Noryl

SECTION II - HAZARDOUS INGREDIENTS
 HAZARDOUS COMPONENTS

All ingredients in this formula are considered Non-Hazardous

SECTION III - PHYSICAL DATA

BOILING POINT (°F)
 FREEZING POINT (°F)
 VOLATILITY / VOLUME (%)
 MELTING POINT
 VAPOR PRESSURE (mmHg)
 VAPOR DENSITY (Air=1)
 SOLUBILITY IN H₂O
 APPEARANCE / ODOR
 SPECIFIC GRAVITY (H₂O=1)
 ACIDITY

N/A
 228 - 288° F
 N/A
 N/A
 N/A
 Black with a characteristically odor
 1.05 - 1.36

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
 LOWER FLAME POINT
 HIGHER FLAME POINT
 EXTINGUISH MEDIA
 FOR FIRE

725° F
 Water
 MSHS / NIOSH approved pressure demand breathing apparatus should be used
 None
 None

UNUSUAL FIRE HAZARD

SECTION V - HEALTH HAZARD DATA
 HEALTH HAZARD

SECTION VI - REACTIVITY DATA
 CHEMICAL STABILITY
 CONDITIONS TO AVOID

Stable

NORYL

SECTION VI - REACTIVITY DATA - CONTINUED
 INCOMPATIBLE MATERIALS
 DECOMPOSITION PRODUCTS

None
 Carbon monoxide and carbon dioxide

HAZARDOUS POLYMERIZATIONS
 POLYMERIZATION AVOID

Will not occur

SECTION VII - SPILL OR LEAK PROCEDURE
 FOR SPILL
 WASTE DISPOSAL METHOD

Normal clean-up procedures
 Dispose in accordance with local regulations

SPECIAL VIII - SPECIAL PROTECTION
 RESPIRATORY PROTECTION

VENTILATION

PROTECTIVE GLOVES

EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT
 HANDLING AND STORAGE

Store indoors and away from flammable materials

SECTION IX - SPECIAL PRECAUTIONS

HAZARD CLASS
 DOT SHIPPING NAME
 REPORTABLE QUANTITY (RQ)
 UN NUMBER N/A
 N/A
 PACKAGING SIZE

Notes:

All information recommendations and suggestions appearing herein concerning this product are based upon data obtained from the manufacturer and/or recognized technical sources. It is the user's responsibility to determine the Safety, Toxicity and suitability of his/her own use, handling and disposal request. Since actual use by others is beyond our control, no warranty, express or implied, is made by Polymer Plastics Company L.C. as to effects of such use. The results to be obtained or the safety and toxicity of the product, nor does Polymer Plastics Company L.C. assume any liability arising out of use by others of the product referred to herein. The data in this MSDS relate only to the specific material designated herein and do not relate to use in combination with any other material or in any other process.

REFERENCES: N/A = Not Applicable, N/D = Not Determined, N.D.A. = No Data Available



Polymer Plastics Company L.C.

250 Mabery Way • Canton, NY 13731
 (770) 373-4100 • (800) 472-5214
www.polyplastics.com



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EASTMAN
MATERIAL SAFETY DATA SHEET

Revision Date: 06/05/2009
MSDSUSA/ANSI/EN/150000017418/Version 2.1

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	Durastar(TM) Polymer DS1000 Natural
Product Identification Number(s)	DS1000, 50058474, 50058475
Manufacturer/Supplier	Eastman Chemical Company 200 South Wilcox Drive Kingsport, TN 37660-5280 US +14232292000
MSDS Prepared by	Eastman Product Safety and Health
Chemical Name	not applicable
Synonym(s)	not applicable
Molecular Formula	not applicable
Molecular Weight	not applicable
Product Use	polymer
OSHA Status	nonhazardous

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

2. COMPOSITION INFORMATION ON INGREDIENTS

(Typical composition is given, and it may vary. A certificate of analysis can be provided, if available.)

<u>Weight %</u>	<u>Component</u>	<u>CAS Registry No.</u>
100%	copolyester	36487-02-2

3. HAZARDS IDENTIFICATION

CAUTION!
MOLTEN MATERIAL WILL PRODUCE THERMAL BURNS

HMIS® Hazard Ratings: Health - 1, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

4. FIRST-AID MEASURES

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Visit our website at www.EASTMAN.com or email emmsds@eastman.com



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ELVAMIDE" NYLON MULTIPOLYMER RESINS IN MID001
MID001 Revised 28-MAR-2003

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ELVAMIDE" is a registered trademark of DuPont.

Tradenames and Synonyms

"ELVAMIDE" 8023R,
"ELVAMIDE" 8051,
"ELVAMIDE" 8052,
"ELVAMIDE" 8061,
"ELVAMIDE" 8061MC,
"ELVAMIDE" 8061Z,
"ELVAMIDE" 8063,
"ELVAMIDE" 8063,
"ELVAMIDE" 8063S,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
NYLON MULTIPOLYMER RESIN		>95
CAPROLACTAM MONOMER	105-60-2	≤5

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Before using "ELVAMIDE", read the bulletin "'Elvamide' Product and Properties Guide"

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION No data are available. Ingestion is not a probable route of exposure. Based on similarity to other polymers, the products listed on this MSDS are predicted to have low oral toxicity.

SKIN No data available.

EYE No data available.

CAPROLACTAM

Human experience or case reports have identified the following potential effects from overexposure by inhalation: Irritation of the nose and throat with sneezing, sore throat or runny nose. Irritation of the digestive tract with stomach pain, heartburn, nausea, vomiting or diarrhea; however there may be no symptoms at all. Liver abnormalities. Central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness. Repeated and/or prolonged exposure may cause: An asthma-like reaction with shortness of breath; wheezing or cough, which may occur after re-exposure to very low levels. Liver abnormalities. Cardiovascular effects. Abnormal blood test results, especially altered hormone levels.

Human experience or case reports have identified the following potential effects from overexposure by skin contact: Irritation with itching, burning, redness, swelling or rash. Dermatitis with itching or rash. Skin permeation may occur in amounts capable of producing the effects of systemic toxicity.

Eye contact may cause irritation with tearing, pain or blurred vision.

Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the: central nervous system, skin, lungs.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice. Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Combustible.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

No special instructions.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material.

RESPIRATORS

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines

Exposure Limits

"ELVAMIDE" NYLON MULTIPOLYMER RESINS IN MID001
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

CAPROLACTAM MONOMER
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, Aerosol, & vapor, A5
AEL * (DuPont) : None Established

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : Not Applicable
Solubility in Water : Negligible
Odor : Mild Ester
Form : Pellets
Specific Gravity : 1.06-1.11

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 245 C (473 F)

(STABILITY AND REACTIVITY - Continued)

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including caprolactam, ammonia, carbon monoxide, hydrogen cyanide, nitrogen oxides, organic acids, aldehydes, and, alcohols.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Caprolactam
Skin Absorption LD50: 1410 mg/kg in rabbits
Oral LD50: 1210 mg/kg in rats
Inhalation 4 hour LC50: 8.1 mg/L in rats (as respirable aerosol)

Caprolactam is a skin irritant, a severe eye irritant, and is a mild skin sensitizer when tested at very high concentrations in animals.

Single dermal exposure to near lethal doses caused edema, and tremors or convulsions.

Single ingestion exposure in rats to near lethal doses caused irritation of the gastrointestinal tract, pathological changes of the brain and liver, tremors or convulsions, and altered liver enzyme activity. Repeated dosing of lower concentrations caused decreased body weight. Effects on kidney function have been observed but were attributable to a reversible physiologic change. Long term exposure caused body weight reductions, reduced food consumption, and anemia.

Single inhalation exposure in rats caused nasal/ocular irritation and alterations in blood pressure. Repeated inhalation exposure at high levels caused nasal/ocular irritation, lung and spleen pathology, and abnormal weight gain in rats. At lower levels, respiratory tract irritation with pathological changes in the nose and larynx were observed.

In animal testing Caprolactam has not caused carcinogenicity, developmental or reproductive toxicity.

(TOXICOLOGICAL INFORMATION - Continued)

There are reports indicating that Caprolactam produced genetic damage in some animal or mammalian cell culture tests; however, the majority of in vitro and in vivo reports in the literature show negative results.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Negligible solubility. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - None known.

(REGULATORY INFORMATION - Continued)

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE
CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST
PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES
IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Caprolactam

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
 : DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
 : WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be
reliable. It is subject to revision as additional knowledge and
experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"MINLON" MINERAL REINFORCED NYLON RESINS ON SYNONYM LIST MIN001
MIN001 Revised 15-FEB-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"MINLON" is a registered trademark of DuPont.

Tradenames and Synonyms

"MINLON" 11C40 BK121,
"MINLON" 11C40 BKB086,
"MINLON" 11C40 BKB121,
"MINLON" 11C40 BK000,
"MINLON" 11C40 BKB121M,
"MINLON" 11C40 NC010,
"MINLON" 11C40L NC010,
"MINLON" 11C40 WTB213,
"MINLON" 11C140 GY350,
"MINLON" 11C140 NC010,
"MINLON" 11C140B NC010,
"MINLON" 12T BK438,
"MINLON" 12T BKB100,
"MINLON" 12T BKB100A,
"MINLON" 12T BKB124,
"MINLON" 12T GY390,
"MINLON" 12T GYB602,
"MINLON" 12T GYB602A,
"MINLON" 12T NC010,
"MINLON" 12TA BKB124,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE	32131-17-2	>40
POLYMERIC MODIFIER		0-20
INERT FILLER		30-40

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

CARBON BLACK	1333-86-4	0-1
TITANIUM DIOXIDE	13463-67-7	<3

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Carbon Black

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

(HAZARDS IDENTIFICATION - Continued)

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

TITANIUM DIOXIDE

Short-term overexposure by inhalation to Titanium Dioxide may cause irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

Repeated skin contact with Titanium Dioxide may cause drying or cracking of the skin in sensitive individuals.

Eye contact with Titanium Dioxide may cause eye irritation with tearing, pain or blurred vision.

Results of a DuPont epidemiology study showed that employees who had been exposed to Titanium Dioxide were at no greater risk of developing lung cancer than were employees who had not been exposed to Titanium Dioxide. No pulmonary fibrosis was found in any of the employees and no association was observed between Titanium Dioxide exposure and chronic respiratory disease or x-ray abnormalities. Based on the results of this study, DuPont concludes that Titanium Dioxide will not cause lung cancer or chronic respiratory disease in humans at concentrations experienced in the workplace.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK	2B			
TITANIUM DIOXIDE	2B			

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

(FIRST AID MEASURES - Continued)

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Hazardous gases/vapors produced in fire are: ammonia, carbon monoxide; small amounts of hydrogen cyanide and aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

(ACCIDENTAL RELEASE MEASURES - Continued)

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool place. Keep container tightly closed.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"MINLON" MINERAL REINFORCED NYLON RESINS ON SYNONYM LIST MIN001
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

CARBON BLACK
 PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 Includes Channel, Lamp, and Thermal
 Black

TITANIUM DIOXIDE
 PEL (OSHA) : 15 mg/m³, total dust, 8 Hr. TWA
 TLV (ACGIH) : 10 mg/m³, total dust, 8 Hr. TWA, A4
 AEL * (DuPont) : 10 mg/m³, 8 & 12 Hr. TWA, total dust
 5 mg/m³, 8 & 12 Hr. TWA, respirable dust

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
 Solubility in Water : Negligible
 Odor : None
 Form : Pellets
 Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong acids, and, oxidizing agents.

Decomposition

Decomposes with heat.

Decomposition temperature: 340 C (644 F)

Hazardous gases or vapors can be released, including caprolactam, cyclopentanone, carbon monoxide.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66
Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

(TOXICOLOGICAL INFORMATION - Continued)

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

Titanium Dioxide
Oral ALD: > 24,000 mg/kg in rats
Dermal ALD: > 10,000 mg/kg in rabbits
Inhalation 4 hour ALC: > 6.82 mg/L in rats

Animal testing indicates Titanium Dioxide is a moderate eye irritant and a slight skin irritant, but is not a skin sensitizer in animals.

Repeated and long term ingestion of Titanium Dioxide caused no significant toxicological effects.

Repeated exposure by inhalation to high doses of Titanium Dioxide caused a typical dust cell reaction.

In lifetime inhalation studies at levels up to 250 mg/m³, no compound-related clinical signs of toxicity were seen in the exposed animals. Slight pulmonary fibrosis was seen at 50 and 250 mg/m³ respirable dust levels but not at 10 mg/m³. There was no evidence of cancer in animals exposed to 10 or 50 mg/m³ respirable Titanium Dioxide. Microscopic lung tumors were seen in 17 percent of the rats exposed to 250 mg/m³ respirable Titanium Dioxide. The lung tumors seen in the rat were different from common human lung cancers, relative to anatomic type and location, occurred only at dust levels which overwhelmed the animals lung clearance mechanism and, therefore, are of questionable biological relevance for man. In lifetime animal feeding tests at levels up to 50,000 ppm, Titanium Dioxide showed no evidence of cancer or other significant adverse effects in either rats or mice. No animal data are available to define the developmental or reproductive toxicity of Titanium Dioxide. Tests have shown that Titanium Dioxide does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

Negligible solubility. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon Black, Titanium Dioxide

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

(REGULATORY INFORMATION - Continued)

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - Carbon Black, Titanium Dioxide

OTHER INFORMATION-----
Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"MINLON" RESINS, ALL GRADES LISTED ON MIN002
MIN002 Revised 13-FEB-2001

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"MINLON" is a registered trademark of DuPont.

Tradenames and Synonyms

"MINLON" 22C BK086,
"MINLON" 22C BK086D,
"MINLON" 22C BK086F,
"MINLON" 22C BKB086,
"MINLON" 22C BKB086D,
"MINLON" 22C BKB086T,
"MINLON" 22C GYB325,
"MINLON" 22C NC010,
"MINLON" 22C WTB281,
"MINLON" FE5402,
"MINLON" FE5403,
"MINLON" FE6182 BK086,
"MINLON" FE6213 BKB086,
"MINLON" FE6226 BK086,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE	32131-17-2	>50
FIBERGLASS		<18
MINERAL FILLER		<30
CARBON BLACK	1333-86-4	0-2
COLORANTS, LUBRICANTS, STABILIZERS		<1
TOUGHENER		<7

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "ZYTEL" Molding Guide before using this product.

FIBER GLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

POLYHEXAMETHYLENE ADIPAMIDE

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

(HAZARDS IDENTIFICATION - Continued)

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK	2B			

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

(FIRST AID MEASURES - Continued)

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

HAZARDOUS COMBUSTION PRODUCTS - Primarily, ammonia, and, carbon monoxide, small amount of, hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

(HANDLING AND STORAGE - Continued)

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

VENTILATION Local exhaust at processing equipment to keep particulates below applicable exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear overall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Exposure Guidelines

Exposure Limits
 "MINLON" RESINS, ALL GRADES LISTED ON MIN002
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits
 POLYHEXAMETHYLENE ADIPAMIDE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

FIBERGLASS
 PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-
 respirable fiber (> 3 microns in
 diameter) non-fibrous particulate.

CARBON BLACK
 PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 Includes Channel, Lamp, and Thermal
 Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally
 imposed occupational exposure limits which are lower than the AEL
 are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 250-260 C (482-500 F)
 Solubility in Water : Insoluble
 Odor : None
 Form : PELLETS
 Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F) .

Incompatibility with Other Materials

Incompatible or can react with strong acids, and, oxidizing agents.

Decomposition

HAZARDOUS DECOMPOSITION PRODUCTS - cyclopentanone, and, carbon monoxide.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

(TOXICOLOGICAL INFORMATION - Continued)

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTE DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont Teijin Films
Material Safety Data Sheet

Page 1

"MYLAR" POLYESTER FILM (NOT INCLUDING POLYVINYLIDENE CHLORIDE COATED TYPES)

MYL045 Revised 26-OCT-2009

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Mylar is a registered trademark of DuPont Teijin Films.

Product Use

OSHA Hazard Communication Standard (29 CFR 1910.1200) requirements for Material Safety Data Sheets do not apply to the product described in this information sheet. This product is excluded as an article.

Tradenames and Synonyms (Remarks)

This data sheet covers the following "Mylar" film types:
A, A102, A701, A951, AHS1, AP, AP101, AR, AT, C, CK1, CK2, CK3, CK4, CK5, CKF1, CKF4, CKS1, CL, D804, DL, DL1, DM, E, E101, E951, E101MR, EB11, EB31, EC, ECO13, ECO13T, ECO23, ECO33, EL, EL21, EP, HR, HR631, HS, HS2, HVAX, J101, J102, KL, KL1, KM, LB, LBT, LBT2, M461, M577, MSX, MA, MLB, MLBT, MO, M021, MT, MTE, MTL, OL, OL10, OL10T, OL11, OL11T, OL12, OL12AF, OL12AT, OL12T, OL13, OL13AF, OL13AT, OL13T, OL1AF, OL1AP, OL2, OL22, OL3, OL3T, OL4AF, OL4AT, OL66, OLAF, OLAF, OLAF, OLAF, OLAF, OLF, P25, RSX, RSX631, RSX951, S1, S2, WC, WC11, WC11G, WC22, XMI25, XMI44, XMI45, XMCLP, XMPOL12, XMPOL12T, XOL60, 122VCMR, 308, 365, 376, 401, 7100, 800, 800C, 808, 811, 813, 814, 816, 820, 822, 823, 834, 840, 841, 850, 850H, 851, 851H, 852, 854, 864

This data sheet also covers the following DuPont Teijin Films which are not branded as "Mylar" products: DuPont Teijin Films, types DB, G2, N5, X2, X21, X2P, X3I

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Teijin Films
U.S. Limited Partnership
1 Discovery Drive
P.O. Box 411
Hopewell, VA 23860 USA

PHONE NUMBERS

Product Information : (800) 635-4639 Fax: (804) 530-9867
Transport Emergency : CHEMTREC: 1-800-424-9300

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Oriented polyester film. May contain a coextrusion layer. Various fillers or additives used to modify the physical appearance and/or surface properties may be present.		100
Base Film: Polyethylene Terephthalate	25038-59-9	55-100
Coextrusion layer (if present): Isophthalate Copolymer	24938-04-3	8-20
The following Fillers and/or Additives may be present in one or more film types:		
Poly(Ethylene/Vinyl Acetate)		<25
Barium Sulfate	7727-43-7	<20
Titanium Dioxide	13463-67-7	<20
Styrene Block Copolymer		<20
Polyterpene Polymer		<18
Acrylic Polymer		<5
Polypropylene	9003-07-0	<5
Polyvinyl Alcohol	9002-89-5	<5
Silica	7631-86-9	<1
Silicone		<1
Carbon Black (only in black films)	1333-86-4	<1
Aluminum	7429-90-5	<1
Aluminum Oxide	1344-28-1	<1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

Appearance: Solid film
Odor: Odorless

No known health hazards at ambient temperature.
Read the entire MSDS for a more thorough evaluation of the hazards.

(HAZARDS IDENTIFICATION - Continued)

Potential Health Effects

High temperature operations using "Mylar" Films can produce fumes or vapors of decomposition products of polyethylene terephthalate and isophthalate polymer. The type and quantity of the fumes or vapors will vary based on temperature, time and other variables. These fumes or vapors may cause eye, nose, throat or respiratory irritation, or other effects such as headache.

Molten polymer can cause thermal burns.

Exposure to components used as fillers is not likely as these are encapsulated in the polymer and fully incorporated into the film.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
Titanium Dioxide			2B	
Carbon Black (only in black films)			2B	

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation.

However, if exposed to fumes from overheating or combustion, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician if necessary.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact but cleansing the skin after use is advisable.

If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

(FIRST AID MEASURES - Continued)

INGESTION

Ingestion is not an expected route of exposure during normal use of the product. If ingested, consult a physician immediately.

Notes to Physicians

Prolonged eye irritation may occur from pieces of debris sticking to the eyeball or eyelids.

FIRE FIGHTING MEASURES

Flammable Properties

Non-metalized films can be combusted only by remaining in contact with flame. If flame source is stationary, non-metalized films will shrink away and self-extinguish. Non-metalized film remaining in contact with flame can continue to burn slowly, dropping flaming liquid which can spread the fire. Metalized films may support combustion if ignited.

Hazardous gases/vapors produced in fire are carbon dioxide, carbon monoxide, organic acids, aldehydes, alcohols.

During processing, film may pick up a strong static charge. Avoid discharge into dust or solvent laden air as a flash fire or explosion may result.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

Do not breathe vapors or fumes that may be evolved during processing.

Avoid skin contact with sharp film edges.

Handling (Physical Aspects)

Rolls of film may telescope. Use caution when handling.

Rolled film should be stored at intended processing temperature for approximately 24 hours prior to use.

Plastic packaging materials can pick up static charge. Polyester film rolls packaged with shrinkwrap (or other plastic overwrap) should be opened or unwrapped only in non-process areas where ignition sources such as solvents are not in use or in storage.

Storage

Store away from heat and sources of ignition. Do not store in direct sunlight. Avoid prolonged storage in high or low temperatures. Recommended storage temperatures are 20 F (-7 C) to 100F (38 C).

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

General exhaust is acceptable except where overheating can occur during processing. High temperature operations may require use of local exhaust ventilation to keep employee exposure below recommended limits.

Movement of film over metal or rollers will produce a surface static charge on the film. Consider processing design and procedures that will reduce or dissipate this charge, and eliminate the possibility of unwanted electrical discharge to people, equipment and materials.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses.

RESPIRATORY PROTECTION

Respirators are not needed for normal use.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Where airborne concentrations are expected to exceed exposure limits, a NIOSH approved respirator should be selected based on the form and concentration of the contaminant in air and in accordance with OSHA Respiratory Protection Standard CFR 1910.134.

PROTECTIVE CLOTHING

If there is potential for contact with hot/molten material, wear heat resistant impervious clothing and footwear.

Special protective clothing is not needed for normal use. Gloves are recommended as good industrial practice.

Exposure Guidelines

Applicable Exposure Limits

Polyethylene Terephthalate
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Aluminum Oxide
 PEL (OSHA) : 15 mg/m³, total dust, 8 Hr. TWA
 5 mg/m³, respirable dust, 8 Hr. TWA
 AEL * (DuPont) : None Established

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Form : Transparent film
 Color : Colorless to black (depending on film type)
 Odor : Negligible
 Melting Point : -260 C (~500 F) (PET base film - coextrusion layer or coatings may melt at lower temperatures)
 Solubility in Water : Insoluble
 Specific Gravity : 1.2-1.4
 Vapor Pressure : Negligible @ 20 C (68 F)

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Strong acids and bases may hydrolyze the film.

Avoid contact with strong oxidizing agents.

Decomposition

Combustion can produce carbon oxides and hydrocarbon oxidation products, including organic acids, aldehydes, alcohols, ketones and acrolein.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polyethylene Terephthalate
Oral ALD: > 10,000 mg/kg in rats

Polyethylene Terephthalate is not a skin irritant, but is a mild eye irritant.

Toxic effects from short exposures by inhalation resulted in no adverse effects.

Toxic effects from short exposures by ingestion resulted in no adverse effects.

Animal testing indicates that Polyethylene Terephthalate does not have carcinogenic, mutagenic, developmental or reproductive effects.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT
Proper Shipping Name : Not regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

CLEAN AIR ACT STATUS: This product does not contain, and is not manufactured with ozone depleting chemicals as defined in 58 FR 8136, February 11, 1993 (final rule).

State Regulations (U.S.)

CONEG STATUS: All "Mylar" products are compliant with CONEG regulations; the sum of the concentrations of cadmium, chromium, lead and mercury does not exceed 100 ppm. None of these metals is used as an ingredient or processing aid.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCE LIST THAT MAY BE PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): Barium Sulfate; Titanium Oxide (TiO₂); Carbon Black (black films only).

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST THAT MAY BE PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): Barium Compounds; Titanium Dioxide; Carbon Black (black films only).

CALIFORNIA PROPOSITION 65 STATUS: The products described herein do not contain substances that require a warning pursuant to Propositions 65.

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 1
Flammability : 1
Reactivity : 0

NPCA-HMIS Rating
Health : 0
Flammability : 1
Reactivity : 0

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Polyester Films MSDS Coordinator
1007 Market St. Room D-6054A
Wilmington, DE 19898
302-773-0904

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

LCP012 "ZENITE" POLYMER ALL IN SYNONYM LIST LCP012
Revised 3-JUL-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZENITE" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZENITE" 6115L BK010,
"ZENITE" 6115L WT010,
"ZENITE" 6130 BK010,
"ZENITE" 6130 NC010,
"ZENITE" 6130 WT010,
"ZENITE" 6130HL BK010,
"ZENITE" 6130HL WT010,
"ZENITE" 6130L BK010,
"ZENITE" 6130L BK010A,
"ZENITE" 6130L BK010T,
"ZENITE" 6130L BK014,
"ZENITE" 6130L BLB014,
"ZENITE" 6130L GY015,
"ZENITE" 6130L GYB013,
"ZENITE" 6130L GYB014,
"ZENITE" 6130L NC010,
"ZENITE" 6130L WT010,
"ZENITE" 6130L WTB012,
"ZENITE" 6130LX BK010,
"ZENITE" 6130LX NC010,
"ZENITE" 6130LX WT010,
"ZENITE" 6140L BK010,
"ZENITE" 6140L BK020,
"ZENITE" 6140L GY025,
"ZENITE" 6140L WT010,
"ZENITE" 6140L WT020,
"ZENITE" 6240L BK010,
"ZENITE" 6240L WT010,
"ZENITE" 6330 BK010,
"ZENITE" 6330 NC010,
"ZENITE" 6330 WTB010,
"ZENITE" 6330L BK010,
"ZENITE" ZE6005 BK010,
"ZENITE" ZE6005 WT010,
"ZENITE" ZE16103 BK010,
"ZENITE" ZE16103 WT010,

#

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
AROMATIC THERMOPLASTIC POLYESTER		>40
FIBERGLASS	14807-96-6	0-50
TALC	7782-42-5	0-50
GRAPHITE		0-20
PIGMENTS	1333-86-4	0-20
CARBON BLACK	13463-67-7	0-9
TITANIUM DIOXIDE		

Components (Remarks)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

 HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

(HAZARDS IDENTIFICATION - Continued)

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

TALC

Short-term over-exposure by inhalation to Talc may cause irritation of the nose, throat and lungs with cough, difficulty breathing or shortness of breath. Long-term over-exposure may lead to chronic lung disease with impaired lung function and abnormal chest x-rays.

Increased susceptibility to the effects of Talc may be observed in persons with pre-existing disease of the lungs.

GRAPHITE

Long-term inhalation of Graphite dust or powder may cause chronic lung disorders with symptoms of lung insufficiency.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

(HAZARDS IDENTIFICATION - Continued)

TITANIUM DIOXIDE

Short-term overexposure by inhalation to Titanium Dioxide may cause irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

Repeated skin contact with Titanium Dioxide may cause drying or cracking of the skin in sensitive individuals.

Eye contact with Titanium Dioxide may cause eye irritation with tearing, pain or blurred vision.

Results of a DuPont epidemiology study showed that employees who had been exposed to Titanium Dioxide were at no greater risk of developing lung cancer than were employees who had not been exposed to Titanium Dioxide. No pulmonary fibrosis was found in any of the employees and no association was observed between Titanium Dioxide exposure and chronic respiratory disease or x-ray abnormalities. Based on the results of this study, DuPont concludes that Titanium Dioxide will not cause lung cancer or chronic respiratory disease in humans at concentrations experienced in the workplace.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK			2B	
TITANIUM DIOXIDE			2B	

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

(FIRST AID MEASURES - Continued)

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide.

Extinguishing Media

Water, CO2, Foam, Dry Chemical.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Store away from ignition sources, combustibles.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSEA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZENITE" POLYMER ALL IN SYNONYM LIST LCP012
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS : None Established
 PEL (OSHA) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 TLV (ACGIH) A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

TALC : 20 mppcf (~3.3 mg/m³), respirable
 PEL (OSHA) as 8 Hr TWA
 TLV (ACGIH) : 2 mg/m³, respirable dust, 8 Hr. TWA, A4
 Notice of Intended Changes (2007)
 1 mg/m³, 8 Hr. TWA, Respirable, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA
 respirable dust

GRAPHITE : 5 mg/m³, respirable dust, 8 Hr. TWA
 PEL (OSHA) : 2 mg/m³, respirable dust, 8 Hr. TWA
 TLV (ACGIH) : None Established
 AEL * (DuPont)

CARBON BLACK : 3.5 mg/m³, 8 Hr. TWA
 PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA, A4
 TLV (ACGIH) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 AEL * (DuPont) Includes Channel, Lamp, and Thermal
 Black

TITANIUM DIOXIDE : 15 mg/m³, total dust, 8 Hr. TWA
 PEL (OSHA) : 10 mg/m³, total dust, 8 Hr. TWA, A4
 TLV (ACGIH) : 10 mg/m³, 8 & 12 Hr. TWA, total dust
 AEL * (DuPont) 5 mg/m³, 8 & 12 Hr. TWA, respirable dust

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 335 C (635 F)
Solubility in Water : Insoluble
Odor : No Distinct Odor.
Specific Gravity : >1
Form : Pellets.

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions. Hazardous decomposition may occur above 400 C (752 F).

Incompatibility with Other Materials

Incompatible or can react with strong oxidizers.

Decomposition

Hazardous gases or vapors can be released, including toxic and flammable carbon monoxide (CO), carbon dioxide, phenol, and, trace organic acids and esters.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

(TOXICOLOGICAL INFORMATION - Continued)

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Talc

Oral LD50: > 5000 mg/kg in rats
Inhalation 5 hour ALC: > 22 mg/L in rats

Long-term exposure by ingestion to Talc caused no significant decrease in life span.

A single exposure by inhalation to high doses of Talc caused irregular respiration and lacrimation but no evidence of an inflammatory reaction. Repeated exposure caused no adverse effects on survival or histological changes. Long-term exposure in rats caused chronic inflammation, impaired pulmonary function and histopathological changes of the lungs.

One lifetime inhalation study reports an increased incidence of lung and adrenal tumors in rats exposed to Talc. The lung tumors and chronic inflammation occurred at dust levels which overwhelmed the animals lung clearance mechanism and, therefore, are of questionable biological relevance for man. The adrenal tumors are unlikely to be a direct effect of Talc exposure and are of questionable relevance. No increases in tumors were observed in mice. Talc has not caused developmental toxicity in animals. No animal data are available to define the reproductive toxicity of Talc. Tests have shown that Talc does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. Animal data indicate that Talc does not cause permanent genetic damage in reproductive cells of mammals (does not cause heritable genetic damage).

Graphite

Oral LD50: > 5,000 mg/kg in rats

Graphite was not an eye irritant when tested in animals.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards of Graphite.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

(TOXICOLOGICAL INFORMATION - Continued)

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

Titanium Dioxide

Oral ALD:	> 24,000 mg/kg in rats
Dermal ALD:	> 10,000 mg/kg in rabbits
Inhalation 4 hour ALC:	> 6.82 mg/L in rats

Animal testing indicates Titanium Dioxide is a moderate eye irritant and a slight skin irritant, but is not a skin sensitizer in animals.

Repeated and long term ingestion of Titanium Dioxide caused no significant toxicological effects.

Repeated exposure by inhalation to high doses of Titanium Dioxide caused a typical dust cell reaction.

In lifetime inhalation studies at levels up to 250 mg/m³, no compound-related clinical signs of toxicity were seen in the exposed animals. Slight pulmonary fibrosis was seen at 50 and 250 mg/m³ respirable dust levels but not at 10 mg/m³. There was no evidence of cancer in animals exposed to 10 or 50 mg/m³ respirable Titanium Dioxide. Microscopic lung tumors were seen in 17 percent of the rats exposed to 250 mg/m³ respirable Titanium Dioxide. The lung tumors seen in the rat were different from common human lung cancers, relative to anatomic type and location, occurred only at dust levels which overwhelmed the animals lung clearance mechanism and, therefore, are of questionable biological relevance for man. In lifetime animal feeding tests at levels up to 50,000 ppm, Titanium Dioxide showed no evidence of cancer or other significant adverse effects in either rats or mice. No animal data are available to define the developmental or reproductive toxicity of Titanium Dioxide. Tests have shown that Titanium Dioxide does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Talc, zinc sulfide, graphite, carbon black, titanium dioxide.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

(REGULATORY INFORMATION - Continued)

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Fiberglass, talc, zinc sulfide, carbon black, titanium dioxide.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. E-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : (302) 999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"HYTREL" THERMOPLASTIC POLYESTER ELASTOMER ON SYNONYM LIST HYT007
HYT007 Revised 5-SEP-2006

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"HYTREL" is a registered trademark of DuPont.

Corporate MSDS Number : DU007295

Tradenames and Synonyms

"HYTREL" 3046-120 NC010,
"HYTREL" 3046X1,
"HYTREL" 3048X1
"HYTREL" 4069B,
"HYTREL" 4556B,
"HYTREL" 4733X1 NC010,
"HYTREL" 4733SPP NC010,
"HYTREL" 4733SPPA NC010
"HYTREL" 4766X1,
"HYTREL" 4767,
"HYTREL" 5033,
"HYTREL" 5033 NC010,
"HYTREL" 5033SPP,
"HYTREL" 5033SPP NC010,
"HYTREL" 6356SPP NC010,
"HYTREL" 6386.
"HYTREL" 7246HV,
"HYTREL" BM4783X-1,
"HYTREL" G3548W,
"HYTREL" HTR8171,
"HYTREL" HTR8186,
"HYTREL" HTR8242,
"HYTREL" HTR8382,
"HYTREL" HTR8347SPP NC010,
"HYTREL" HTR8407 NC010,
"HYTREL" HTR8408 NC010,
"HYTREL" HTR8409 NC010,
"HYTREL" HTR8543 NC010,
"HYTREL" HTR8618 NC010,
"HYTREL" HTR8636 NC010,
"HYTREL" HTR8678 NC010,
"HYTREL" HTR8679 NC010,
"HYTREL" HTR8710 NC010,
"HYTREL" HTR8717 NC010,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION = Continued)

"HYTREL" HTX8347,
 "HYTREL" HTX8382,
 "HYTREL" HTX8457 NC010,
 "HYTREL" HTX8531 NC010,
 "HYTREL" HTX8532 NC010,
 "HYTREL" HTX8542 NC010

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
BUTYLENE PHTHALATE/POLY(ALKYLENE ETHER) PHTHALATE COPOLYMER		>90

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Before using this resin, please read Bulletin H-38066, "Handling and Processing Precautions for 'HYTREL'."

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION Low toxicity. Not a probable route of exposure.

SKIN Molten polymer will produce thermal burns.

EYE Mechanical irritant.

(HAZARDS IDENTIFICATION - Continued)

INHALATION Polymer granules not respirable. In case of overheating fumes may be irritating to the eyes and upper respiratory tract and lungs.

CHRONIC EFFECTS None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE None known.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

(FIRE FIGHTING MEASURES - Continued)

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are carbon monoxide.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
"HYTREL" THERMOPLASTIC POLYESTER ELASTOMER ON SYNONYM LIST HYT007
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 150-225 C (302-437 F)
Solubility in Water : Insoluble
Odor : None
Form : Pellets
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Oxidizing (heating in air). Abnormally long processing time or high temperatures can produce irritating and toxic fumes.

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including acrolein, tetrahydrofuran, crotonaldehyde, acetaldehyde.

Polymerization

Polymerization will not occur.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
 : DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
 : WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Picco(TM) 2215 Hydrocarbon Resin

Product No.: EAN 800247. 2215, P75209TR, P75209TS

Synonyms, Trade Names: 75209-00

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Chemical Intermediate

Uses advised against: None known.

Details of the supplier of the safety data sheet**Manufacturer / Supplier**

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37680-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard Classification:**OSHA Specified Hazards:**

Combustible dust

If converted to small particles during further processing, handling or by other means may form combustible dust concentrations in air.

Warning label items including precautionary statement:

Signal Words: WARNING!

Hazard Statement(s): If converted to small particles during further processing, handling or by other means may form combustible dust concentrations in air.

Precautionary Statement:

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None known.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
hydrocarbon resin	80 - 90%	CAS-No.: proprietary	
additive(s)/colorant(s)	10 - 20%	CAS-No.: proprietary	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
 # This substance has workplace exposure limit(s).

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist.

Skin Contact: Wash with soap and water. Get medical attention if symptoms occur.

Ingestion: Seek medical advice. Material is not expected to be absorbed from the gastrointestinal tract so that induction of vomiting should not be necessary.

Most important symptoms and effects, both acute and delayed: No known chronic or acute health risks.

Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General Fire Hazards: Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.

Extinguishing media

Suitable extinguishing media: Water spray. Carbon Dioxide. Dry chemical.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture: Powdered material may form explosive dust-air mixtures.

Advice for firefighters	
Special fire fighting procedures:	Minimize dust generation and accumulation.
Special protective equipment for fire-fighters:	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Wear appropriate personal protective equipment.
Environmental Precautions:	Not regarded as dangerous for the environment.
Methods and material for containment and cleaning up:	Sweep up and place in a clearly labeled container for chemical waste. Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.
Notification Procedures:	In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling:	Minimize dust generation and accumulation.
Conditions for safe storage, including any incompatibilities:	Keep container closed.
Specific end use(s):	Chemical Intermediate

SECTION 8: Exposure controls/personal protection**Control Parameters****Occupational Exposure Limits**

Country specific exposure limits have not been established or are not applicable unless listed below.

Exposure controls**Appropriate engineering controls:**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment**General information:**

Eye bath. Washing facilities.

Eye/face protection:

It is a good industrial hygiene practice to minimize eye contact.

Skin protection	
Hand Protection:	It is a good industrial hygiene practice to minimize skin contact.
Other:	No data available.
Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.
Hygiene measures:	Observe good industrial hygiene practices.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical State:	Solid
Form:	Flake
Color:	Amber
Odor:	Characteristic
Odor Threshold:	Not determined.
pH:	No data available.
Softening Point:	110 - 118 °C (Ring and Ball Method)
Boiling Point:	No data available.
Flash Point:	218 °C (Cleveland Open Cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	Not determined.
Vapor density (air=1):	No data available.
Specific Gravity:	1.09 (25 °C)
Solubility(ies)	
Solubility In Water:	Negligible
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Autoignition Temperature:	No data available.
Decomposition Temperature:	Thermal stability not tested. Low stability hazard expected at normal operating temperatures.
Dynamic Viscosity:	No data available.
Kinematic viscosity:	Not determined.
Explosive properties:	No data available.

Oxidizing properties:

No data available.

SECTION 10: Stability and reactivity

Reactivity:	None known.
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	None at ambient temperatures.
Incompatible Materials:	Strong oxidizing agents.
Hazardous Decomposition Products:	Carbon Monoxide. Carbon Dioxide.

SECTION 11: Toxicological information**Information on likely routes of exposure**

Inhalation:	None known.
Ingestion:	None known.
Skin Contact:	None known.
Eye contact:	None known.

Information on toxicological effects

Oral Product:	No data available.
Dermal Product:	No data available.
Inhalation Product:	No data available.
Repeated Dose Toxicity Product:	No data available.
Skin Corrosion/Irritation Product:	No data available.
Serious Eye Damage/Eye Irritation Product:	No data available.
Respiratory or Skin Sensitization Product:	No data available.

Carcinogenicity

Product:	No data available.
Specified substance(s): additive(s)/colorant(s)	IARC Not Listed. NTP Not Listed. OSHA Not Listed.
Toxicity to reproduction Product:	No data available.
Developmental Toxicity Product:	No data available.
Germ Cell Mutagenicity	
In vitro Product:	No data available.
In vivo Product:	No data available.
Specific Target Organ Toxicity - Single Exposure Product:	No data available.
Specific Target Organ Toxicity - Repeated Exposure Product:	No data available.
Aspiration Hazard Product:	No data available.
Other Effects:	No data available.

SECTION 12: Ecological information**Ecotoxicity:****Acute hazards to the aquatic environment:**

**Fish
Product:** No data available.

**Aquatic Invertebrates
Product:** No data available.

Chronic hazards to the aquatic environment:

**Fish
Product:** No data available.

Aquatic Invertebrates
Product: No data available.

Toxicity to Aquatic Plants
Product: No data available.

Persistence and Degradability

Biodegradation
Product: No data available.

BOD/COD Ratio
Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)
Product: No data available.

Partition Coefficient n-octanol / water (log Kow)
Product: No data available.

Mobility in Soil: No data available.

Known or predicted distribution to environmental compartments

hydrocarbon resin No data available.

additive(s)/colorant(s) No data available.

Other Adverse Effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Class not regulated

IMDG - International Maritime Dangerous Goods Code
Class not regulated

IATA
Class not regulated

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: noncontrolled

SARA 311-312 Hazard Classification(s):
fire hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List
NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

Philippines Inventory (PICCS): All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 1, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision information:	Not relevant.
Key literature references and sources for data:	No data available.
Training information:	No data available.
Issue Date:	04/16/2015
SDS No.:	
Disclaimer:	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Material Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: H8202NL, H8202NLB
OTHER/GENERIC NAMES: AEGIS™ Nylon Resin, Nylon 6 General Purpose Homopolymer Resin
PRODUCT USE: Plastic resin for use in extrusion/molding applications.
MANUFACTURER: Honeywell
 101 Columbia Road
 Box 1053
 Morristown, New Jersey 07962-1053

FOR MORE INFORMATION CALL:

(Monday-Friday, 8:00am-5:00pm)
 1-800-707-4555

IN CASE OF EMERGENCY CALL:

(24 Hours/Day, 7 Days/Week)
 1-800-707-4555 or Chemtrec 1-800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Nylon 6	25038-54-4	97+
Caprolactam	105-60-2	<1

Trace impurities and additional material names not listed above may also appear in Sections 3, 8, 11 and 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Naturally-colored (clear to beige) plastic pellets with possibly a slight organic odor. Resin pellets are not considered hazardous at ambient conditions. Exposure to fire will release irritating, toxic and/or flammable fumes and vapors.

POTENTIAL HEALTH HAZARDS

SKIN: Pellets or dusts in contact with skin may cause mechanical irritation. Hot or molten polymer can burn the skin.

EYES: Contact with powders or dusts may cause mechanical irritation. Thermal processing fumes/vapors may irritate the eyes.

INHALATION: Thermal processing fumes/vapors or dusts may irritate the mucous membranes of the nose and throat.

INGESTION: Ingestion is not a likely route of exposure. Ingestion of product may cause gastrointestinal discomfort.

DELAYED EFFECTS: There are no known chronic effects associated with this product.

MATERIAL SAFETY DATA SHEET

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
------------------------	-------------------	--------------------	------------------

No ingredients listed in this section.

4. FIRST AID MEASURES

SKIN: For irritation, flush the skin with cool running water. Wash the affected area with mild soap and water. Obtain medical attention if irritation develops. If hot or molten polymer burns the skin, immerse the burned area in cold running water and obtain medical attention immediately.

EYES: Flush with flowing water. Obtain medical attention if irritation develops or persists.

INHALATION: Remove person to fresh air. Obtain medical attention if irritation develops or persists.

INGESTION: Ingestion is not a likely route of exposure. If product is ingested, seek medical attention.

ADVICE TO PHYSICIAN: There are no specific recommendations for treatment of effects associated with exposure to this product. Base treatments on clinical findings.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Not determined.
FLASH POINT METHOD: Not applicable.
AUTOIGNITION TEMPERATURE: Not determined.
UPPER FLAME LIMIT (volume % in air): Not applicable.
LOWER FLAME LIMIT (volume % in air): Not applicable.
FLAME PROPAGATION RATE (solids): Not applicable.
OSHA FLAMMABILITY CLASS: Not applicable; solid material.

EXTINGUISHING MEDIA: Use any standard agent (water fog, foam, dry chemical, carbon dioxide).

UNUSUAL FIRE AND EXPLOSION HAZARDS: Hydrogen cyanide, ammonia gases or carbon monoxide may be generated during combustion.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS: Wear self-contained, positive-pressure breathing apparatus (full face-piece type) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE (Always wear recommended personal protective equipment):
Sweep or vacuum material and place in container for re-use or disposal.
Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

MATERIAL SAFETY DATA SHEET

7. HANDLING AND STORAGE

NORMAL HANDLING (Always wear recommended personal protective equipment): Avoid processing material above recommended thermal processing temperatures. Read product Technical Data Sheet before use, or contact a technical service representative for specific advice. Avoid breathing thermal processing fumes and vapors. Avoid inhalation and/or skin contact with product dusts or pellets. Avoid dust or pellet contact with the eyes. Consider the use of local exhaust ventilation at all processing emission points. Wash thoroughly after handling.

STORAGE RECOMMENDATIONS: To maintain product quality, store product in a cool, dry place. Keep in a tightly sealed container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Good manufacturing practice and good industrial hygiene practice is recommended. The use of local exhaust ventilation at thermal processing emission points is recommended. Processors should evaluate the need for local exhaust ventilation at each processing emission point. These considerations should include secondary operations (cutting, regrinding, chopping, etc.) that follow thermal processing.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION: Wear gloves when handling drums and when handling hot polymer. Use arm protection to protect against thermal burns.

EYE PROTECTION: Wear safety glasses with sideshields as minimum protection. Use a faceshield when processing molten material.

RESPIRATORY PROTECTION: If dusty conditions exist, use an approved mechanical filter respirator. For exposure to fumes and vapors in excess of permissible exposure limits, use an approved organic vapor cartridge respirator.

ADDITIONAL RECOMMENDATIONS: Use additional personal protective equipment consistent with plant conditions and requirements. An eye wash fountain or other source of running water is recommended for the work area.

MATERIAL SAFETY DATA SHEET

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Caprolactam (dust)	1 mg/m ³ TWA; 3 mg/m ³ STEL	1 mg/m ³ TWA; 3 mg/m ³ STEL	NIOSH REL 1 mg/m ³ ; 3 mg/m ³ STEL
Caprolactam (vapor)	5 ppm, 23 mg/m ³ TWA; 10 ppm, 46 mg/m ³ STEL	5 ppm, 20 mg/m ³ TWA; 10 ppm, 40 mg/m ³ STEL	NIOSH REL 1 mg/m ³ ; 3 mg/m ³ STEL
Product (Dusts)	Particulates Not Otherwise Classified - 10 mg/m ³ total dust, TWA	Particulates Not Otherwise Classified - 15 mg/m ³ total dust, TWA; 5 mg/m ³ respirable dust, TWA	None

* = Limit established by Honeywell International, Inc.

** = Workplace Environmental Exposure Level (AIHA).

*** = Biological Exposure Index (ACGIH).

PEL values represent limits established by the 1989 Air Contaminants Rule (29 CFR 1910.1000, Subpart Z, Table Z-1-A), which was subsequently revoked on June 30, 1993. Several states continue to enforce Table Z-1-A.

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear to white or off-white pellets.	
PHYSICAL STATE:	Solid	
MOLECULAR WEIGHT:	113.2 (monomer)	
CHEMICAL FORMULA:	(C ₆ H ₁₁ NO) _n	
ODOR:	Possibly a slight organic odor.	
SPECIFIC GRAVITY (water = 1.0):	1.13-1.15	
SOLUBILITY IN WATER (weight %):	Insoluble.	
pH:	Not applicable.	
BOILING POINT:	Not applicable.	
MELTING POINT:	215 C (420 F)	
VAPOR PRESSURE:	Not applicable.	
VAPOR DENSITY (air = 1.0):	Not applicable.	
EVAPORATION RATE:	Not applicable.	COMPARED TO:
% VOLATILES:	Not determined.	
FLASH POINT:	Not determined for solid product.	

(Flash point method and additional flammability data are found in Section 5.)

MATERIAL SAFETY DATA SHEET

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID): Product is stable. Avoid exposure to open flame or temperatures exceeding optimum recommended processing temperatures. Avoid prolonged exposure to processing temperatures. Consult technical service personnel for recommended processing conditions.

INCOMPATIBILITIES: Strong mineral acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal breakdown products may include a complex mixture of compounds, including but not limited to carbon monoxide, ammonia, aliphatic amines, amides, ketones, nitriles and hydrogen cyanide, which may be flammable, toxic and/or irritating. The specific materials generated will vary depending on the additives and colorants used, specific temperature, time of exposure and other immediate environmental factors.

HAZARDOUS POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS: Toxicological data concerning immediate (acute) health effects of the product are not available.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS: Toxicological data concerning delayed (chronic and subchronic) health effects of the product are not available.

OTHER DATA: Caprolactam: 13-Week Inhalation Toxicity Study of Caprolactam in the Rat via Whole Body Exposures - The study involved daily six-hour dust exposures, five days per week for 13 weeks at levels of 1 (Control), 23, 66, and 245 mg/m³. Signs of mild irritation were observed at all levels. However, Histopathological results indicate irritation effects at the 66 and 245 mg/m³ levels only. There were neurotoxic effects or systemic signs of toxicity. There were no effects on the lower respiratory system. The NOEL for non-irritant effects was 245 mg/m³. Skin irritation Study in the Rabbit (24-hour occluded application) - negligible to mild irritation.

Caprolactam	LD50 (oral-rat):	930-2500 mg/kg
	LC50 (inh-rat, 4 hr.):	8160 mg/m ³
Potassium Bromide (certain HS grades)	LD50: Not available	
	LC50: Not available	

12. ECOLOGICAL INFORMATION

No ecotoxicological information is available for the products. These products are not considered degradable or toxic in terms of their physical impact. Pellets left at large (spills) in the general environment may be ingested by animals. Material is expected to have low aquatic toxicity because of its insolubility in water. Aquatic toxicity studies conducted with caprolactam indicate LC50 (mg/l) values > 100 ppm in fish (flathead minnow, bluegill, channel catfish) and invertebrates (Daphnia magna).

MATERIAL SAFETY DATA SHEET

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? No
If yes, the RCRA ID number is: Not applicable.

OTHER DISPOSAL CONSIDERATIONS: Observe all Federal, State, and Local Environmental regulations. Standard grade and precolored products, as shipped, are nonhazardous organic solids. Preferred options for disposal are recycle, incineration with energy recovery or landfill.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT PROPER SHIPPING NAME: Not regulated.
US DOT HAZARD CLASS: Not applicable.
CANADIAN TDG: Not regulated

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: All components are listed on the TSCA Inventory or are exempt under PMN regulations.
OTHER TSCA ISSUES: None.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPO (lb)</u>
None	None	None

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate

SARA 313 TOXIC CHEMICALS:

MATERIAL SAFETY DATA SHEET

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
None.	

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
None		

ADDITIONAL REGULATORY INFORMATION: None

WHMIS CLASSIFICATION (CANADA): Product is not a WHMIS controlled product.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all information required by the CPR.

FOREIGN INVENTORY STATUS: All components are listed on the Canadian Domestic Substances List (DSL) or are exempt under CEPA regulations. All components are listed on the European Inventory of Existing Chemical Substances (EINECS) or are exempt by EC Directives.

16. OTHER INFORMATION

CURRENT ISSUE DATE: 04/23/2004
PREVIOUS ISSUE DATE: 04/06/2004
PREPARED BY: Product Stewardship Department (973-455-2000)

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
 Section 1 - Chemical Product and Company Identification - add product name.

NATIONAL FIRE PROTECTION AGENCY (NFPA®) AND NATIONAL PAINT AND COATINGS ASSOCIATION (NPCA®) HAZARD RATING CLASSIFICATION:

	<u>NFPA®</u>	<u>HMIS®</u>
Health	0	0
Fire	0	0
Reactivity	0	0

MATERIAL SAFETY DATA SHEET

OTHER INFORMATION: Honeywell does not promote or support the use of its products in the manufacture of medical devices which are intended for permanent implantation in the human body or in permanent contact with internal bodily tissues or fluids.

AEGIS™ is a trademark of Honeywell. HMIS® is a registered trademark of the National Paint and Coatings Manufacturers Association. NFPA® is a registered trademark of the National Fire Protection Agency. ACGIH® and TLV® are registered trademarks of the American Congress of Governmental Industrial Hygienists.



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" HTN HIGH PERFORMANCE POLYAMIDE RESINS ON SYNONYM LIST ZYT110
ZYT110 Revised 28-SEP-2006

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" E2000820-8-6,
"ZYTEL" EFE7284 BK039,
"ZYTEL" EFE7291 BK420,
"ZYTEL" FE5399 BK031,
"ZYTEL" FE5399 BK038,
"ZYTEL" FE5399 BK083,
"ZYTEL" FE5399 NC010,
"ZYTEL" FE5401 BK083,
"ZYTEL" FE5401 BK083L,
"ZYTEL" FE5401 NC010,
"ZYTEL" FE5401 NC010L,
"ZYTEL" FE5438 NC010,
"ZYTEL" FE5443 NC010,
"ZYTEL" FE150009 BK083,
"ZYTEL" HTNFE3823 BK420,
"ZYTEL" HTNFE5476 NC010,
"ZYTEL" HTNFE5496 BK083,
"ZYTEL" HTNFE5496 NC010,
"ZYTEL" HTN51G15HSL BK083,
"ZYTEL" HTN51G15HSL NC010,
"ZYTEL" HTN51G35HSLR BK420,
"ZYTEL" HTN51G35HSLR NC010,
"ZYTEL" HTN51G35HS NC010,
"ZYTEL" HTN51G35HSL BK083,
"ZYTEL" HTN51G35HSL NC010,
"ZYTEL" HTN51G35HSL RDB404
"ZYTEL" HTN51G45HS NC010,
"ZYTEL" HTN51G45HSL NC010,
"ZYTEL" HTN51G45HSL BK083,
"ZYTEL" HTN51G45HSLR BK083,
"ZYTEL" HTN51G45HSLR BK420,
"ZYTEL" HTN51LG45 BK083,
"ZYTEL" HTN51LG45HSL BK083,
"ZYTEL" HTN51LG50L BK083,
"ZYTEL" HTN51LG50HSL BK083
"ZYTEL" HTNFE5441 BK083,
"ZYTEL" HTNFE5441 NC010,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"ZYTEL" HTNFE5447 BK083,
 "ZYTEL" HTNFE5459 BK083,
 "ZYTEL" HTNFE5459 NC010,

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYAMIDE COPOLYMER		>40
FIBERGLASS		<60
CARBON BLACK	1333-86-4	<2

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

(HAZARDS IDENTIFICATION - Continued)

No data are available. Based on similarity to other chemically related polymers, the base polymer in the products listed on the MSDS is predicted to have low toxicity by ingestion, skin contact or inhalation. Fumes generated by overheating or during processing may cause irritation of eyes, nose and throat, with redness, itching, and coughing.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

(HAZARDS IDENTIFICATION - Continued)

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK				2B

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

(FIRE FIGHTING MEASURES - Continued)

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZYTEL" HTN HIGH PERFORMANCE POLYAMIDE RESINS ON SYNONYM LIST
ZYT110
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

CARBON BLACK

(Other Applicable Exposure Limits - Continued)

PEL (OSHA)	:	3.5 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	:	3.5 mg/m ³ , 8 Hr. TWA, A4
AEL * (DuPont)	:	0.5 mg/m ³ , 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%) Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	:	>200 C (>392 F)
Solubility in Water	:	Insoluble
Odor	:	None
Form	:	Pellets
Specific Gravity	:	>1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F) .

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including cyclopentanone, carbon monoxide, aldehydes, ammonia.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

(REGULATORY INFORMATION - Continued)

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

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DuPont
Material Safety Data Sheet

FUS144 FUSABOND RESIN ALL IN SYNONYM LIST FUS144
Revised 8-DEC-2004

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"FUSABOND" is a registered trademark of DuPont.

Tradenames and Synonyms

"FUSABOND" N MO-525D
"FUSABOND" N MO-568D
"FUSABOND" N MO-572D
"FUSABOND" N MO-577D
"FUSABOND" N MO-578D
"FUSABOND" N MO-579D
"FUSABOND" N MO-583D
"FUSABOND" N MO-584D
"FUSABOND" N MO-609D

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Packaging & Industrial Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Maleic Anhydride Modified Ethylene/ Olefin Copolymer ..		100
Maleic Anhydride (Residual)	108-31-6	<0.1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

May contain small amounts of stabilizers, additives and pigments.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION: Not a probable route of exposure.

SKIN: Contact with maleic anhydride vapour will cause severe skin irritation. Contact with resin may cause mild irritation of skin.

EYE: Contact with maleic anhydride vapour will cause severe eye irritation. Contact with resin may cause mild irritation of eyes.

INHALATION: Contact with maleic anhydride vapour will cause severe nose and throat irritation.

This maleic anhydride modified polyethylene polymer may produce volatile skin, eye or respiratory irritants on thermal processing. The atmosphere and dust contained in the packaging may cause similar irritation.

Overexposure may cause allergic respiratory reaction.

Avoid inhalation of stagnant air in closed container of polymer and contact with dust on container lid.

CHRONIC EFFECTS: None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

MALEIC ANHYDRIDE

Skin contact with Maleic Anhydride may cause skin burns or ulceration. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

Eye contact with Maleic Anhydride may cause eye corrosion with corneal or conjunctival ulceration. Exposure to the vapors may cause tearing, blurring of vision, sensitivity to light, or inflammation of the eyelids.

Inhalation of Maleic Anhydride may cause headaches, nausea, irritation or ulceration of the upper respiratory passages; workers have reported nasal irritation after a one minute exposure to 1.5 ppm. This compound may cause asthma-like reactions with shortness of breath, wheezing, or cough. Higher overexposures may cause pulmonary edema (body fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin. Symptoms may be delayed. Prompt medical attention is required.

(HAZARDS IDENTIFICATION - Continued)

Ingestion of Maleic Anhydride may cause severe burns of the mouth and tissues of the upper gastrointestinal tract with severe pain, bleeding, vomiting, diarrhea and collapse of blood pressure.

Prolonged or gross overexposures may cause abnormal kidney function as detected by laboratory tests.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INGESTION

Not a probable route. However, in case of accidental ingestion, call a physician.

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. Dispose of contaminated clothing. If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

FIRE FIGHTING MEASURES

Flammable Properties

Autoignition : ~350 C (~652 F)

Fire and Explosion Hazards:

HAZARDOUS COMBUSTION PRODUCTS Complete combustion gives carbon dioxide and water. Incomplete combustion gives, in addition, carbon monoxide and hydrocarbon oxidation products including organic acids, aldehydes and alcohols.

UNUSUAL FIRE, EXPLOSION HAZARDS: Failure or malfunction of temperature control systems on processing equipment such as extruders, may create explosion hazards.

UNUSUAL FIRE, EXPLOSION HAZARDS The solid polymer can be combusted only with difficulty. An electrostatic charge can potentially build up when pouring pellets. Grounding of equipment is recommended.

Extinguishing Media

Water, CO₂, Foam, Dry Chemical.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Polyethylene resins are combustible materials. Molten polyethylene tends to flow or drip and will propagate fire.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Sweep up to avoid slipping hazard.

Accidental Release Measures

Hot molten polymer may liberate irritating vapour and should be kept in ventilated enclosure.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a cool, dry place.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Use sufficient ventilation to keep employee exposure below recommended limits. Avoid breathing or otherwise contacting vapor especially during initial opening of container and liner.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear overall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

RESPIRATORS

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines

Applicable Exposure Limits

Maleic Anhydride (Residual)

PEL (OSHA) : 0.25 ppm, 1.0 mg/m³, 8 Hr. TWA
TLV (ACGIH) : 0.1 ppm, 8 Hr. TWA, A4
Sensitizer
AEL * (DuPont) : 0.1 ppm, 8 & 12 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point : NA
Vapor Pressure : NA
Vapor Density : NA
% Volatiles : 0.2% (by weight)
Evaporation Rate : NA
Solubility in Water : Insoluble
Odor : Slightly irritating
Form : Pellets or Powder
Color : White or pigmented
Melting Point : 60-110 C (140-230 F) approx.
Specific Gravity : 0.86-0.91

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 290 C (554 F) .

Incompatibility with Other Materials

MATERIALS TO AVOID: Avoid contact with strong oxidants at high temperatures.

Decomposition

Decomposes with heat.

Decomposition temperature: Not determined

(STABILITY AND REACTIVITY - Continued)

HAZARDOUS DECOMPOSITION PRODUCTS - carbon dioxide, carbon monoxide, hydrocarbons, smoke, acrolein. Decomposition products may vary in nature depending upon actual conditions, eg. availability of oxygen, temperature and presence of other materials. Degradation products generated during processing may include carbon dioxide, carbon monoxide, hydrocarbons, smoke and possible trace amounts of irritants.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Maleic Anhydride
Skin absorption LD50: 2620 mg/kg in rabbits
Oral LD50 : 235 mg/kg (10% solution in corn oil) female rats

Maleic Anhydride is corrosive to the skin and eyes. Tests for skin sensitization have produced positive and negative results in animals.

No deaths occurred when rats were exposed to by inhalation to saturated vapors of maleic anhydride for 8 hours. Repeated or long-term exposure of rats, hamsters or monkeys to this material caused eye, nose, and lung irritation; reduced weight gain was noted at the higher concentrations. Evidence of respiratory sensitization was observed in guinea pigs.

Repeated ingestion of capsules containing Maleic Anhydride caused severe gastrointestinal corrosion. Animals fed diets containing high doses of this material showed pathological changes to the kidney and altered urine analysis. In a different repeated dose ingestion study in rats fed Maleic Anhydride effects were observed in the liver, kidneys, and heart.

Animal testing indicates that Maleic Anhydride does not have carcinogenic, developmental, or reproductive effects.

Maleic Anhydride did not produce genetic damage in bacterial cultures or in animals. It does produce genetic damage in mammalian cell cultures. It has not been tested for heritable genetic damage.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA
Not Regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

NA = Not applicable
NE = Not established

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : T. P. PRICE
DUPONT PACKAGING & INDUSTRIAL POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : (302) 999-4664

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

 "HYTREL" DYM THERMOPLASTIC POLYESTER ELASTOMER ON SYNONYM LIST DYM007
 DYM007
 Revised 1-JUN-2006

 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"HYTREL" is a registered trademark of DuPont.

Tradenames and Synonyms

"HYTREL" DYM100 NC010, #
 "HYTREL" DYM160 NC010, DYM250 NC010, DYM250S NC010,
 "HYTREL" DYM300 NC010, DYM350 NC010
 "HYTREL" DYM500 NC010, DYM830 NC010, DYM1300 NC010,

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
BUTYLENE/POLY(ALKYLENE ETHER) PHTHALATE		>98

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

 HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Before using this resin, please read Bulletin H-38066, "Handling and Processing Precautions for 'HYTREL'."

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point

: Not Applicable

Fire and Explosion Hazards:

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Hazardous gases/vapors produced in fire are carbon monoxide.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

(FIRE FIGHTING MEASURES - Continued)

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"HYTREL" DYM THERMOPLASTIC POLYESTER ELASTOMER ON SYNONYM LIST

DYM007

PEL (OSHA)

: Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 150-225 C (302-437 F)
Solubility in Water	: Insoluble
Odor	: None
Form	: Pellets
Specific Gravity	: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Oxidizing (heating in air). Abnormally long processing time or high temperatures can produce irritating and toxic fumes.

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including acrolein, tetrahydrofuran, crotonaldehyde, acetaldehyde.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

No information available.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

DYM007

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Material Safety Data Sheet

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(Continued)

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

DEL012

DuPont
Material Safety Data Sheet

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
 "DELRIN" ACETAL RESIN/PTFE BLENDS ON SYNONYM LIST DEL012
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYTETRAFLUOROETHYLENE : None Established
 PEL (OSHA) : None Established
 TLV (ACGIH) : 10 mg/m³, 8 Hr. TWA, total dust
 AEL * (DuPont) 5 mg/m³, 8 Hr. TWA, respirable dust

FORMALDEHYDE
 PEL (OSHA)

: 0.75 ppm, 0.92 mg/m³, 8 Hr. TWA
 STEL 2 ppm, 2.5 mg/m³
 : Ceiling 0.3 ppm, A2
 Sensitizer
 : 0.5 ppm, 8 & 12 Hr. TWA
 1 ppm, 15 minute TWA

TLV (ACGIH)

AEL * (DuPont)

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point
 Solubility in Water
 Odor
 Form
 Specific Gravity

: 175-183 C (347-361 F)
 : Insoluble
 : Slight formaldehyde
 : Pellets
 : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Maintain polymer melt temperatures below 230 C (446 F). Avoid prolonged exposure at or above the recommended processing temperatures.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, acetal resins are incompatible with halogenated polymers such as PVC and PVDC and any elastomers containing halogenated polymers. Even small amounts of such contaminants can cause sudden and spontaneous formaldehyde gas formation. Workplace fume concentrations well above threshold levels are a likely result. Unsafe pressurization of equipment, e.g., extruders, molds, can also result.

Do not contaminate either virgin resin or rework. Do not mix this resin with pigments or additives other than those designated by DuPont. Do not mix this grade with other grades of Delrin, nor with any other resins, without first consulting DuPont. Doing any of the above may change the thermal stability of this resin and potentially cause decomposition.

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperatures. At the recommended processing temperature of 210-220 C (410-428 F), decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants, pigments, and/or other additives.

Autoclaving with pressurized steam may lead to a rapid decomposition and should be done for only minimum amounts of time. COOL COMPLETELY BEFORE OPENING the autoclave.

Hazardous gas/vapor produced is formaldehyde.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Delrin
Inhalation 6 hour LC50: > 22,000 mg/m³ in rats
Oral LD50: > 11,000 mg/kg in rats

Delrin is not a skin irritant, and is not a skin sensitizer in animals.

Single or repeated inhalation exposures to high concentrations of Delrin dust resulted in collapse of some areas of the lungs, other areas were over-inflated. This effect was seen as late as 11-19 days post-exposure.

No toxic effect were observed in animals ingesting Delrin.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

PTFE

Animal testing indicates that PTFE is not a skin irritant.

Repeated exposure to PTFE by ingestion caused no significant toxicological effects. Possible effects on white blood cell counts were found in rats fed 25% PTFE in the diet for 90 days, however any changes were within normal variability and were considered to be of no toxicological significance.

In rats, single exposure to dusts of undegraded PTFE by inhalation caused irritation of the lungs. Exposure to thermal decomposition products of PTFE caused lung injury whose severity depends upon the temperature and exposure conditions. Birds appear to be especially susceptible to the toxic effects of fluoropolymer decomposition products. In rats, exposure to freshly formed low molecular weight polymer fragments (fume) produced by continuous heating of the polymer above 400 degrees C may produce acute pulmonary inflammation. When the concentration of fluoropolymer fragment fumes increases, deaths may occur from pulmonary edema and hemorrhage. Exposure to fume aged for several minutes, markedly reduces the toxicity. At higher temperatures involving gross thermal decomposition of the polymer, deaths occurred due to pulmonary edema from lethal concentrations of fluoropolymer fume and/or fluorinated gas decomposition products.

No adequate animal data are available to define the carcinogenicity or developmental hazards of PTFE. No adequate reports of genetic testing were found. No animal data are available to define the reproductive toxicity of PTFE.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Formaldehyde.

DuPont
Material Safety Data Sheet

(REGULATORY INFORMATION - Continued)

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST
PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES
IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be
reliable. It is subject to revision as additional knowledge and
experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

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DuPont
Material Safety Data Sheet

"DELFIN" ACETAL RESIN CUSTOM COLORS ON SYNONYM LIST DEL001
Revised 23-AUG-2006

DEL001

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DELFIN" is a registered trademark of DuPont.

Tradenames and Synonyms

"DELFIN" 100 BK602,
"DELFIN" 100 BL6002,
"DELFIN" 100 BL6003,
"DELFIN" 100 BN6003,
"DELFIN" 100 BNA089,
"DELFIN" 100 GY1007,
"DELFIN" 100 GY1061,
"DELFIN" 100 GYA124,
"DELFIN" 100 WT760,
"DELFIN" 100 YL403,
"DELFIN" 100 YL6003,
"DELFIN" 500 BK602,
"DELFIN" 500 BK656,
"DELFIN" 500 BL734,
"DELFIN" 500 BL1071,
"DELFIN" 500 BL1076,
"DELFIN" 500 BL8084,
"DELFIN" 500 BLH707,
"DELFIN" 500 BLH787,
"DELFIN" 500 BN1079,
"DELFIN" 500 BN1096,
"DELFIN" 500 BN6001,
"DELFIN" 500 BN6003,
"DELFIN" 500 BN7008,
"DELFIN" 500 GN1061,
"DELFIN" 500 GN1071,
"DELFIN" 500 GN1072,
"DELFIN" 500 GN6001,
"DELFIN" 500 GN6002,
"DELFIN" 500 GN6006,
"DELFIN" 500 GNE755,
"DELFIN" 500 GY1007,
"DELFIN" 500 GY1073,
"DELFIN" 500 GY1095,
"DELFIN" 500 GY1107,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"DELTRIN" 500 GY1125,
"DELTRIN" 500 GY1130,
"DELTRIN" 500 GY1133,
"DELTRIN" 500 GY6001,
"DELTRIN" 500 GY6002,
"DELTRIN" 500 GY6004,
"DELTRIN" 500 GYA214,
"DELTRIN" 500 GYA601,
"DELTRIN" 500 GYA214,
"DELTRIN" 500 GYA601,
"DELTRIN" 500 ORH625,
"DELTRIN" 500 RD1058,
"DELTRIN" 500 VTH621,
"DELTRIN" 500 WT602,
"DELTRIN" 500 WT610,
"DELTRIN" 500 WT760,
"DELTRIN" 500 WT1068,
"DELTRIN" 500 WT6002,
"DELTRIN" 500 YL6003,
"DELTRIN" 500 YL7013,
"DELTRIN" 500 YLH645,
"DELTRIN" 500CL BK602,
"DELTRIN" 500CL GY1170,
"DELTRIN" 500CL GYB6002,
"DELTRIN" 507 GN6001,
"DELTRIN" 507 GN6006,
"DELTRIN" 507 GY6002,
"DELTRIN" 507 GY6030,
"DELTRIN" 507 GY7080,
"DELTRIN" 507 GY807,
"DELTRIN" 507 OR6002,
"DELTRIN" 507 RD6001,
"DELTRIN" 507 RD836,
"DELTRIN" 507 VT642,
"DELTRIN" 507 WT602,
"DELTRIN" 507 WT610,
"DELTRIN" 900 AL1002,
"DELTRIN" 900 BNH845,
"DELTRIN" 900 BK602,
"DELTRIN" 900 GK658,
"DELTRIN" 900 GYA204,
"DELTRIN" 900 WT6002,
"DELTRIN" 907 GY9003,
"DELTRIN" 907 GY9022,
"DELTRIN" DE8502 BK602,
"DELTRIN" DE8502 NC010,
"DELTRIN" DE9070 RD1001,
"DELTRIN" DE9101 BK602,
"DELTRIN" RSM100BK2,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637-----
COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	%
Material		>97
ACETAL POLYMER		<2
STABILIZER		<1
PIGMENT	1333-86-4	0-0.5
CARBON BLACK	50-00-0	<0.005
FORMALDEHYDE		

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the specific datasheet for product to be used before using this resin, as well as the Delrin Molding Guide.

ACETAL POLYMER

There are no known effects from exposure to the Delrin polymer itself. If overheated, the polymer releases formaldehyde which may cause skin, eye, and respiratory irritation and allergic reactions.

(HAZARDS IDENTIFICATION - Continued)

Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

	IARC	NTP	OSHA	ACGIH
Material	2B			
CARBON BLACK	1	X	X	A2
FORMALDEHYDE				

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

(FIRST AID MEASURES - Continued)

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

"Delrin" dust cloud ignition temperature is 440 degrees C (824 degrees F).

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition. Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spilled material is a slipping hazard.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Open container only in well-ventilated area.

Minimize the generation and accumulation of dust.

Storage

Store in a well ventilated area away from heat and sunlight.

Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

When temperatures exceed 230 degrees C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSEA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
"DELRIN" ACETAL RESIN CUSTOM COLORS ON SYNONYM LIST DEL001
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

CARBON BLACK : 3.5 mg/m³, 8 Hr. TWA
PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA, A4
TLV (ACGIH) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
AEL * (DuPont) Aromatic Hydrocarbon Content <0.1%)
Includes Channel, Lamp, and Thermal
Black

FORMALDEHYDE : 0.75 ppm, 0.92 mg/m³, 8 Hr. TWA
PEL (OSHA) STEL 2 ppm, 2.5 mg/m³
TLV (ACGIH) : Ceiling 0.3 ppm, A2
Sensitizer
AEL * (DuPont) : 0.5 ppm, 8 & 12 Hr. TWA
1 ppm, 15 minute TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 175-183 C (347-361 F)
Solubility in Water : Insoluble
Odor : Slight formaldehyde
Form : Pellets
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Maintain polymer melt temperatures below 230 C (446 F) . Avoid prolonged exposure at or above the recommended processing temperatures.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, acetal resins are incompatible with halogenated polymers such as PVC and PVDC and any elastomers containing halogenated polymers. Even small amounts of such contaminants can cause sudden and spontaneous formaldehyde gas formation. Workplace fume concentrations well above threshold levels are a likely result. Unsafe pressurization of equipment, e.g., extruders, molds, can also result.

Do not contaminate either virgin resin or rework. Do not mix this resin with pigments or additives other than those designated by DuPont. Do not mix this grade with other grades of Delrin, nor with any other resins, without first consulting DuPont. Doing any of the above may change the thermal stability of this resin and potentially cause decomposition.

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperatures. At the recommended processing temperature of 210-220 C (410-428 F), decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants, pigments, and/or other additives.

Autoclaving with pressurized steam may lead to a rapid decomposition and should be done for only minimum amounts of time. COOL COMPLETELY BEFORE OPENING the autoclave.

Hazardous gas/vapor produced is formaldehyde.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Delrin
Inhalation 6 hour LC50: > 22,000 mg/m³ in rats
Oral LD50: > 11,000 mg/kg in rats

Delrin is not a skin irritant, and is not a skin sensitizer in animals.

Single or repeated inhalation exposures to high concentrations of Delrin dust resulted in collapse of some areas of the lungs, other areas were over-inflated. This effect was seen as late as 11-19 days post-exposure.

No toxic effect were observed in animals ingesting Delrin.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Formaldehyde.

(REGULATORY INFORMATION - Continued)

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. E-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

"CRASTIN" THERMOPLASTIC POLYESTER RESINS ALL IN SYNONYM LIST CRA029
CRA029
Revised 28-JAN-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"CRASTIN" is a registered trademark of DuPont.

Tradenames and Synonyms

- "CRASTIN" CE2504 BK503,
- "CRASTIN" CE2504 NC010,
- "CRASTIN" CE2505 BK503,
- "CRASTIN" CE2505 NC010,
- "CRASTIN" CE2509 BK503,
- "CRASTIN" CE2509 NC010,
- "CRASTIN" LW9320 BK503,
- "CRASTIN" LW9320 BK851,
- "CRASTIN" LW9320 NC010,
- "CRASTIN" LW9320 RDB573,
- "CRASTIN" LW9320LM BK591
- "CRASTIN" LW9330 BK503,
- "CRASTIN" LW9330 BK851,
- "CRASTIN" LW9330 NC010

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
107 Market Street
Wilmington, DE 19898

PHONE NUMBERS

- Product Information : 1-(800)-441-7515
- Transport Emergency : 1-(800)-424-9300
- Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYBUTYLENE TEREPHTHALATE	30965-26-5	35-55
FIBERGLASS		15-35
COLORANTS, LUBRICANTS, STABILIZERS		<5
STYRENE-ACRYLONITRILE	1333-86-4	15-35
CARBON BLACK		<1
TOUGHENER		<10

Degradation products from overheating:

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

*STYRENE	100-42-5
*ACRYLONITRILE	107-13-1
*BUTYL ACRYLATE	141-32-2

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Components (Remarks)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "CRASTIN" Molding Guide before using this product.

POLYBUTYLENE TEREPHTHALATE

Eye contact with Polybutylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Decomposition products caused by overheating Polybutylene Terephthalate may cause skin, eye or respiratory tract irritation.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

(HAZARDS IDENTIFICATION - Continued)

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK	2B			
STYRENE	2B			
ACRYLONITRILE	2B	X	X	A3

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

(REGULATORY INFORMATION - Continued)

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM - Formaldehyde.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"DELRIN" ACETAL RESIN/PDPE BLENDS ON SYNONYM LIST DEL012
DEL012 Revised 20-APR-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DELRIN" is a registered trademark of DuPont.

Tradenames and Synonyms

"DELRIN" 100AF NC010
"DELRIN" 500AF NC010
"DELRIN" 510MP NC010,
"DELRIN" 520MP NC010,
"DELRIN" AFDE588,
"DELRIN" DE9266,
"DELRIN" DE9407,
"DELRIN" DE9410 NC010,
"DELRIN" DE9411 NC010,
"DELRIN" DE9413 NC010,
"DELRIN" DE9415 NC010,
"DELRIN" DE9432

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
ACETAL POLYMER		>75
POLYTETRAFLUOROETHYLENE	9002-84-0	<25
STABILIZER		<4
FORMALDEHYDE	50-00-0	<0.005

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the specific datasheet for product to be used before using this resin, as well as the Delrin Molding Guide.

ACETAL POLYMER

There are no known effects from exposure to the Delrin polymer itself. If overheated, the polymer releases formaldehyde which may cause skin, eye, and respiratory irritation and allergic reactions.

Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

POLYTETRAFLUOROETHYLENE (PTFE)

Inhalation of PTFE dust may cause generalized irritation of the nose, throat and lungs with cough, difficulty breathing or shortness of breath.

Heating PTFE above 300 degrees C may liberate a fine particulate fume. Inhalation may produce polymer fume fever, a temporary flu-like condition with fever, chills, nausea, shortness of breath, chest tightness, muscle or joint ache, and sometimes cough and elevated white blood cell count. The symptoms are often temporary, lasting 4 to 24 hours after exposure. These signs are generally complications. However, some individuals with repeated episodes of polymer fume fever have reported persistent pulmonary effects. Protection against polymer fume fever should also provide protection against any potential chronic effects.

(HAZARDS IDENTIFICATION - Continued)

Exposure to decomposition products from PTFE heated above 400 degrees C may cause pulmonary inflammation, hemorrhage or edema. These more serious consequences of exposure may occur from extreme thermal decomposition of PTFE which can liberate fume particles, and toxic gases (carbonyl fluoride, hydrogen fluoride, and other fluorinated gases) especially under conditions of poor ventilation and/or confined spaces. These decomposition products may initially produce chest tightness or pain, chills, fever, nausea, with shortness of breath, cough, wheezing and progression into pulmonary edema. Edema may be delayed in onset and requires medical treatment. In severe cases, if medical intervention is delayed, pulmonary edema may become life threatening. Recovery is generally complete within a few days; in some rare cases, persistent lung function abnormalities have been reported.

Compared to nonsmokers, polymer fume fever symptoms appear to be more prevalent and serious in smokers. Smokers must avoid contamination of tobacco with residual polymer from their hands or from fumes, and should wash their hands before smoking.

Significant skin permeation, and systemic toxicity, after contact with the dust appears unlikely. There are no reports of human sensitization from contact with the dust.

If PTFE dusts contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Individuals with pre-existing diseases of the lungs or cardiovascular system may have increased susceptibility to the reduction in blood oxygen that may develop after excessive exposures to thermal decomposition products.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material
FORMALDEHYDE

IARC	NTP	OSHA	ACGIH
1	X	X	A2

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

(FIRST AID MEASURES - Continued)

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

"Delrin" dust cloud ignition temperature is 440 degrees C (824 degrees F).

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde, hydrogen fluoride (HF), and, carbonyl fluoride.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

(ACCIDENTAL RELEASE MEASURES - Continued)

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Open container only in well-ventilated area.

Minimize the generation and accumulation of dust.

Storage

Store in a well ventilated area away from heat and sunlight.

Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

When temperatures exceed 230 degrees C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"FUSABOND" P
FUS141 Revised 7-DEC-2004

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"FUSABOND" is a registered trademark of DuPont.

Tradenames and Synonyms

"FUSABOND" P MD-211D BL,
"FUSABOND" P MD-215D GBL,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Packaging & Industrial Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Maleic Anhydride Modified Polypropylene	25722-45-6	>98.5
Non-Hazardous Pigments, Stabilizers and Additives		<1.5
Maleic Anhydride (Residual)	108-31-6	<0.1

HAZARDS IDENTIFICATION

Potential Health Effects

ACUTE OR IMMEDIATE EFFECTS: ROUTES OF ENTRY AND SYMPTOMS

INGESTION: Not a probable route of exposure.

SKIN: Contact with maleic anhydride vapour will cause severe skin irritation. Contact with resin may cause mild irritation of skin.

EYE: Contact with maleic anhydride vapour will cause severe eye irritation. Contact with resin may cause mild irritation of eyes.

(HAZARDS IDENTIFICATION - Continued)

INHALATION: Contact with maleic anhydride vapour will cause severe nose and throat irritation.

"FUSABOND" p MD-211D BL and 215D GBL refers to a series of maleic anhydride modified polypropylene. They may produce volatile skin, eye or respiratory irritants on thermal processing. The atmosphere and dust contained in the package may cause similar irritation.

Avoid inhalation of stagnant air in closed container of polymer and contact with dust on container liner.

CHRONIC EFFECTS: None known.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

MALEIC ANHYDRIDE

Skin contact with Maleic Anhydride may cause skin burns or ulceration. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

Eye contact with Maleic Anhydride may cause eye corrosion with corneal or conjunctival ulceration. Exposure to the vapors may cause tearing, blurring of vision, sensitivity to light, or inflammation of the eyelids.

Inhalation of Maleic Anhydride may cause headaches, nausea, irritation or ulceration of the upper respiratory passages; workers have reported nasal irritation after a one minute exposure to 1.5 ppm. This compound may cause asthma-like reactions with shortness of breath, wheezing, or cough. Higher overexposures may cause pulmonary edema (body fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin. Symptoms may be delayed. Prompt medical attention is required.

Ingestion of Maleic Anhydride may cause severe burns of the mouth and tissues of the upper gastrointestinal tract with severe pain, bleeding, vomiting, diarrhea and collapse of blood pressure.

Prolonged or gross overexposures may cause abnormal kidney function as detected by laboratory tests.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

In case of contact, immediately wash skin with soap and water. Wash contaminated clothing before reuse. If molten material gets on skin, cool rapidly with cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Not a probable route. However, in case of accidental ingestion, call a physician.

FIRE FIGHTING MEASURES

Flammable Properties

Autoignition : Approx. 350 deg C.

Fire and Explosion Hazards:

UNUSUAL FIRE, EXPLOSION HAZARDS: Failure or malfunction of temperature control systems on processing equipment such as extruders, may create explosion hazards. UNUSUAL FIRE, EXPLOSION HAZARDS The solid polymer can be combusted only with difficulty. An electrostatic charge can potentially build up when pouring pellets. Grounding of equipment is recommended.

HAZARDOUS COMBUSTION PRODUCTS: Complete combustion gives carbon dioxide and water. Incomplete combustion gives in addition, carbon monoxide and hydrocarbon oxidation products including organic acids, aldehydes, and alcohols, acrolein.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

(FIRE FIGHTING MEASURES - Continued)

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus (SCBA) and full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Accidental Release Measures

May create a slipping hazard and should be swept up when spilled. Hot molten polymer may liberate irritating vapour and should be kept in ventilated enclosure.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a cool, dry place.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION: Local exhaust system recommended for high temperature processing and open resin handling system.

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

EYE/FACE PROTECTION

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

RESPIRATORS

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines

Exposure Limits

"FUSABOND" P

PEL (OSHA)

: Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

Maleic Anhydride (Residual)

PEL (OSHA)

: 0.25 ppm, 1.0 mg/m³, 8 Hr. TWA

TLV (ACGIH)

: 0.1 ppm, 8 Hr. TWA, A4

Sensitizer

AEL * (DuPont)

: 0.1 ppm, 8 & 12 Hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Boiling Point : NA
Vapor Pressure : NA
Vapor Density : NA
Melting Point : Approx. 160 deg C
% Volatiles : 0.2% (% of weight)
Evaporation Rate : NA
Solubility in Water : Insoluble
Odor : Mild hydrocarbon odor
Form : Pellets or Powder

(PHYSICAL AND CHEMICAL PROPERTIES - Continued)

Color : Blue
Specific Gravity : 0.92 (water = 1)

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong oxidants.

Decomposition

Decomposes with heat.

Decomposition temperature: 270 C (518 F)

Hazardous gases/vapors produced are carbon dioxide, carbon monoxide, and hydrocarbon oxidation products including organic acids, aldehydes, and alcohols, acrolein.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Maleic Anhydride

Skin absorption LD50: 2620 mg/kg in rabbits
Oral LD50 : 235 mg/kg (10% solution in corn oil) female
rats

Maleic Anhydride is corrosive to the skin and eyes. Tests for skin sensitization have produced positive and negative results in animals.

No deaths occurred when rats were exposed to by inhalation to saturated vapors of maleic anhydride for 8 hours. Repeated or long-term exposure of rats, hamsters or monkeys to this material caused eye, nose, and lung irritation; reduced weight gain was noted at the higher concentrations. Evidence of respiratory sensitization was observed in guinea pigs.

(TOXICOLOGICAL INFORMATION - Continued)

Repeated ingestion of capsules containing Maleic Anhydride caused severe gastrointestinal corrosion. Animals fed diets containing high doses of this material showed pathological changes to the kidney and altered urine analysis. In a different repeated dose ingestion study in rats fed Maleic Anhydride effects were observed in the liver, kidneys, and heart.

Animal testing indicates that Maleic Anhydride does not have carcinogenic, developmental, or reproductive effects.

Maleic Anhydride did not produce genetic damage in bacterial cultures or in animals. It does produce genetic damage in mammalian cell cultures. It has not been tested for heritable genetic damage.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/IATA
Not Regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : T. P. PRICE
DUPONT PACKAGING & INDUSTRIAL POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4664

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"DELRIN" POLYACETAL RESIN COLOR CONCENTRATES ON SYNONYM LIST DEL030
DEL030 Revised 14-JUL-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DELRIN" is a registered trademark of DuPont.

Tradenames and Synonyms

"DELRIN" COLC BLC1072,
"DELRIN" COLC BLC1081,
"DELRIN" COLC BLC1082,
"DELRIN" COLC BLC1098,
"DELRIN" COLC BLC1099,
"DELRIN" COLC BLC6003;
"DELRIN" COLC BNC6003;
"DELRIN" COLC GNC1069,
"DELRIN" COLC GNC1069A,
"DELRIN" COLC GNC1070,
"DELRIN" COLC GNC1076,
"DELRIN" COLC GNC1077
"DELRIN" COLC ORC602,
"DELRIN" COLC RDC897,
"DELRIN" COLC RDC1060,
"DELRIN" COLC RDC1065,
"DELRIN" COLC RDC1079,
"DELRIN" COLC RDC1079A,
"DELRIN" COLC RDC1080,
"DELRIN" COLC RDC1080A,
"DELRIN" COLC RDC1072,
"DELRIN" COLC RDC1085,
"DELRIN" COLC RDC1086,
"DELRIN" COLC RDC1089,
"DELRIN" COLC RDC1092,
"DELRIN" COLC RDC1094,
"DELRIN" COLC RDC1096,
"DELRIN" COLC RDC6001,
"DELRIN" COLC VTC1055,
"DELRIN" COLC VTC1057,
"DELRIN" COLC YLC1001

#

Company Identification

MANUFACTURER/DISTRIBUTOR

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
ACETAL POLYMER		>75
STABILIZER		<10
COLORANT		<15
FORMALDEHYDE	50-00-0	<0.005

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the specific datasheet for product to be used before using this resin, as well as the Dalrin Molding Guide.

ACETAL POLYMER

There are no known effects from exposure to the Dalrin polymer itself. If overheated, the polymer releases formaldehyde which may cause skin, eye, and respiratory irritation and allergic reactions.

(HAZARDS IDENTIFICATION - Continued)

Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
FORMALDEHYDE	1	X	X	A2

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

"Delrin" dust cloud ignition temperature is 440 degrees C (824 degrees F).

Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Open container only in well-ventilated area.

Minimize the generation and accumulation of dust.

Storage

Store in a well ventilated area away from heat and sunlight.

Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

When temperatures exceed 230 degrees C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"DELRIN" POLYACETAL RESIN COLOR CONCENTRATES ON SYNONYM LIST

DEL030

PEL (OSHA)

: Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FORMALDEHYDE
PEL (OSHA)

: 0.75 ppm, 0.92 mg/m³, 8 Hr. TWA
STEL 2 ppm, 2.5 mg/m³

TLV (ACGIH)

: Ceiling 0.3 ppm, A2
Sensitizer

AEL * (DuPont)

: 0.5 ppm, 8 & 12 Hr. TWA
1 ppm, 15 minute TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 175-183 C (347-361 F)
Solubility in Water	: Insoluble
Odor	: Slight formaldehyde
Form	: Pellets
Specific Gravity	: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Maintain polymer melt temperatures below 230 C (446 F) . Avoid prolonged exposure at or above the recommended processing temperatures.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, acetal resins are incompatible with halogenated polymers such as PVC and PVDC and any elastomers containing halogenated polymers. Even small amounts of such contaminants can cause sudden and spontaneous formaldehyde gas formation. Workplace fume concentrations well above threshold levels are a likely result. Unsafe pressurization of equipment, e.g., extruders, molds, can also result.

Do not contaminate either virgin resin or rework. Do not mix this resin with pigments or additives other than those designated by DuPont. Do not mix this grade with other grades of Delrin, nor with any other resins, without first consulting DuPont. Doing any of the above may change the thermal stability of this resin and potentially cause decomposition.

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperatures. At the recommended processing temperature of 210-220 C (410-428 F), decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants, pigments, and/or other additives.

Autoclaving with pressurized steam may lead to a rapid decomposition and should be done for only minimum amounts of time. COOL COMPLETELY BEFORE OPENING the autoclave.

Hazardous gas/vapor produced is formaldehyde.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Delrin
Inhalation 6 hour LC50: > 22,000 mg/m³ in rats
Oral LD50: > 11,000 mg/kg in rats

Delrin is not a skin irritant, and is not a skin sensitizer in animals.

Single or repeated inhalation exposures to high concentrations of Delrin dust resulted in collapse of some areas of the lungs, other areas were over-inflated. This effect was seen as late as 11-19 days post-exposure.

No toxic effect were observed in animals ingesting Delrin.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Formaldehyde.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

(Continued)

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"DELTRIN" ACETAL RESIN ON SYNONYM LIST DEL011
Revised 23-AUG-2006

DEL011

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DELTRIN" is a registered trademark of DuPont.

Tradenames and Synonyms

"DELTRIN" 510GR BL1080,
"DELTRIN" 510GR NC000,
"DELTRIN" 525GR NC000,
"DELTRIN" 570 NC000,
"DELTRIN" DE9036 NCB000,
"DELTRIN" DE9191 NC000,
"DELTRIN" DE9191X NC000,
"DELTRIN" DE9255 NC000,
"DELTRIN" DE9453 BL1080,
"DELTRIN" DE9453 BL1083,
"DELTRIN" DE9453 BLN1080,
"DELTRIN" DE9453 NC000,
"DELTRIN" DE9453 YL1063,
"DELTRIN" DE9454 NC000,
"DELTRIN" DE9474 BL1080,
"DELTRIN" DE9474 BLN1080,
"DELTRIN" DE20050 NC000

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
ACETAL POLYMER		>70
STABILIZER		<2
PIGMENT		<1
FIBERGLASS		<30
FORMALDEHYDE	50-00-0	<0.005

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the specific datasheet for product to be used before using this resin, as well as the Delrin Molding Guide.

ACETAL POLYMER

There are no known effects from exposure to the Delrin polymer itself. If overheated, the polymer releases formaldehyde which may cause skin, eye, and respiratory irritation and allergic reactions.

Significant skin permeation and systemic toxicity after contact appears unlikely. There are inconclusive or unverified reports of human sensitization.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

(HAZARDS IDENTIFICATION - Continued)

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
FORMALDEHYDE	1	X	X	A2

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

"Delrin" dust cloud ignition temperature is 440 degrees C (824 degrees F).

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition. Burns with invisible flame. Hazardous gases/vapors produced in fire are carbon monoxide, formaldehyde.

(FIRE FIGHTING MEASURES - Continued)

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Open container only in well-ventilated area.

Minimize the generation and accumulation of dust.

Storage

Store in a well ventilated area away from heat and sunlight.

Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

When temperatures exceed 230 degrees C and ventilation is inadequate to maintain concentrations below exposure limits, use a positive-pressure air-supplied respirator. Air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"DELTRIN" ACETAL RESIN ON SYNONYM LIST DEL011
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS
 PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-
 respirable fiber (> 3 microns in
 diameter) non-fibrous particulate.

FORMALDEHYDE

(Other Applicable Exposure Limits - Continued)

PEL (OSHA)	: 0.75 ppm, 0.92 mg/m ³ , 8 Hr. TWA STEL 2 ppm, 2.5 mg/m ³
TLV (ACGIH)	: Ceiling 0.3 ppm, A2 Sensitizer
AEL * (DuPont)	: 0.5 ppm, 8 & 12 Hr. TWA 1 ppm, 15 minute TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 175-183 C (347-361 F)
Solubility in Water	: Insoluble
Odor	: Slight formaldehyde
Color	: Pigmented.
Form	: Pellets
Specific Gravity	: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Maintain polymer melt temperatures below 230 C (446 F). Avoid prolonged exposure at or above the recommended processing temperatures.

Incompatibility with Other Materials

Incompatible with strong acids and bases (decomposes forming formaldehyde) and strong oxidizing agents. At melt temperatures, acetal resins are incompatible with halogenated polymers such as PVC and PVDC and any elastomers containing halogenated polymers. Even small amounts of such contaminants can cause sudden and spontaneous formaldehyde gas formation. Workplace fume concentrations well above threshold levels are a likely result. Unsafe pressurization of equipment, e.g., extruders, molds, can also result.

Do not contaminate either virgin resin or rework. Do not mix this resin with pigments or additives other than those designated by DuPont. Do not mix this grade with other grades of Delrin, nor with any other resins, without first consulting DuPont. Doing any of the above may change the thermal stability of this resin and potentially cause decomposition.

(STABILITY AND REACTIVITY - Continued)

Decomposition

Decomposition of this material depends on the length of time it is exposed to elevated temperatures. At the recommended processing temperature of 210-220 C (410-428 F), decomposition should not be significant until after 30 minutes. Decomposition may be accelerated by contaminants, pigments, and/or other additives.

Autoclaving with pressurized steam may lead to a rapid decomposition and should be done for only minimum amounts of time. COOL COMPLETELY BEFORE OPENING the autoclave.

Hazardous gas/vapor produced is formaldehyde.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Delrin
Inhalation 6 hour LC50: > 22,000 mg/m3 in rats
Oral LD50: > 11,000 mg/kg in rats

Delrin is not a skin irritant, and is not a skin sensitizer in animals.

Single or repeated inhalation exposures to high concentrations of Delrin dust resulted in collapse of some areas of the lungs, other areas were over-inflated. This effect was seen as late as 11-19 days post-exposure.

No toxic effect were observed in animals ingesting Delrin.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

(TOXICOLOGICAL INFORMATION - Continued)

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewars.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

(FIRST AID MEASURES - Continued)

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point

: Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are nitrogen oxides, carbon monoxide, carbon dioxide, traces of hydrogen cyanide, styrene.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"CRASTIN" THERMOPLASTIC POLYESTER RESINS ALL IN SYNONYM LIST

CRA029

PEL (OSHA)

: Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS

PEL (OSHA)

TLV (ACGIH)

AEL * (DuPont)

: None Established
: 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
: 5 mg/m³ total dust - 8 Hr. TWA, non-
respirable fiber (> 3 microns in
diameter) non-fibrous particulate.

CARBON BLACK

PEL (OSHA)

TLV (ACGIH)

AEL * (DuPont)

: 3.5 mg/m³, 8 Hr. TWA
: 3.5 mg/m³, 8 Hr. TWA, A4
: 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
Aromatic Hydrocarbon Content <0.1%)
Includes Channel, Lamp, and Thermal
Black

STYRENE

PEL (OSHA)

TLV (ACGIH)

AEL * (DuPont)

: 100 ppm, 8 Hr. TWA
200 ppm, Ceiling
600 ppm - 5 Min. Max
: 20 ppm, 85 mg/m³, 8 Hr. TWA, A4
STEL 40 ppm, 170 mg/m³, A4
: 20 ppm, 8 & 12 Hr. TWA
40 ppm, 15 minute TWA

ACRYLONITRILE

PEL (OSHA)

TLV (ACGIH)

AEL * (DuPont)

: 2 ppm, 8 Hr. TWA, Skin
10 ppm, 15 Ceiling
: 2 ppm, 8 Hr. TWA, Skin, A3
: 0.5 ppm, 8 & 12 Hr. TWA, Skin
2.0 ppm, 15 minute TWA, Skin

BUTYL ACRYLATE

(Other Applicable Exposure Limits - Continued)

PEL (OSHA)	: None Established
TLV (ACGIH)	: 2 ppm, 8 Hr. TWA, A4, SEN
AEL * (DuPont)	: 2 ppm, 8 & 12 Hr. TWA, Skin

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 220-228 C (428-442 F)
Solubility in Water	: Insoluble
Odor	: None
Form	: Pellets
Specific Gravity	: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 572 F (300 C) .

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

The recommended melt temperature range when processing the materials is 464-500 F (240-260 C). At temperatures above 572 F (300 C) the resins may liberate carbon monoxide, aldehydes, tetrahydrofuran, aromatic compounds, styrene, acrylonitrile, or butyl acrylate.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polybutylene Terephthalate
Rats exposed to combustion products exhibited signs of carbon monoxide intoxication.

No animal data are available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of Polybutylene Terephthalate.

Fiber Glass
Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect

(TOXICOLOGICAL INFORMATION - Continued)

of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS-----
Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION-----
Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION-----
U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

(REGULATORY INFORMATION - Continued)

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Styrene (<0.015%), acrylonitrile, butyl acrylate (<0.012%).

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- carbon black.

OTHER INFORMATION-----
Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

Page 1

DuPont
Material Safety Data Sheet

"CRASTIN" THERMOPLASTIC POLYESTER RESINS ON CRA008
Revised 4-AUG-2005

CRA008

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"CRASTIN" is a registered trademark of DuPont.

Tradenames and Synonyms

"CRASTIN" SK601 BK851,
"CRASTIN" SK601 NC010,
"CRASTIN" SK602 BK503,
"CRASTIN" SK602 BK851,
"CRASTIN" SK602 BKB600,
"CRASTIN" SK602 BKB602,
"CRASTIN" SK602 BNB643,
"CRASTIN" SK602 BNB656,
"CRASTIN" SK602 BNB656,
"CRASTIN" SK602 GN558,
"CRASTIN" SK602 GY659,
"CRASTIN" SK602 GYB659,
"CRASTIN" SK602 GYB807,
"CRASTIN" SK602 NC010,
"CRASTIN" SK602 RDB570,
"CRASTIN" SK602 RD576,
"CRASTIN" SK602 RDB576,
"CRASTIN" SK603 BK503,
"CRASTIN" SK603 BK851,
"CRASTIN" SK603 NC010,
"CRASTIN" SK605 BK503,
"CRASTIN" SK605 BK851,
"CRASTIN" SK605 BKB609,
"CRASTIN" SK605 GY802,
"CRASTIN" SK605 GYB802,
"CRASTIN" SK605 NC010

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS
Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

# Components	CAS Number	%
Material		
POLYBUTYLENE TEREPHTHALATE	30965-26-5	>65
FIBERGLASS		5-40
COLORANTS, LUBRICANTS, STABILIZERS		<2
CARBON BLACK	1333-86-4	0-1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

POLYBUTYLENE TEREPHTHALATE

Eye contact with Polybutylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Decomposition products caused by overheating Polybutylene Terephthalate may cause skin, eye or respiratory tract irritation.

FIBER GLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

CRA008

DuPont
Material Safety Data Sheet

(HAZARDS IDENTIFICATION - Continued)

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

IARC	NTP	OSHA	ACGIH
2B			

Material
CARBON BLACK

FIRST AID MEASURES**First Aid****INHALATION**

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point

: Not Applicable

Fire and Explosion Hazards:

Combustible. Hazardous gases/vapors produced in fire are carbon monoxide.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

CRA008

DuPont
Material Safety Data Sheet

Exposure Limits
 "CRASTIN" THERMOPLASTIC POLYESTER RESINS ON CRA008
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS : None Established
 PEL (OSHA) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 TLV (ACGIH) A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

CARBON BLACK : 3.5 mg/m³, 8 Hr. TWA
 PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA, A4
 TLV (ACGIH) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%)
 AEL * (DuPont) Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 220-228 C (428-442 F)
 Solubility in Water : Insoluble
 Odor : None
 Form : Pellets
 Specific Gravity : >1

 STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 570 F (299 C) . Abnormally long processing time or high temperatures can produce irritating and toxic fumes.

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including carbon monoxide, aldehydes, tetrahydrofuran.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polybutylene Terephthalate
Rats exposed to combustion products exhibited signs of carbon monoxide intoxication.

No animal data are available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of Polybutylene Terephthalate.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

(TOXICOLOGICAL INFORMATION - Continued)

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS-----
Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION-----
Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

MATERIAL SAFETY DATA SHEET

SECTION 1 Chemical Product and Manufacturer's Identification

Chemical Name and Synonyms:	Polyvinyl Butyral Interlayer Film(PVB Film)	
Trade Name:	WINLITE	
Chemical Family:	Plastic Interlayer	
Chemical Formula:		
Supplier Information:	Chang Chun Petrochemical Co., Ltd 301 Songkiang Road, 7 th Fl., Taipei, Taiwan, 10477 Tel: 886-2-25038131, 886-2-25001800 Fax: 886-2-25033378	
Issue Date : Feb. 4, 2008	Revised Date :	Version : 1.0

SECTION 2 Hazards Identification

Inhalation:	No more than slightly toxic if inhaled.
Ingestion:	No more than slightly toxic if swallowed.
Skin Contact:	No more than slightly irritating to skin.
Eye Contact:	No more than slightly irritating to eyes.

SECTION 3 Composition / Information on Ingredients

Ingredient	CAS No	Percent
Polyvinyl Butyral	63148-65-2	70~80 %
Adipic Acid ether ester	141-17-3	30~20 %

Emergency Overview

CAUTION! May form combustible dust concentrations in air. Nuisance dust.

Potential Health Effects

SECTION 4. First Aid Measures

Inhalation:	Immediate first aid is not likely to be required. Seek medical advice if irritation develops.
Ingestion:	Immediate first aid is not likely to be required. Seek medical advice if irritation develops.
Skin Contact:	Immediate first aid is not likely to be required. This material can be removed with water.
Eye Contact:	Immediate first aid is not likely to be required. This material can be removed with water.

SECTION 5 Fire Fighting Measures

Flammable properties:
Flammable limits in air, % by volume: Upper: Not Applicable ; Lower: Not Applicable. Auto ignition temperature: Not Applicable
Fire: None know
Explosion: None know
Fire Extinguishing Media:
Water spray, dry chemical, alcohol foam or Carbon Dioxide.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

SECTION 6. Accidental Release Measures

Personal precautions : Use personal protection recommended in section 8
Environmental precautions : None
Methods for cleaning up : In case of spill, sweep, scoop or vacuum and remove. Flush residual spill area with water

SECTION 7. Handling and Storage

Handing :
Handing in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from skin and eyes.
Storage :
Storage in below 25°C. Storage in a clean, dry place.

SECTION 8. Exposure Controls/Personal Protection

Airborne Exposure Limits :
No specific exposure limits has been established.
Ventilation System:
No special requirement.
Personal Respirators:
This material is not likely to present an airborne exposure concern under normal condition of use. Use approved respiratory protection equipment when airborne exposure is excessive.
Eye Protection: Use chemical safety goggles to avoid eye contact.
Skin Protection: Wear protective gloves and clean body-covering clothing.

SECTION 9. Physical and Chemical Properties

Appearance:	Translucent flexible plastic Film
Odor:	Mild.

Solubility	Insoluble in water.
Specific Gravity	1.07
pH	Not Applicable.
Boiling Point	Not Applicable.
Melting Point	60~100°C
Vapor Density (Air=1)	Not Applicable.
Vapor Pressure (mm Hg):	Not Applicable.
Evaporation Rate (BuAc=1)	Not Applicable.

SECTION 10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: acrolein ; butyraldehyde ; butyric acid ; crotonaldehyde; carbon monoxide(CO) ; adipic acid

Hazardous Polymerization: Does not occur.

Incompatibilities: Strong oxidizers.

Conditions to Avoid: Heat, flame, ignition sources, and incompatibles.

SECTION 11. Toxicological Information

Polyvinyl butyral :

Oral LD50, rat, > 10,000 mg/kg; practically nontoxic to animals by ingestion.
Dermal LD50, rabbit >7,940 mg/kg; practically nontoxic after skin application at animal studies.

Skin irritation: Slightly irritating to rabbit skin.
Eye irritation : Slightly irritating to rabbit eyes.

Carcinogenicity: Polyvinyl Butyral is not classifiable as to (its) carcinogenicity in humans".

Reproductive/Developmental Effects: No information available.
Repeated Exposure : No information available.

SECTION 12. Ecological Information

Ecotoxicity : No information available.

Environmental Fate/Biodegradation: No information available.

SECTION 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Dispose of as a non-hazardous solid waste.

SECTION 14. Transport Information

This product is not classified as dangerous goods according to the international regulations for transport by land, inland waterway, sea and air.

SECTION 15. Regulatory Information

Chemical Inventory Status				
Ingredient\Area	TSCA	EC	Japan	Australia
Polyvinyl Butyral	Yes	No	Yes	Yes

SECTION 16. Other Information

NFPA Ratings: Health: 0, Flammability: 1, Reactivity: 0
Label Hazard Warning:

Disclaimer:

Chang Chun Petrochemical Co., Ltd provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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PLEXIGLAS® G ACRYLIC SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Inc.
2000 Market Street
Philadelphia, Pennsylvania 19103

Altuglas International

Customer Service Telephone Number: (800) 523-1532
(Monday through Friday, 8:30 AM to 5:30 PM EST)

Emergency Information

Transportation:

CHEMTREC: (800) 424-9300
(24 hrs., 7 days a week)

Medical:

Rocky Mountain Poison Center: (303) 623-5716
(24 hrs., 7 days a week)

Product Information

Product name:

PLEXIGLAS® G ACRYLIC SHEET

Synonyms:

Not available

Molecular formula:

Not available

Chemical family:

acrylic copolymer

Product use:

Special applications, in general

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: clear
Physical state: solid
Form: sheets
Odor: odourless

CAUTION!
PROCESSING MAY RELEASE VAPORS AND/OR FUMES WHICH CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

Potential Health Effects

Primary routes of exposure:
Inhalation and skin contact.

Signs and symptoms of acute exposure:

High molecular weight polymer. The product, in the form supplied, is not anticipated to produce significant adverse human health effects. Product dust may be irritating to eyes, skin and respiratory system. Effects due to processing releases: Irritating to eyes, respiratory system and skin. Inhalation of fume may cause flu-like symptoms. (severity of effects depends on extent of exposure) Prolonged or repeated exposure may cause: headache, drowsiness, nausea, weakness.

Remarks:

PLEXIGLAS® G ACRYLIC SHEET

Handle in accordance with good industrial hygiene and safety practice. (sheets) Secondary operations, such as grinding, sanding or sawing, can produce dust which may present a respiratory hazard. This product may release fume and/or vapor of variable composition depending on processing time and temperature.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	OSHA Hazardous
Polymethyl methacrylate copolymers	Proprietary*	99 - 100 %	N

The substance(s) marked with a "Y" in the Hazard column above, are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

*The specific chemical identity is withheld because it is trade secret information of Arkema Inc.

While this material is not classified as hazardous under Federal OSHA regulations, this MSDS contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and available for employees and other users of this product.

4. FIRST AID MEASURES

Inhalation:
If inhaled, remove to fresh air.

Skin:
In case of contact, immediately flush skin with plenty of water. If molten polymer gets on the skin, cool rapidly with cold water. Do not peel solidified product off the skin. Obtain medical treatment for thermal burns. Remove material from clothing. Wash clothing before reuse.

Eyes:
Immediately flush eye(s) with plenty of water. Obtain medical treatment for thermal burns.

Ingestion:
If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Flash point not applicable
Auto-ignition temperature: 860 °F (460 °C)
Lower flammable limit (LFL): not applicable
Upper flammable limit (UFL): not applicable
Extinguishing media (suitable):
 Dry chemical, water spray, carbon dioxide, foam
Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:
Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:
Heated material can form flammable vapors with air.

6. ACCIDENTAL RELEASE MEASURES

In case of spill or leak:
Pick up and transfer to properly labelled containers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling

General information on handling:
Avoid breathing processing fumes or vapors.
Avoid breathing dust.
Handle in accordance with good Industrial hygiene and safety practices.
These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing.

Storage

General information on storage conditions:
Avoid extreme temperatures.

Storage incompatibility – General:
Store away from sources of heat and light.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

2-Propenoic acid, 2-methyl-, methyl ester (80-62-8)

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA):	50 ppm
Short Term Exposure Limit (STEL):	100 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL:	100 ppm (410 mg/m ³)
------	----------------------------------

PLEXIGLAS® G ACRYLIC SHEET

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantify exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:
Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Respiratory protection:
Avoid breathing processing fumes or vapors. Avoid breathing dust. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components and substances released during processing. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:
Processing of this product releases vapors or fumes which may cause skin irritation. Minimize skin contamination by following good industrial hygiene practice. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after contact with processing fumes or vapors. Wash thoroughly after handling.

Eye protection:
Processing of this product releases vapors or fumes which may cause eye irritation. Use good industrial practice to avoid eye contact. Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	clear
Physical state:	solid
Form:	sheets
Odor:	odourless
pH:	not applicable
Density:	not applicable
Vapor pressure:	not applicable
Vapor density:	not applicable
Boiling point/boiling range:	not applicable
Freezing point:	not applicable

Melting point/range: not applicable
Solubility in water: insoluble
% Volatiles: 0 %

10. STABILITY AND REACTIVITY

Stability:
The product is stable under normal handling and storage conditions

Hazardous reactions:
Hazardous polymerization does not occur.

Materials to avoid:
None under normal conditions of use.

Conditions / hazards to avoid:
Avoid flames, welding arcs, potential ignition sources, or other high temperature sources which induce thermal decomposition.

Hazardous decomposition products:
Thermal decomposition may yield acrylic monomers. Thermal decomposition begins to generate monomer vapor at >570F (>300 C).

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for Polymethyl methacrylate copolymers (Proprietary)

Acute toxicity

Oral:
Practically nontoxic. (rat) LD50 = 8,000 mg/kg. (similar material)

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, human cells

Genotoxicity

Assessment In Vivo:
No genetic changes were observed in laboratory tests using: animals

Other information

Biocompatibility testing for this polymer or its extracts has generally shown that the material is inert.

Human experience

PLEXIGLAS® G ACRYLIC SHEET

Skin contact:
Skin: Irritant but not a sensitizer. Mechanical irritation. (studied using human volunteers)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway
No data are available.

Ecotoxicology
No data are available.

13. DISPOSAL CONSIDERATIONS

Waste disposal:
Where possible recycling is preferred to disposal or incineration. If recycling is not an option, incinerate or dispose of in accordance with federal, state, and local regulations. Pigmented, filled and/or solvent laden product may require special disposal practices in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT): not regulated

International Maritime Dangerous Goods Code (IMDG): not regulated

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Does not conform
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.
Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	DSL	All components of this product are on the Canadian DSL list.
Japan. Kashin-Hou Law List	ENCS (JP)	Conforms to
Korea. Toxic Chemical Control Law (TCCL) List	KECI (KR)	Conforms to

PLEXIGLAS® G ACRYLIC SHEET

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Conforms to
China. Inventory of Existing Chemical Substances	IECSC (CN)	Conforms to
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	NZIOC	Does not conform

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA Title III - Section 311/312 Hazard Categories:
No SARA Hazards

SARA Title III – Section 313 Toxic Chemicals:
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

OSHA Regulated Carcinogens (NTP, IARC, OSHA Listed):

NTP:
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC:
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA:
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

United States – State Regulations

Massachusetts Right to Know

No components are subject to the Massachusetts Right to Know Act.

PLEXIGLAS® G ACRYLIC SHEET

New Jersey Right to Know

No components are subject to the New Jersey Right to Know Act.

Pennsylvania Right to Know

Chemical Name
Polymethyl methacrylate copolymers

CAS-No.
Proprietary

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

16. OTHER INFORMATION

Latest Revision(s):

Revised Section(s):	Updated Section 2 and 9
Reference number:	00000036586
Date of Revision:	10/29/2008
Date Printed:	10/29/2008

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The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

Page 1

DuPont
Material Safety Data Sheet

"CRASTIN" THERMOPLASTIC POLYESTER RESINS ALL IN CRA005
CRA005 Revised 2-NOV-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"CRASTIN" is a registered trademark of DuPont.

CAS Name : "CRASTIN" 7131 NC010,

Tradenames and Synonyms

"CRASTIN" 6003 NC010
"CRASTIN" 6125 NC010,
"CRASTIN" 6125 WT592
"CRASTIN" 6129 NC010,
"CRASTIN" 6129 NC010A,
"CRASTIN" 6129C NC010
"CRASTIN" 6129MF NC010,
"CRASTIN" 6129U NC010,
"CRASTIN" 6130 NC010,
"CRASTIN" 6130 NC010A,
"CRASTIN" 6130 NC010B,
"CRASTIN" 6130-186,
"CRASTIN" 6130C NC010,
"CRASTIN" 6131 NC010,
"CRASTIN" 6131B NC010,
"CRASTIN" 6131C NC010,
"CRASTIN" 6131C-183 NC010,
"CRASTIN" 6134 NC010,
"CRASTIN" 6134C NC010,
"CRASTIN" 6136 NC010,
"CRASTIN" 6137 NC010,
"CRASTIN" 6330 NC010,
"CRASTIN" 6330C NC010,
"CRASTIN" 7003 NC010,
"CRASTIN" 7129 NC010,
"CRASTIN" 7130 NC010,
"CRASTIN" 7139 NC010,
"CRASTIN" CE2051 NC010,
"CRASTIN" CE2054 NC010,
"CRASTIN" CE2055 NC010,
"CRASTIN" CE6125L NC010,
"CRASTIN" S600 NC010,
"CRASTIN" S600F10 NC010,
"CRASTIN" S600F20 NC010,
"CRASTIN" S600F20 RDB575,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"CRASTIN" S600F30 NC010,
 "CRASTIN" S600F40 NC010,
 "CRASTIN" S610 GY735,
 "CRASTIN" S610 NC010,
 "CRASTIN" S610 RDB575,
 "CRASTIN" S610 WT592,
 "CRASTIN" S620 NC010,
 "CRASTIN" S620F20 NC010,
 "CRASTIN" XMB6500 NCB010,

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS
 Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

# Components	CAS Number	%
Material	30965-26-5	>97
POLYBUTYLENE TEREPHTHALATE		<2
ANTIOXIDANTS, COLORANTS, LUBRICANTS		

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "CRASTIN" Molding Guide before using this product.

POLYBUTYLENE TEREPHTHALATE

Eye contact with Polybutylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Decomposition products caused by overheating Polybutylene Terephthalate may cause skin, eye or respiratory tract irritation.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Hazardous gases/vapors produced in fire are carbon monoxide.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
"CRASTIN" THERMOPLASTIC POLYESTER RESINS ALL IN CRA005
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 220-228 C (428-442 F)
Solubility in Water : Insoluble
Odor : None
Form : Pellets
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 570 F (299 C) . Abnormally long processing time or high temperatures can produce irritating and toxic fumes.

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including carbon monoxide, aldehydes, tetrahydrofuran.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polybutylene Terephthalate
Rats exposed to combustion products exhibited signs of carbon monoxide intoxication.

No animal data are available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of Polybutylene Terephthalate.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

(REGULATORY INFORMATION - Continued)

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST
PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES
IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
 : DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
 : WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be
reliable. It is subject to revision as additional knowledge and
experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

"RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN006
RYN006 Revised 13-APR-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"RYNITE" is a registered trademark of DuPont.

Tradenames and Synonyms

- "RYNITE" FR530 BK507,
- "RYNITE" FR530 BK507A
- "RYNITE" FR530 BL5003
- "RYNITE" FR530 NC010
- "RYNITE" FR530 NC010A
- "RYNITE" FR530 WT504,
- "RYNITE" FR530L NC010,
- "RYNITE" FR530L NC010A

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

- Product Information : 1-(800)-441-7515
- Transport Emergency : 1-(800)-424-9300
- Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYETHYLENE TEREPHTHALATE	25038-59-9	>35
FIBERGLASS		<40
BROMINATED AROMATIC COMPOUND		<20
PLASTICIZERS, LUBRICANTS, STABILIZERS, ANTIOXIDANTS		<10
PIGMENTS		<10
* SODIUM ANTIMONATE	15432-85-6	<5
* ZINC COMPOUND	1314-98-3	<5
CARBON BLACK	1333-86-4	<1

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Components (Remarks)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

During drying, purging and molding, small amounts of hazardous gases and/or particulate matter may be released. These may be irritating to the eyes, upper respiratory tract and lungs. Cutting, sawing, similar processing can release respirable fibers and respirable dusts.

POLYETHYLENE TEREPHTHALATE

Eye contact with Polyethylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Patch tests with humans resulted in no skin irritation or skin sensitization.

Decomposition products caused by overheating Polyethylene Terephthalate may cause skin, eye or respiratory tract irritation.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

(HAZARDS IDENTIFICATION - Continued)

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

SODIUM ANTIMONATE

The compound is not a skin irritant, is a mild eye irritant, and is untested for animal sensitization. The effects in animals from exposures by inhalation, ingestion, or skin contact have not been determined. No animal test reports are available to define carcinogenic, mutagenic, embryotoxic, or reproductive hazards.

Human health effects of overexposure by inhalation, ingestion, or skin or eye contact may initially include: no acceptable information is available to confidently predict the effects of excessive human exposure to this compound.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

IARC NTP OSHA ACGIH
2B

Material
CARBON BLACK

FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

(FIRST AID MEASURES - Continued)

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Will not burn without external flame. Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are carbon monoxide, hydrogen bromide.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
"RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN006
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYETHYLENE TEREPHTHALATE
PEL (OSHA) : None Established
TLV (ACGIH) : None Established
AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

FIBERGLASS
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

SODIUM ANTIMONATE
PEL (OSHA) : 0.5 mg/m³, 8 Hr. TWA, , as Sb
TLV (ACGIH) : 0.5 mg/m³, compounds as Sb - 8 Hr TWA
AEL * (DuPont) : None Established

CARBON BLACK
PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%)
Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : 250-255 C (482-491 F)
Solubility in Water : Negligible
Odor : None
Form : Pellets
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Reacts with other polymers (polycarbonate, polyacetal, etc.)
at melt temperatures.

Decomposition

Decomposes with heat.

Decomposition temperature: 329 C (624 F)

Hazardous gases or vapors can be released, including carbon
monoxide, aldehydes, and, acrolein.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polyethylene Terephthalate
Oral ALD: > 10,000 mg/kg in rats

Polyethylene Terephthalate is not a skin irritant, but is a mild
eye irritant.

Toxic effects from short exposures by inhalation resulted in no
adverse effects.

Toxic effects from short exposures by ingestion resulted in no
adverse effects.

Animal testing indicates that Polyethylene Terephthalate does not
have carcinogenic, mutagenic, developmental or reproductive
effects.

Fiber Glass

(TOXICOLOGICAL INFORMATION - Continued)

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

(TOXICOLOGICAL INFORMATION - Continued)

SODIUM ANTIMONATE

Inhalation 4 hour LC50: 11.5 mg/L in rats
Skin absorption LD50: no information found
Oral LD50: > 25,000 mg/kg in rats

Slightly toxic by inhalation (4 hour LC50 1,000 - 5,000 ppm;
8 - 40 mg/L).
Very low toxicity by ingestion (oral LD50 > 5,000 mg/kg).

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Negligible solubility. Do not
discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration
with energy recovery, and (3) landfill. The high fuel value of
this product makes option 2 very desirable for material that
cannot be recycled, but incinerator must be capable of scrubbing
out acidic combustion products. Treatment, storage,
transportation, and disposal must be in accordance with applicable
federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory
requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

DuPont
Material Safety Data Sheet

(REGULATORY INFORMATION - Continued)

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon Black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Antimony Compound, Zinc Compound, Carbon Black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

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DuPont
Material Safety Data Sheet

"RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN018A
RYN018A Revised 28-JUL-2006

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"RYNITE" is a registered trademark of DuPont.

Tradenames and Synonyms

"RYNITE" FR515 BK507, FR515 BK507R,
"RYNITE" FR515 BK556, FR515 BKB556,
"RYNITE" FR515 BK557, FR515 BKB557,
"RYNITE" FR515 BL560, FR515 BLB560,
"RYNITE" FR515 BN577, FR515 BNB577,
"RYNITE" FR515 BN578, FR515 BNB578,
"RYNITE" FR515 BN579, FR515 BNB579,
"RYNITE" FR515 BN590, FR515 BNB590,
"RYNITE" FR515 BN591, FR515 BNB591,
"RYNITE" FR515 GN551, FR515 GNB551,
"RYNITE" FR515 GY646, FR515 GYB646,
"RYNITE" FR515 GY647, FR515 GYB647,
"RYNITE" FR515 GY648, FR515 GYB648,
"RYNITE" FR515 GY649, FR515 GYB649,
"RYNITE" FR515 GY650, FR515 GYB650,
"RYNITE" FR515 GY651, FR515 GYB651,
"RYNITE" FR515 GY652, FR515 GYB652,
"RYNITE" FR515 GY653, FR515 GYB653,
"RYNITE" FR515 GY656, FR515 GYB656, FR515 GY685,
"RYNITE" FR515 NC010, FR515 RD525, FR515 RDB525,
"RYNITE" FR515 WT504,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYETHYLENE TEREPHTHALATE	25038-59-9	>50
GLASS FIBER		15
BROMINATED AROMATIC COMPOUND		<20
PLASTICIZERS, LUBRICANTS, STABILIZERS, ANTIOXIDANTS		<10
*ANTIMONY OXIDE	1309-64-4	<3
PIGMENTS, ETC		<5
* ZINC COMPOUND (IN WT, GY & GYB ONLY)	1314-98-3	<5

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Components (Remarks)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "Rynite" Molding Guide before using this product.

During drying, purging and molding, small amounts of hazardous gases and/or particulate matter may be released. These may be irritating to the eyes, upper respiratory tract and lungs.

Cutting, sawing, similar processing can release respirable fibers and respirable dusts.

POLYETHYLENE TEREPHTHALATE

Eye contact with Polyethylene Terephthalate particles may cause mechanical irritation with discomfort, tearing, or blurring of vision.

Patch tests with humans resulted in no skin irritation or skin sensitization.

(HAZARDS IDENTIFICATION - Continued)

Decomposition products caused by overheating Polyethylene Terephthalate may cause skin, eye or respiratory tract irritation.

GLASS FIBER

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

ANTIMONY OXIDE

Short-term overexposure by inhalation may cause irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath. Repeated and/or prolonged exposure by inhalation may cause chronic respiratory irritation which may progress to abnormal tissue structure or scarring; impaired lung function and breathing difficulty may result.

Human experience or case reports on skin contact have identified the following effects from overexposure to Antimony Trioxide; skin irritation with itching, burning, redness, swelling or rash. Antimony Trioxide has been infrequently associated with skin sensitization in humans. Prolonged skin contact may cause pustular dermatitis.

Eye contact with Antimony Trioxide may cause irritation with tearing, pain or blurred vision.

Short-term overexposure to Antimony Trioxide by ingestion or by inhalation may cause non-specific effects such as headache, nausea and weakness, vomiting, joint or muscle pain, or dizziness.

Increased susceptibility to the effects of Antimony Trioxide may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

(HAZARDS IDENTIFICATION - Continued)

IARC NTP OSHA ACGIH
2BMaterial
ANTIMONY OXIDE-----
FIRST AID MEASURES

First Aid

INHALATION
No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT
The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION
No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Will not burn without external flame. Hazardous gases/vapors produced in fire are carbon monoxide, hydrogen bromide.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Sweep up to avoid slipping hazard. If molten, allow to freeze. Recover undamaged and minimally contaminated material for reuse and reclamation. Shovel or sweep up.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a clean, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"RYNITE" THERMOPLASTIC POLYESTER RESINS ON SYNONYM LIST RYN018A
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYETHYLENE TEREPHTHALATE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

GLASS FIBER
 PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

ANTIMONY OXIDE

(Other Applicable Exposure Limits - Continued)

PEL (OSHA)	: 0.5 mg/m ³ , as Sb, 8 Hr. TWA
TLV (ACGIH)	: 0.5 mg/m ³ , handling and use as Sb Antimony Trioxide Production, A2 8 Hr TWA
AEI * (DuPont)	: 0.2 mg/m ³ , 8 Hr. TWA, as Sb 0.1 mg/m ³ , 12 Hr. TWA, as Sb

* AEI is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEI are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: >200 C (>392 F)
Solubility in Water	: Negligible
Odor	: None
Form	: Pellets
Specific Gravity	: >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with Reacts with other polymers, such as, polycarbonate and polyacetal, at melt temperatures.

Decomposition

Decomposes with heat.

Decomposition temperature: 329 C (624 F)

Hazardous gases or vapors can be released, including carbon monoxide, aldehydes, acrolein.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Polyethylene Terephthalate
Oral ALD: > 10,000 mg/kg in rats

Polyethylene Terephthalate is not a skin irritant, but is a mild eye irritant.

Toxic effects from short exposures by inhalation resulted in no adverse effects.

Toxic effects from short exposures by ingestion resulted in no adverse effects.

Animal testing indicates that Polyethylene Terephthalate does not have carcinogenic, mutagenic, developmental or reproductive effects.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Antimony Trioxide

Skin Absorption ALD, rat:	2,000 mg/kg
Oral LD50, rat:	> 34,600 mg/kg
Inhalation 4 hour, ALC, rat:	> 2.76 mg/L

Antimony Trioxide is a slight skin irritant, a moderate to severe eye irritant, but is not a skin sensitizer in animals.

Single exposure by ingestion to high doses caused vomiting, diarrhea, and liver effects. Repeated ingestion exposures caused gastrointestinal tract irritation, diarrhea, liver effects, and decreased body weight. Long-term exposure caused altered hematology and clinical chemistry, and reduced weight gain.

(TOXICOLOGICAL INFORMATION - Continued)

Single inhalation exposure to high concentrations caused histopathological changes of the lungs. Repeated exposures at lower concentrations caused inflammation of the lungs sometimes accompanied by tissue scarring, liver effects, altered hematology, and reduced weight gain. Long-term exposure caused inflammation of lungs, histopathological changes of the lungs, including tumors, and clouding of the eye (corneal opacity).

Data show an increased incidence of tumors after inhalation of dust by laboratory animals. No adequate animal data are available to define the developmental toxicity of Antimony Trioxide. No animal data are available to define reproductive toxicity. Tests have shown that Antimony Trioxide produces genetic damage in bacterial and mammalian cell cultures, and in animals. More recent tests suggest that Antimony Trioxide is not genotoxic. Antimony Trioxide has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS-----
Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION-----
Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Antimony oxide, zinc compound (in WT, GY & GYB only).

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Antimony oxide.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Antimony oxide, zinc compound (in WT, GY and GYB only).

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
Wilmington, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"SURLYN" IONOMER RESIN ALL IN SYNONYM LIST SUR002
SUR002 Revised 27-JUL-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"SURLYN" is a registered trademark of DuPont.

Tradenames and Synonyms

"SURLYN" AD1078,
"SURLYN" AD1082-1, AD1082-2,
"SURLYN" AD8110SB, AD8112, AD8134SB, AD8137SBR,
"SURLYN" AD8281SB, AD8396-2,
"SURLYN" AD8427-1, AD8458, AD8464-1, AD8464-2,
"SURLYN" AD8464-3,
"SURLYN" AD8469, AD8470, AD8514, AD8541,
"SURLYN" AD8545, AD8547, AD8563, AD8569, AD8575, AD8579,
"SURLYN" AE1005-1, AE1005-2,
"SURLYN" AE1007, AE1007-1,
"SURLYN" AE1010-1, AE1010-2,
"SURLYN" BR1650, BR1702, BR8554,
"SURLYN" E185SB, EL1-E, IP-05,
"SURLYN" LS420, LS424, LS426, LTAD8111,
"SURLYN" PG1000, PK101,
"SURLYN" RX1652-1, RX3739, RX3739-1, SPF-1, SPF-2,
"SURLYN" TP1, WP1, 1554P, 1557, 1650, 1650B, 1650-E,
"SURLYN" 1650SB, 1650SB-V,
"SURLYN" 1652, 1652-1, 1652-E, 1652-1HS, 1652R, 1652R-1,
"SURLYN" 1652SB, 1652SB-CT, 1652SB-1, 1652SBR, 1652SR,
"SURLYN" 1652SB-E, 16526R-E,
"SURLYN" 1702, 1702-1, 1702HM, 1702LM, 1702SBR,
"SURLYN" 1702SBR-1, 1705, 1705-1, 1706, 1706B, 1706-E,
"SURLYN" 1801, 1825, 1855, 1857,
"SURLYN" 8110SB-V, 8396-2,
"SURLYN" 9010, 9120, 9150, 9220, 9450, 9455,
"SURLYN" 9520, 9520P, 9520W,
"SURLYN" 9533, 9650, 9650-S, 9720, 9721, 9722, 9730,
"SURLYN" 9910, 9910-E, 9910J, 9910BS, 9945, 9945J, 9950, #
"SURLYN" 9970, 9970FB, 9970P, 9975,

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont Packaging & Industrial Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
ETHYLENE/METHACRYLIC ACID COPOLYMERS, PARTIAL ZINC SALT *ZINC COMPOUNDS	7440-66-6	>99 <5

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Before using "SURLYN" Packaging Resins, read the bulletin on the safe handling of these polymers.

No information available for this "SURLYN" Ionomer Resin or for the ethylene copolymer partial metal salt. Based on its similarity to other polymers, this "SURLYN" resin is predicted to have low toxicity.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact but cleansing the skin after use is advisable.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion. Consult a physician if necessary.

FIRE FIGHTING MEASURES

Flammable Properties

Hazardous gases/vapors produced in fire are carbon monoxide, hydrocarbon oxidation products, including organic acids, aldehydes, alcohols, and zinc or sodium oxides.

Fire and Explosion Hazards:

The solid polymer can be combusted only with difficulty.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

Use self-contained breathing apparatus if exposed to fumes.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Recover undamaged and minimally contaminated material for reuse and reclamation.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Storage

Store in a cool, dry place. Keep container closed to prevent contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION: Local ventilation should be used over processing equipment.

Personal Protective Equipment

EYE/FACE PROTECTION

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material. A full face mask respirator provides protection from eye irritation.

RESPIRATORS

A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge with a dust/mist canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Exposure Guidelines

Exposure Limits

"SURLYN" IONOMER RESIN ALL IN SYNONYM LIST SUR002
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: 80-100 C (176-212 F)
% Volatiles	: Negligible
Solubility in Water	: Negligible
Odor	: Mild methacrylic acid
Form	: Pellets
Color	: White or pigmented
Specific Gravity	: NA

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with oxidizing agents.

Decomposition

Decomposes with heat.

Decomposition temperature: 325 C (617 F)

Hazardous gases or vapors can be released, including carbon monoxide, and, hydrocarbon oxidation products, including, organic acids, aldehydes, and, alcohols.

Polymerization

Polymerization will not occur.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT
Proper Shipping Name : Not regulated

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : T. P. PRICE
DUPONT PACKAGING & INDUSTRIAL POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4664

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

 "ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT002
 ZYT002 Revised 14-MAY-2007

 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

- "ZYTEL" 80G25HS BK117,
- "ZYTEL" 80G25HS NC010,
- "ZYTEL" 80G33HS1L BK104W,
- "ZYTEL" 80G33HS1L BKB010,
- "ZYTEL" 80G33HS1L NC010,
- "ZYTEL" 80G33HS1L NC010W,
- "ZYTEL" 80G33L BKB151,
- "ZYTEL" 80G33L NC010,
- "ZYTEL" 80G43HS1L BKB010,
- "ZYTEL" FE380005 BK151,
- "ZYTEL" FE380006 BKB521,

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

- Product Information : 1-(800)-441-7515
- Transport Emergency : 1-(800)-424-9300
- Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)	32131-17-2	>45
GLASS FIBER		20-45
TOUGHENER		<20
LUBRICANTS, STABILIZERS, AND PIGMENTS		<5
CARBON BLACK	1333-86-4	0-2

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "ZYTEL" Molding Guide before using this product.

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

GLASS FIBER

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

(HAZARDS IDENTIFICATION - Continued)

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material CARBON BLACK	IARC NTP OSHA ACGIH 2B
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FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, and, aldehydes.

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT002

PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)

PEL (OSHA) : None Established
TLV (ACGIH) : None Established
AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

GLASS FIBER

PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-
respirable fiber (> 3 microns in
diameter) non-fibrous particulate.

CARBON BLACK

PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
Aromatic Hydrocarbon Content <0.1%)
Includes Channel, Lamp, and Thermal
Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
Solubility in Water : Insoluble
Odor : None
Form : Pellets.
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

(STABILITY AND REACTIVITY - Continued)

Incompatibility with Other Materials

Incompatible or can react with strong acids, strong oxidizers.

Decomposition

HAZARDOUS DECOMPOSITION PRODUCTS - cyclopentanone, carbon monoxide, aldehydes.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66
Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

(TOXICOLOGICAL INFORMATION - Continued)

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS-----
Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- Carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS

ZYT002

DuPont
Material Safety Data Sheet

Page 10

(Continued)

Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

 "ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT005
 Revised 14-MAY-2007

 ZYT005

 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

- "ZYTEL" 72G33L BK031,
- "ZYTEL" 72G33L BKB217,
- "ZYTEL" 72G33L BKB292,
- "ZYTEL" 72G33L GYB450,
- "ZYTEL" 72G33L GYB500,
- "ZYTEL" 72G33L GYB569.
- "ZYTEL" 72G33L NC010,
- "ZYTEL" 72G33L RDB238,
- "ZYTEL" 72G33L RDB315,

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS
 Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLY(HEXAMETHYLENE ADIPAMIDE/CAPROLACTAM)	24993-04-2	>65
GLASS FIBERS		<35
COLORANTS, LUBRICANTS, STABILIZERS	105-60-2	<4
CAPROLACTAM		<1

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Decomposes with heat.

Decomposition temperature: 340 C (644 F)

Hazardous gases or vapors can be released, including caprolactam, cyclopentanone, carbon monoxide.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

(TOXICOLOGICAL INFORMATION - Continued)

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

ECOLOGICAL INFORMATION-----
Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewars.

DISPOSAL CONSIDERATIONS-----
Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION-----
Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION-----
U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

(REGULATORY INFORMATION - Continued)

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION-----
Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" NYLON RESINS ON SYNONYM LIST ZYT005A
ZYT005A Revised 14-MAY-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" 72G13L BJB388,
"ZYTEL" 72G33L BKB224,
"ZYTEL" 72G33L BLB322,
"ZYTEL" 72G33L BLB324,
"ZYTEL" 72G33L BNB264,
"ZYTEL" 72G33L BNB265,
"ZYTEL" 72G33L BNB270,
"ZYTEL" 72G33L BNB275,
"ZYTEL" 72G33L BNB276,
"ZYTEL" 72G33L GNB254,
"ZYTEL" 72G33L GYB321,
"ZYTEL" 72G33L GYB345,
"ZYTEL" 72G33L GYB406,
"ZYTEL" 72G33L GYB408,
"ZYTEL" 72G33L GYB429,
"ZYTEL" 72G33L GYB453,
"ZYTEL" 72G33L GYB484,
"ZYTEL" 72G33L GYB486,
"ZYTEL" 72G33L RDB202,
"ZYTEL" 72G33L RDB205,
"ZYTEL" 72G33L WTB187,
"ZYTEL" 72G33HS1L BK159

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
	24993-04-2	>65
POLY (HEXAMETHYLENE ADIPAMIDE/CAPROLACTAM)		<35
FIBERGLASS		<4
COLORANTS, LUBRICANTS, STABILIZERS	105-60-2	<1
CAPROLACTAM		

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

No data are available. Based on similarity to other chemically related polymers, the base polymer in the products listed on the MSDS is predicted to have low toxicity by ingestion, skin contact or inhalation. Fumes generated by overheating or during processing may cause irritation of eyes, nose and throat, with redness, itching, and coughing.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

No special instructions.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.
Sweep up to avoid slipping hazard.

Accidental Release Measures

Sweep up to prevent a slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination. Store away from ignition sources, combustibles.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
"ZYTEL" NYLON RESINS ON SYNONYM LIST ZYT005A
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

FIBERGLASS
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

CAPROLACTAM

(Other Applicable Exposure Limits - Continued)

PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, Aerosol, & vapor, A5
 AEL * (DuPont) : None Established

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
 Solubility in Water : Insoluble
 Odor : None
 Form : Pellets
 Specific Gravity : >1

 STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

Incompatibility with Other Materials

Incompatible or can react with strong acids, and, oxidizing agents.

Decomposition

HAZARDOUS DECOMPOSITION PRODUCTS - cyclopentanone, carbon monoxide, aldehydes, and, ammonia.

Polymerization

Polymerization will not occur.

 ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" RESINS ON SYNONYM LIST ZYT005B
ZYT005B Revised 16-SEP-2004

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" 74G20HSL BK185;
"ZYTEL" 74G33W BK196;
"ZYTEL" 74G43W BK196

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE	32131-17-2	>40
POLYCAPROLACTAM	25038-54-4	<30
GLASS FIBERS		<43
CAPROLACTAM	105-60-2	<2
CARBON BLACK	1333-86-4	<1
COLORANTS, LUBRICANTS, STABILIZERS		<2

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read "ZYTEL" Molding Guide before using this product.

POLYHEXAMETHYLENE ADIPAMIDE

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

POLYCAPROLACTAM

Eye contact with Nylon 6 particles may cause eye irritation with discomfort, tearing, or blurring of vision.

Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

FIBERGLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CAPROLACTAM

(HAZARDS IDENTIFICATION - Continued)

Human experience or case reports have identified the following potential effects from overexposure by inhalation to Caprolactam: irritation of the nose and throat with sneezing, sore throat, dry throat or runny nose; irritation of the gastrointestinal tract with heartburn or discomfort; liver abnormalities; central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness; convulsions; nosebleed; or bitter taste. Repeated and/or prolonged inhalation may cause central nervous system abnormalities. Less frequently, liver abnormalities have been reported. Exposure to Caprolactam fumes or dust may cause concentration-related increases in skin, eye, and upper respiratory tract irritation.

Human experience or case reports have identified the following potential effects from overexposure by skin contact with Caprolactam: skin irritation with itching, burning, redness, swelling or rash; dermatitis with itching or rash; or skin sensitization. By itself 5% Caprolactam showed no clear evidence of dermatitis; however, skin sensitization has been reported in Caprolactam manufacturing facilities. Skin permeation may occur in amounts capable of producing the effects of systemic toxicity.

Eye contact with Caprolactam may cause eye irritation with tearing, pain or blurred vision. Prolonged or high exposure may cause corneal damage.

Increased susceptibility to the effects of this material may be observed in persons with pre-existing disease of the central nervous system.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

(HAZARDS IDENTIFICATION - Continued)

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK				2B

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, and, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

(FIRE FIGHTING MEASURES - Continued)

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Recover undamaged and minimally contaminated material for reuse and reclamation. Shovel or sweep up.

HANDLING AND STORAGE

Handling (Personnel)

Avoid breathing dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Avoid dust generation.

Storage

Store in a cool place. Keep container tightly closed.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

EYE/FACE: Safety Glasses.

PROTECTIVE GLOVES: Leather to protect from glass fibers.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

RESPIRATOR: During grinding, sanding, or sawing operations use a NIOSH/MSHA approved air purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

For abnormal processing problems when the possibility exists for spraying of molten material, wear coverall chemical splash goggles and face shield, and heat resistant clothing.

Exposure Guidelines

Exposure Limits
"ZYTEL" RESINS ON SYNONYM LIST ZYT005B
PEL (OSHA) : Particulates (Not Otherwise Regulated)
15 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits
POLYHEXAMETHYLENE ADIPAMIDE
PEL (OSHA) : None Established
TLV (ACGIH) : None Established
AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
5 mg/m³, 8 Hr. TWA, respirable dust

GLASS FIBERS
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
A4
AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-respirable fiber (> 3 microns in diameter) non-fibrous particulate.

CAPROLACTAM
PEL (OSHA) : None Established
TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, Aerosol, & vapor, A5
AEL * (DuPont) : None Established

CARBON BLACK
PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%)
Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

(TOXICOLOGICAL INFORMATION - Continued)

Nylon 6 is not a skin irritant, but is an eye irritant in animal tests.

Repeated ingestion exposures caused slower rate of weight gain and lower food consumption, but no anatomic injury was observed after exposure ended.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

Caprolactam

Skin Absorption LD50:	1410 mg/kg in rabbits
Oral LD50:	1210 mg/kg in rats
Inhalation 4 hour LC50:	8.1 mg/L in rats (as respirable aerosol)

Caprolactam is a skin irritant, a severe eye irritant, and is a mild skin sensitizer when tested at very high concentrations in animals.

Single dermal exposure to near lethal doses caused edema, and tremors or convulsions.

Single ingestion exposure in rats to near lethal doses caused irritation of the gastrointestinal tract, pathological changes of the brain and liver, tremors or convulsions, and altered liver enzyme activity. Repeated dosing of lower concentrations caused decreased body weight. Effects on kidney function have been observed but were attributable to a reversible physiologic change. Long term exposure caused body weight reductions, reduced food consumption, and anemia.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
Solubility in Water : Insoluble
Odor : None
Form : Pellets
Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Decomposes with heat.

Decomposition temperature: 340 C (644 F)

Hazardous gases or vapors can be released, including caprolactam, cyclopentanone, carbon monoxide.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Nylon 6

Inhalation 0.5 hour LC50: 11,000 mg/m3 in mice
Oral LD50: 3,200 mg/kg in rats

(TOXICOLOGICAL INFORMATION - Continued)

Single inhalation exposure in rats caused nasal/ocular irritation and alterations in blood pressure. Repeated inhalation exposure at high levels caused nasal/ocular irritation, lung and spleen pathology, and abnormal weight gain in rats. At lower levels, respiratory tract irritation with pathological changes in the nose and larynx were observed.

In animal testing Caprolactam has not caused carcinogenicity, developmental or reproductive toxicity.

There are reports indicating that Caprolactam produced genetic damage in some animal or mammalian cell culture tests; however, the majority of in vitro and in vivo reports in the literature show negative results.

CARBON BLACK

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Caprolactam, carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

(REGULATORY INFORMATION - Continued)

The State of California, under Proposition 65, regulates Carbon Black - airborne, unbound particles of respirable size as a carcinogen. In this product, carbon black is not supplied in the form regulated in California.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - Caprolactam, carbon black.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : I. V. BEBENSEE
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements
of the United States and may not meet regulatory requirements
in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT007
ZYT007 Revised 31-AUG-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL", "MARANYL" are registered trademarks of DuPont.

Tradenames and Synonyms

"ZYTEL" 70G30HSL BK099,
"ZYTEL" 70G30HSL BK139,
"ZYTEL" 70G30HSL NC010,
"ZYTEL" 70G30HSLR BK099,
"ZYTEL" 70G30HSLR NC010,
"ZYTEL" 70G30HSR2 BK430,
"ZYTEL" 70G30L NC010,
"ZYTEL" 70G30PSR NC010,
"ZYTEL" 70G33HS1L BK031R,
"ZYTEL" 70G33HS1L BK104TP,
"ZYTEL" 70G33HS1L BKB031,
"ZYTEL" 70G33HS1L BLB299,
"ZYTEL" 70G33HS1L BLB378,
"ZYTEL" 70G33HS1L BLB507,
"ZYTEL" 70G33HS1L GNB239,
"ZYTEL" 70G33HS1L GNB300,
"ZYTEL" 70G33HS1L GYB255,
"ZYTEL" 70G33HS1L GYB265,
"ZYTEL" 70G33HS1L GYB269,
"ZYTEL" 70G33HS1L GYB519,
"ZYTEL" 70G33HS1L GYB522,
"ZYTEL" 70G33HS1L NC010,
"ZYTEL" 70G33HS1L NC010J,
"ZYTEL" 70G33HS1L NC010P,
"ZYTEL" 70G33HS1L YLB192,
"ZYTEL" 70G33HS1L RDB311,
"ZYTEL" 70G33L NC010,
"ZYTEL" 70G35HS1L BK031R,
"ZYTEL" FE5105 NC010,
"ZYTEL" FE5329 NC010,
"ZYTEL" FE5354 BK031,
"ZYTEL" FE5423 NC010,
"ZYTEL" FE5468 NC010,
"ZYTEL" FE15005 BK033,
"MARANYL" A475

#

Company Identification

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

MANUFACTURER/DISTRIBUTOR

DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE	32131-17-2	>60
FIBERGLASS		<40
COLORANTS, STABILIZERS, LUBRICANTS		<4

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

(HAZARDS IDENTIFICATION - Continued)

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

FIBER GLASS

The mechanical action of the sharp fibers from Fiber Glass may cause skin irritation with discomfort or rash.

Eye contact with Fiber Glass particles may cause mechanical eye irritation with discomfort, tearing, or blurring of vision.

Inhalation of Fiber Glass particles may cause irritation of the upper respiratory passages, with coughing and discomfort.

Results from epidemiology studies suggest no causal relationship between Fiber Glass exposure and cancer. One epidemiology study does indicate a slight increase in lung cancer deaths. The evidence that fiber glass is related to these increased lung cancer deaths is considered weak.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties .

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, small amounts of, hydrogen cyanide, and, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

(HANDLING AND STORAGE - Continued)

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT007
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

FIBERGLASS

PEL (OSHA) : None Established
 TLV (ACGIH) : 5 mg/m³, 8 Hr. TWA, inhalable particulate
 A4
 AEL * (DuPont) : 5 mg/m³ total dust - 8 Hr. TWA, non-
 respirable fiber (> 3 microns in
 diameter) non-fibrous particulate.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
 Solubility in Water : Insoluble
 Odor : None
 Form : Pellets
 Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

HAZARDOUS DECOMPOSITION PRODUCTS: Cyclopentanone, carbon monoxide, aldehydes, and ammonia.

(STABILITY AND REACTIVITY - Continued)

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Fiber Glass

Skin irritation and mild eye irritation occurs in animals, but these effects are attributed primarily to mechanical damage rather than a chemical effect.

The effects in mice from single exposure by intratracheal instillation with Fiber Glass include an inflammatory response. Repeated inhalation exposures invoked pulmonary macrophage reactions similar to biologically inert dusts.

Tests in some animals with Fiber Glass demonstrate carcinogenic activity. However, these studies were by artificial implantation or injection of fine glass fibers into the chest, abdominal cavity, or trachea and are judged to be irrelevant to industrial exposure. Chronic inhalation exposure of animals to fiber glass at low concentrations produced minimal fibrosis in one study and no adverse effects in a different study.

No animal test reports are available to define mutagenic, developmental, or reproductive hazards.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES): None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

(REGULATORY INFORMATION - Continued)

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST
PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.1% FOR SUBSTANCES
IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): None known.

OTHER INFORMATION-----
Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications
involving permanent implantation in the human body. For other
medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the
specific material designated herein and does not relate to use in
combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
 : DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
 : WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

This information is based upon technical information believed to be
reliable. It is subject to revision as additional knowledge and
experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" NYLON RESINS ALL IN SYNONYM LIST ZYT016
ZYT016 Revised 17-AUG-2006

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" AST801 NC010
"ZYTEL" CFE8005HS BK010,
"ZYTEL" CFE8005HS BK435,
"ZYTEL" FE4200 BK136,
"ZYTEL" FE8208 NC010,
"ZYTEL" FE8208HS NC010,
"ZYTEL" FE8213HS NC010,
"ZYTEL" FE8214HS NC010,
"ZYTEL" FE8217HS BK010,
"ZYTEL" FE8220HS BK010,
"ZYTEL" ST801 BK010,
"ZYTEL" ST801 BK010A,
"ZYTEL" ST801 BLB513,
"ZYTEL" ST801 BLB8000,
"ZYTEL" ST801 GNB293,
"ZYTEL" ST801 GNB385,
"ZYTEL" ST801 GNB8000,
"ZYTEL" ST801 GXB668,
"ZYTEL" ST801W GYB748,
"ZYTEL" ST801 GYB8000,
"ZYTEL" ST801 NC010,
"ZYTEL" ST801 NC010A,
"ZYTEL" ST801 ORB097,
"ZYTEL" ST801 ORB8000,
"ZYTEL" ST801 RD383,
"ZYTEL" ST801 RD411,
"ZYTEL" ST801 RDB351,
"ZYTEL" ST801 RDB8000,
"ZYTEL" ST801 YLB8000;
"ZYTEL" ST801A NC010A,
"ZYTEL" ST801A WTB8000,
"ZYTEL" ST801AHS BK010,
"ZYTEL" ST801AHS NC010,
"ZYTEL" ST801AW BK195,
"ZYTEL" ST801AW NC010,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"ZYTEL" ST801HS BK010,
 "ZYTEL" ST801HS BK010F,
 "ZYTEL" ST801HS NC010,
 "ZYTEL" ST801HSL BK010,
 "ZYTEL" ST801W BK195,
 "ZYTEL" ST801W BKB295,
 "ZYTEL" ST801W BKB406,
 "ZYTEL" ST801W BKB433,
 "ZYTEL" ST801 BKB504,
 "ZYTEL" ST801W BLB473,
 "ZYTEL" ST801W BN386,
 "ZYTEL" ST801W BNB365,
 "ZYTEL" ST801W BNB424,
 "ZYTEL" ST801W BNB480,
 "ZYTEL" ST801W BNB498,
 "ZYTEL" ST801W GY427,
 "ZYTEL" ST801W GY586,
 "ZYTEL" ST801W GY697,
 "ZYTEL" ST801W GYB427,
 "ZYTEL" ST801W GYB498,
 "ZYTEL" ST801W GYB586,
 "ZYTEL" ST801W GYB606,
 "ZYTEL" ST801W GYB696,
 "ZYTEL" ST801W GYB697
 "ZYTEL" ST801W NC010

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont Engineering Polymers
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
 Transport Emergency : 1-(800)-424-9300
 Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)	32131-17-2	>76
TOUGHENER		<23
COLORANTS, LUBRICANTS, STABILIZERS		<2.5
CARBON BLACK	1333-86-4	0-5

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE ADIPAMIDE

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

(HAZARDS IDENTIFICATION - Continued)

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK				2B

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

(FIRE FIGHTING MEASURES - Continued)

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZYTEL" NYLON RESINS ALL IN SYNONYM LIST ZYT016
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

CARBON BLACK

(Other Applicable Exposure Limits - Continued)

PEL (OSHA)	:	3.5 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	:	3.5 mg/m ³ , 8 Hr. TWA, A4
AEL * (DuPont)	:	0.5 mg/m ³ , 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%) Includes Channel, Lamp, and Thermal Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	:	>200 C (>392 F)
Solubility in Water	:	Insoluble
Odor	:	None
Form	:	Pellets
Specific Gravity	:	>1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Decomposes with heat.

Decomposition temperature: 340 C (644 F)

Hazardous gases or vapors can be released, including ammonia, carbon monoxide, cyclopentanone, hydrogen cyanide, nitrogen oxides.

Polymerization

Polymerization will not occur.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None.

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

Page 1

DuPont
Material Safety Data Sheet

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT019
Revised 30-APR-2007

ZYT019

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" 151 NC010,
"ZYTEL" 151 NC010Z,
"ZYTEL" 151L NC010,
"ZYTEL" 151L NC010Z,
"ZYTEL" 151SL NC010,
"ZYTEL" 151Z NC010,
"ZYTEL" 151ZL NC010,
"ZYTEL" 153HSL NC010,
"ZYTEL" 153HSL NC010Z,
"ZYTEL" 158 NC010,
"ZYTEL" 158 NC010Z,
"ZYTEL" 158L NC010Z,
"ZYTEL" 158L NC010,
"ZYTEL" 158V NC010,
"ZYTEL" 159 NC010,
"ZYTEL" 159L NC010,
"ZYTEL" FE3375 NC010,
"ZYTEL" FE3643 NC010,
"ZYTEL" FE3643A NC010,
"ZYTEL" FE3734 NC010,
"ZYTEL" FE10029 NC010,
"ZYTEL" FE10030 NC010,
"ZYTEL" FE20033 NC010,
"ZYTEL" FE310001 NC010,
"ZYTEL" FE310051 NC010,
"ZYTEL" FE310059 NC010,
"ZYTEL" FE310071 NC010,
"ZYTEL" FE310158 NC010,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE DODECANAMIDE	26098-55-5	>97
LUBRICANTS, STABILIZERS		0-3

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE DODECANAMIDE (Nylon 612)

No adverse effects are expected from occupational exposure.

Significant skin permeation after contact appears unlikely. There are no reports of human sensitization.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.
Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits
 "ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT019
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

 PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	: >200 C (>392 F)
Solubility in Water	: Insoluble
Odor	: None
Form	: Pellets
Specific Gravity	: >1

 STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

(STABILITY AND REACTIVITY - Continued)

Decomposition

Hazardous gases or vapors can be released, including carbon monoxide, ammonia, hydrogen cyanide.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 612

Oral LD50: > 10,000 mg/kg in rats

Nylon 612 is not a skin irritant or eye irritant in animal tests.

Nylon 612 caused no adverse effects when administered to animals in their diets for 13 weeks.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES) - None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM - None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS) - None known.

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : REGULATORY AFFAIRS
DUPONT ENGINEERING POLYMERS
Address : CHESTNUT RUN PLAZA 713
WILMINGTON, DE 19880-0713
Telephone : 302-999-4257

Indicates updated section.

(Continued)

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

The MSDS format adheres to the standards and regulatory requirements
of the United States and may not meet regulatory requirements
in other countries.

DuPont
Material Safety Data Sheet

Page 1

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT023
ZYT023 Revised 21-MAR-2006

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"ZYTEL" is a registered trademark of DuPont.

Tradenames and Synonyms

"ZYTEL" 101 BKB249,
"ZYTEL" 101 BN006,
"ZYTEL" 101 BNB483,
"ZYTEL" 101 GYB690,
"ZYTEL" 101 WF007,
"ZYTEL" 101 WTB118,
"ZYTEL" 101F BK009,
"ZYTEL" 101F BKB038,
"ZYTEL" 101F BKB249,
"ZYTEL" 101F BKB439,
"ZYTEL" 101F BL117,
"ZYTEL" 101F BLB008,
"ZYTEL" 101F GYB669,
"ZYTEL" 101F RD239,
"ZYTEL" 101F RDB232,
"ZYTEL" 101F RDB239,
"ZYTEL" 101L BK009,
"ZYTEL" 101L BKB009,
"ZYTEL" 101L BKB038,
"ZYTEL" 101L BKB038H,
"ZYTEL" 101L BKB080,
"ZYTEL" 101L BKB295,
"ZYTEL" 101L BKB321,
"ZYTEL" 101L BKB323,
"ZYTEL" 101L BLB361,
"ZYTEL" 101L BLB1000,
"ZYTEL" 101L BNB357,
"ZYTEL" 101L BNB361,
"ZYTEL" 101L BNB364,
"ZYTEL" 101L GNB1000,
"ZYTEL" 101L GYB531,
"ZYTEL" 101L GYB532,
"ZYTEL" 101L GYB588,
"ZYTEL" 101L GYB615,
"ZYTEL" 101L GYB627,
"ZYTEL" 101L GYB628,
"ZYTEL" 101L GYB668,

(CHEMICAL PRODUCT/COMPANY IDENTIFICATION - Continued)

"ZYTEL" 101L GYB1000,
"ZYTEL" 101L ORB089,
"ZYTEL" 101L ORB1000.
"ZYTEL" 101L RDB321,
"ZYTEL" 101L RDB414,
"ZYTEL" 101L RDB1000,
"ZYTEL" 101L WTB007,
"ZYTEL" 101L WTB025,
"ZYTEL" 101L WTB188,
"ZYTEL" 101L WTB256,
"ZYTEL" 101L WTB1000,
"ZYTEL" 101L YLB205,
"ZYTEL" 101L YLB209,
"ZYTEL" 101L YLB1000,
"ZYTEL" 103HSL BKB080,
"ZYTEL" 103HSL BKB295
"ZYTEL" 105 BK010A,
"ZYTEL" 132F BKB088,
"ZYTEL" 132F BKB323,
"ZYTEL" 132F BKB501,
"ZYTEL" 132F BNB364,
"ZYTEL" 132F BNB455,
"ZYTEL" 132F GYB523,
"ZYTEL" 132F YLB199,
"ZYTEL" 132F WTB229,
"ZYTEL" 133L GNB295,
"ZYTEL" 133L GYB523,
"ZYTEL" 133L RDB259,
"ZYTEL" 133L YLB153,
"ZYTEL" 133L YLB163,
"ZYTEL" 135F BK207,
"ZYTEL" E50 BKB425,
"ZYTEL" FE3509FHS BK010,
"ZYTEL" FE3681 BK010,
"ZYTEL" FE3751 NC010,
"ZYTEL" FE3758 NC010,
"ZYTEL" FE310052F BKB501,

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont Engineering Polymers
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-(800)-441-7515
Transport Emergency : 1-(800)-424-9300
Medical Emergency : 1-(800)-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
POLYHEXAMETHYLENE ADIPAMIDE	32131-17-2	>89
Colorants, Stabilizers, Lubricants		<11
CARBON BLACK	1333-86-4	0-2

Components (Remarks)

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Additives in this product do not present a respiration hazard unless the product is ground to a powder of respirable size and the dust is inhaled. All dusts are potentially injurious to the respiratory tract if respirable particles are generated and inhaled in sufficiently high concentrations. Good industrial hygiene practices, as with all dusts, should include precautions to prevent inhalation of respirable particles.

HAZARDS IDENTIFICATION

Potential Health Effects

ADDITIONAL HEALTH EFFECTS

Read the datasheet for this product or the molding guide for this resin family.

POLYHEXAMETHYLENE ADIPAMIDE (Nylon 66)

In general, skin irritation has not been produced in human patch tests with Nylon 66. However, a small percentage of subjects may respond to prolonged contact with redness of skin. Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

If particles of Nylon 66 contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

CARBON BLACK

Immediate effects of overexposure to Carbon Black by inhalation may include irritation of the nose, throat, and lungs with cough, difficulty breathing or shortness of breath.

If particles from Carbon Black contact the eye, mechanical irritation with tearing, pain or blurred vision may result.

(HAZARDS IDENTIFICATION - Continued)

Significant skin permeation, and systemic toxicity, after contact with Carbon Black appears unlikely. There are no reports of human sensitization.

Epidemiologic studies demonstrate no significant risk of human cancer from exposure to Carbon Black. While some reports cite an increased incidence of pulmonary abnormalities, such as decreased pulmonary function and radiological changes among Carbon Black workers, other reports show no correlation between exposure and effects on pulmonary function or disease.

Increased susceptibility to the effects of Carbon Black may be observed in persons with pre-existing disease of the lungs.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK	2B			

FIRST AID MEASURES

First Aid

INHALATION

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

SKIN CONTACT

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : Not Applicable

Fire and Explosion Hazards:

Like most organic materials in powder form, dust generated from this product may form a flammable dust-air mixture. Potential for a dust explosion may exist. Minimize the generation and accumulation of dust. Keep away from sources of ignition.

Large molten masses may ignite spontaneously in air. Water quenching of such masses is good practice.

Hazardous gases/vapors produced in fire are ammonia, carbon monoxide, traces of hydrogen cyanide, aldehydes.

Extinguishing Media

Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Spilled material is a slipping hazard.

Sweep up to avoid slipping hazard.

HANDLING AND STORAGE

Handling (Personnel)

See FIRST AID and PERSONAL PROTECTIVE EQUIPMENT SECTIONS.

Handling (Physical Aspects)

Minimize the generation and accumulation of dust.

(HANDLING AND STORAGE - Continued)

Storage

Store in a cool, dry place. Keep containers tightly closed to prevent moisture absorption and contamination. Store away from ignition sources, combustibles.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

VENTILATION When hot processing this material, use local and/or general exhaust ventilation to control the concentration of vapors and fumes below exposure limits.

In cutting or grinding operations with this material, use local exhaust to control the concentration of dust below exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye or face contact due to splashing or spraying of molten material. A full face mask positive-pressure air-supplied respirator provides protection from eye irritation.

Respirators

A NIOSH/MSHA approved air-purifying respirator with an organic vapor cartridge with a dust/mist filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

During grinding, sawing, routing, drilling or sanding operations use a NIOSH/MSHA approved air-purifying respirator with dust/mist cartridge or canister if airborne particulate concentrations are expected to exceed permissible exposure levels.

Protective Clothing

If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

Wear leather or cotton gloves when grinding, sawing, routing, drilling or sanding.

Exposure Guidelines

Exposure Limits

"ZYTEL" POLYAMIDE RESINS ON SYNONYM LIST ZYT023
 PEL (OSHA) : Particulates (Not Otherwise Regulated)
 15 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

Other Applicable Exposure Limits

POLYHEXAMETHYLENE ADIPAMIDE
 PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 10 mg/m³, 8 Hr. TWA, total dust
 5 mg/m³, 8 Hr. TWA, respirable dust

CARBON BLACK

PEL (OSHA) : 3.5 mg/m³, 8 Hr. TWA
 TLV (ACGIH) : 3.5 mg/m³, 8 Hr. TWA, A4
 AEL * (DuPont) : 0.5 mg/m³, 8 & 12 Hr. TWA, (Polynuclear
 Aromatic Hydrocarbon Content <0.1%)
 Includes Channel, Lamp, and Thermal
 Black

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point : >200 C (>392 F)
 Solubility in Water : Insoluble
 Odor : None
 Form : Pellets.
 Specific Gravity : >1

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Conditions to Avoid

Temperatures above 340 C (644 F)

Incompatibility with Other Materials

Incompatible or can react with strong acids, oxidizing agents.

Decomposition

Hazardous gases or vapors can be released, including ammonia, carbon monoxide, cyclopentanone, hydrogen cyanide, nitrogen oxides.

(STABILITY AND REACTIVITY - Continued)

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Nylon 66

Oral LD50, rat: > 10,000 mg/kg

Nylon 66 is not a skin irritant in tests with animals.

Single exposure by ingestion to high doses caused decreased body weight. Long-term exposure caused no significant toxicological effects.

Repeated insufflation exposure caused histopathological changes of the lungs, and kidneys.

In animal testing Nylon 66 has not caused carcinogenicity. No animal data are available to define developmental, reproductive or mutagenic hazards.

Carbon Black

Oral ALD, rat: > 25,100 mg/kg

Repeated inhalation exposure of animals to Carbon Black caused inflammation of the respiratory tract, lungs and emphysema.

Repeated exposure to high doses of Carbon Black by ingestion or skin contact caused no significant toxicological effects.

No adequate studies have been conducted in animals to define the carcinogenicity of Carbon Black by ingestion. In several skin painting studies using various Carbon Blacks no carcinogenicity was observed. Tests by inhalation for carcinogenicity in rats show significant increases in lung tumors in female rats but not male rats. In another study using female mice exposed by inhalation to Carbon Black there was no increase in the incidence of respiratory tract tumors. Researchers conducting the rat inhalation studies believe that these effects probably result from the massive accumulation of small dust particles in the lung which overwhelm the normal lung clearance mechanisms. This represents "lung overload" phenomenon, rather than a specific chemical effect of the dust particle in the lung.

Tests have shown that this material does not cause genetic damage in bacterial or mammalian cell cultures. Tests in animals for genetic toxicity have produced mostly negative results. No animal data are available to define developmental or reproductive toxicity.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

No information is available. Toxicity is expected to be low based on insolubility in water. Do not discharge to streams, ponds, lakes or sewers.

DISPOSAL CONSIDERATIONS

Waste Disposal

Preferred options for disposal are (1) recycling, (2) incineration with energy recovery, and (3) landfill. The high fuel value of this product makes option 2 very desirable for material that cannot be recycled, but incinerator must be capable of scrubbing out acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

Not regulated in transportation by DOT/IMO/IATA.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : In compliance with TSCA Inventory requirements for commercial purposes.

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- Carbon black.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- None known.

