addivant™
SOLUTIONS TO
BREAKTHROUGH

*Felipe De La Mora*
*Site Director*

**Addivant**
1000 Morgantown Industrial Park
Morgantown, WV 26501

Tel: 304-284-2215

June 3, 2015

Director
West Virginia Department of Environmental Protection
Division of Air Quality – Permitting Section
601 57th Street S.E.
Charleston, WV 25304

**RE: Permit Determination Request – Addivant USA, LLC**
**North Plant – Upgrade of Weston® W705 Process**
**DAQ Plant I.D. No.: 061-00061**

Dear Director,

Addivant USA, LLC ("Addivant") is planning to upgrade an existing chemical manufacturing unit at its North Plant facility located in Morgantown, West Virginia. This change will improve the process, quality, reliability, add additional units for managing hydrochloric acid (a co-product), as well as slightly increase the production capacity for Weston® 705 production.

The WV DEP reviewed a permit determination request submitted by former owner / operator Chemtura Corporation, dated July 30, 2010, for modifying this production area to produce 10 tons/year Weston® 705, and responded that no permit was required for the modification (Determination No. PD10-053).
Enclosed is the permit determination form for the manufacturing units used to produce Weston® 705, along with the following attachments:

- Attachment A – Map of Facility,
- Attachment B – Process Flow Diagram,
- Attachment C – Process Description,
- Attachment D – Material Safety Data Sheets, and
- Attachment E – Supporting Calculations

Attachment E provides a summary of the potential-to-emit estimates and shows that the proposed Weston® 705 process emissions remain below the permitting thresholds for modification as defined in 45 CSR 13: the reasonably calculated maximum potential emissions are under two (2) lb/hr OR five (5) tons/year of total Hazardous Air Pollutants (HAPs); six (6) lbs/hr and ten (10) tons per year or 144 pounds per calendar day of any regulated pollutant. As requested for all permitting actions, one hardcopy and two electronic copies are included with this submittal.

Should the department have any questions or need clarification on any part of this application package, please contact Steve Marcus at 304-284-2281.

Sincerely,

Felipe DeLaMora
Site Director

Enclosures: 2 electronic copies

| WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION DIVISION OF AIR QUALITY 601 57th Street, SE Charleston, WV 25304 Phone: (304) 926-0475 www.dep.wv.gov/daq | ***PERMIT DETERMINATION FORM (PDF)*** |
|---|---|
| | **FOR AGENCY USE ONLY:** PLANT I.D. # _____ |
| | PDF # _____ PERMIT WRITER: _____ |

| | |
|---|---|
| 1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE): Addivant USA, LLC | |
| 2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE): Morgantown North Plant | 3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE: 325199 |
| 4A. MAILING ADDRESS: 1000 Morgantown Industrial Park, Morgantown, WV 26501 | 4B. PHYSICAL ADDRESS: 1000 Morgantown Industrial Park, Morgantown, WV 26501 |
| 5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP AS ATTACHMENT A**): I-79 Exit 152. Proceed on Rt 19 N approx ¾ miles. Turn right onto DuPont Road and proceed to first stop sign. Cross over County Road 45 and enter Morgantown Industrial Park. Take a left at the first stop sign. Take a right at the second intersection and continue to entrance gate at the end of the road. | |

| | | |
|---|---|---|
| 5B. NEAREST ROAD: County Road 45 | 5C. NEAREST CITY OR TOWN: Morgantown | 5D. COUNTY: Monongalia |
| 5E. UTM NORTHING (KM): 4384.842 | 5F. UTM EASTING (KM): 587.954 | 5G. UTM ZONE: 17 |
| 6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED: Rebecca Dalrymple | | 6B. TITLE: Environmental Engineer |
| 6C. TELEPHONE: (304) 284-2214 | 6D. FAX: (304) 284-2363 | 6E. E-MAIL: Rebecca.Dalrymple@addivant.com |

| | |
|---|---|
| 7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY): 061-00061 | 7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY): None |
| 7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: NA | |
| 8A. TYPE OF EMISSION SOURCE (CHECK ONE): ☐ NEW SOURCE ☐ ADMINISTRATIVE UPDATE ☒ MODIFICATION ☐ OTHER (PLEASE EXPLAIN IN 11B) | 8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN? ☐ YES ☐ NO |
| 9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☐ YES ☒ NO | |
| 10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE: 07/20/2015 | 10B. DATE OF ANTICIPATED START-UP: 11/09/2015 |
| 11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**. | |
| 11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION AS ATTACHMENT C**. | |
| 12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR. | |

**13A. REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY,** PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY,** PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

*PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.*

| POLLUTANT | HOURLY PTE (LB/HR) | YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON |
|---|---|---|
| PM | | |
| $PM_{10}$ | | |
| VOCs | 7.39 lb/hr (55.49 lb/day) | 9.0 |
| CO | 1.07 | 4.69 |
| $NO_x$ | 1.27 | 5.58 |
| $SO_2$ | 0.01 | 0.03 |
| Pb | | |
| HAPs (AGGREGATE AMOUNT) | 0.83 | 1.98 |
| TAPs (INDIVIDUALLY)* | | |
| OTHER (INDIVIDUALLY)* | | |

* ATTACH ADDITIONAL PAGES AS NEEDED

**13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.**

*CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).*

**14. CERTIFICATION OF DATA**

I, FELIPE DE LA MORA (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A RESPONSIBLE OFFICIAL** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: SITE DIRECTOR

DATE: 05/29/2015.

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

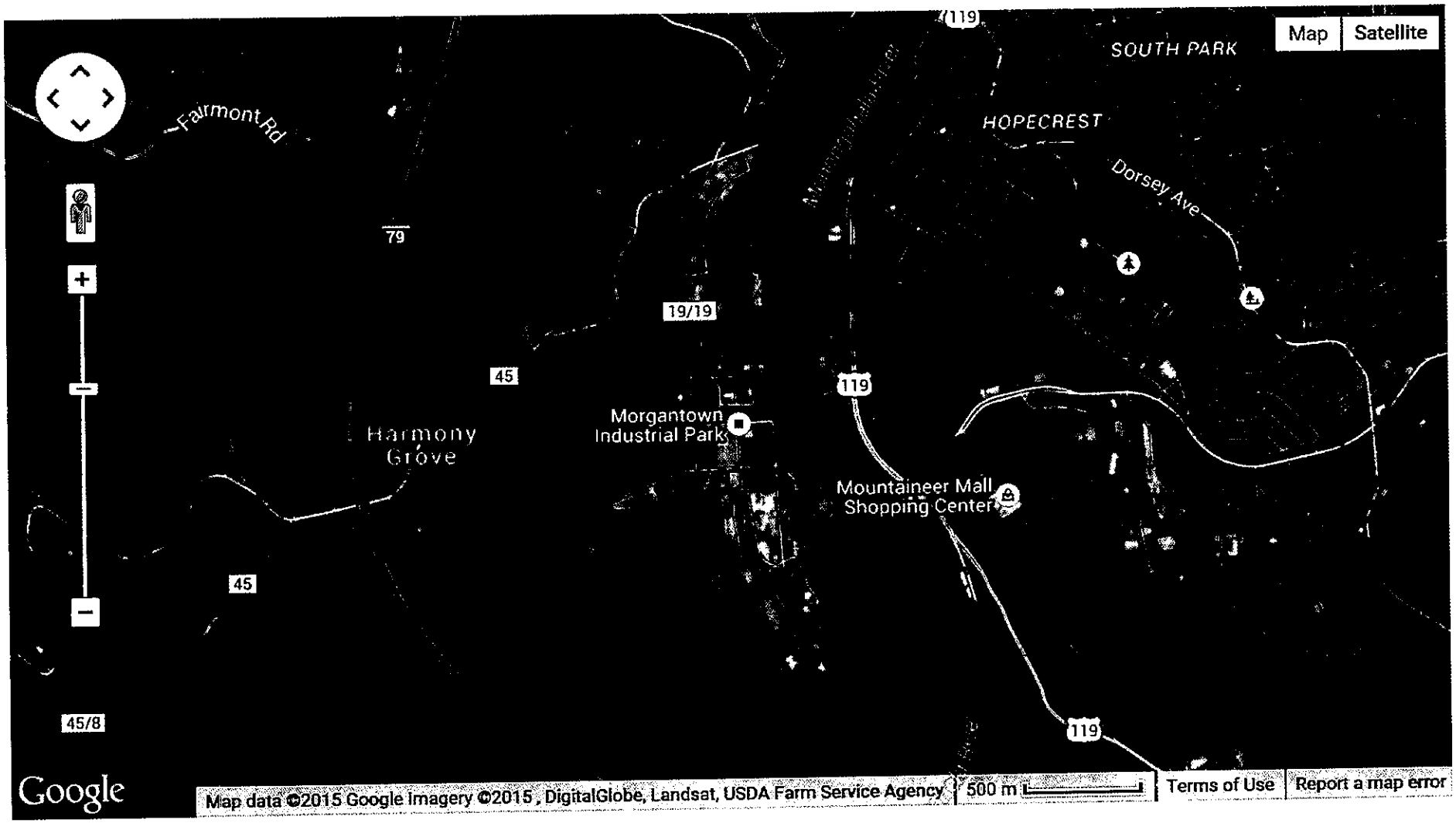
**NOTE:** PLEASE CHECK ENCLOSED ATTACHMENTS:

☒ **ATTACHMENT A** ☒ **ATTACHMENT B** ☒ **ATTACHMENT C** ☒ **ATTACHMENT D** ☒ **ATTACHMENT E**

***RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.***

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

***www.dep.wv.gov/daq***


Map
Satellite
Fairmont Rd
79
19/19
45
Harmony Grove
Morgantown Industrial Park
119
SOUTH PARK
HOPECREST
Dorsey Ave
Mountaineer Mall Shopping Center
45/8
Google
Map data ©2015 Google Imagery ©2015 , DigitalGlobe, Landsat, USDA Farm Service Agency
500 m
Terms of Use
Report a map error

1. PREAMBLE

This Permit Determination Request is being submitted for Addivant's North Plant facility (DAQ Facility ID# 061-00061), located within the Morgantown Industrial Park. Previous owner, Chemtura Corporation, submitted a permit determination request in July of 2010 for manufacturing 10 tons/year Weston® 705, a future potential replacement for Weston TNPP/399 at the facility. On August 31, 2010 WV DEP determined that a permit was not required for the proposed production of this product based upon the information included with the Permit Determination Form. Due to waiting for a full FDA approval and the decision of the customers switching TNPP/399 to Weston®705, this unit has been running in very low capacity utilization (only operating K-61 partially) since 2010.

Addivant became an owner and operator of this facility in May of 2013. During the last two years, the new owners placed much effort on progressing the process to complete FDA approval and customers'. Now Addivant is working towards meeting full capacity commercialization of Weston® 705 and is ready for further investment of capital into the Morgantown North Plant facility to upgrade the Weston® 705 ("W705") process and to build up the plant as the first strategic and reliable Weston® 705 global sourcing plant.

The 2010 permit determination proposed using both existing K-60 and K-61 reactors to manufacture 10,000 tons/year Weston® 705 at building 174, as well as using the K-63 reactor to blend small quantities of Triisopropanolamine (TIPA) to make W705T. The estimated cycle time was 7.8 hours, but currently we are running a batch cycle time of 14 hours instead of 7.8 hours due to an FDA requirement of residual amylphenol decreasing from 1% to 0.5% in the final product. In order to compensate for this the stripping time increased. To meet the new specification and reach the capacity as needed, Addivant is planning to convert K-63 into a third reactor. Thus the total capacity will be slightly increased from 10,000 tons per year to 10,500 per year, but the calculated potential emissions continue to be under the Regulation 13 permit requirements.

In addition Addivant plans to install dedicated vacuum pumps for each reactor to improve the reliability, additional storage tanks to increase the inventory capability, additional amylphenol condensers and HCl absorption capability to improve HCl product quality as part of this determination request. Detailed changes will be described in process description below.

2. PROCESS DESCRIPTON

Raw material Amylphenol is shipped to the site via tank trucks or overseas Isotainers. Four new tanker truck stations are being added, such that there will be four with steam heating stations, with one of these stations also having loading / unloading capabilities. This brings this unloading area to five stations total (one already existing) with two of the five having loading/unloading capabilities. During this heating process the truck will vent to scrubber C035. **Note that the emissions reduction from the scrubber has not been included in these calculations.** Amylphenol will be unloaded into one of two tanks, T-166 and T-167, which are existing 12,000 gallon tanks. T-167 is currently utilized for storage of W705, but is being converted to amylphenol storage.

The amylphenol storage tanks are operated under a nitrogen blanket to prevent exposure to moisture. Existing equipment formerly used for production in the 174 building is being converted for use as a scrubber for the amylphenol unloading/heating process (scrubber C-035 and receiver R-149), venting at a new vent number 1074. The scrubber will use decyl alcohol, an existing raw material for other plant operations, as the scrubbing liquid. **Note that the calculations for permit determination do not include the emission reductions from this scrubber.** It is estimated that once a year the spent decyl alcohol / amylphenol solution will need to be replaced with new decyl alcohol. The spent solution will be loaded onto a waste tanker truck (combined with other north plant liquid waste) and shipped offsite for

disposal. The waste truck will be loaded at an existing loading / unloading bay currently used for unloading raw materials at the 181 Building (TS-5).

Phosphorous Trichloride (PCl3), an existing raw material that was used in the original 174 building processes, is also used as a raw material in this process. No modifications are being made to the existing system, which vent through existing vent 1049. Emissions are estimated using the net throughput to support the W705 production, US EPA Tanks program, and mass balances.

Amylphenol and PCl3 are added to the reactor. During this initial part of the process hydrogen chloride gas is generated and vented to the existing absorber system. Prior to the absorber system the gas passes through an existing gassing condenser, HX-182, a new secondary gassing condenser, HX-287, (not shown in PFD) and an existing Demister F-150. These units work to condense and remove organics from the hydrogen chloride gas, with most of the condensed material being returned to the reactor. The demister liquid is not returned to the reactor, but drained to a 55 gallon waste drum (an existing emission point), such that any moisture from the acid system does not impact the reactor. This draining activity is currently performed once each cycle typically producing less than a liter of material. The reactor is heated to the design temperature to complete the gassing part of the process. Once completed the reactor is setup for vacuum stripping. A valve in gassing line is closed and a valve opens in the strip line allowing vacuum to be applied using a vacuum system. This vacuum system can produce a maximum of 400 cubic feet per minute (CFM) of gas flow from the reactor. During this step, excess amylphenol is removed from the W705 product as the vacuum and temperature increase to terminal conditions. The gasses from this stripping process are cooled through a condensing unit and the excess amylphenol collected in various receivers.

Since each reactor is designed the same, the process flow diagram (PFD) included as Attachment B (D-1460(A)) shows one reactor marked with the three reactor unit identification numbers venting to three heat exchangers: HX-193, HX-183, and HX-281. This is meant to represent that each reactor vents to its own heat exchanger. Table 1, which follows this process description narrative, provides a list of all the emission units affiliated with the process, providing a description, design capacity, and control device. The description will identify, where applicable, the specific reactor that these units support. After the heat exchanger, the gas and liquids then pass through a single receiver dedicated to a single reactor. Liquids collect in the receiver and the remaining gas flows through another freeze condenser before the gases flow through the vacuum pump. The condensers and receivers are necessary to prevent liquids from accumulating and plugging the vacuum pump. The gases from the vacuum pump will then flow through an aftercooler installed after each vacuum pump. After the aftercooler, the gasses and liquids from all three pumps will flow through a final shared receiver, R-185 that will collect the liquids with excess gas venting into T-64, an existing 10,000 gallon tank that services similar vacuum pumps utilized in an adjacent existing production building. This tank vents through an existing water scrubber, existing vent ID 1009. The scrubber water accumulates in the tank, which is pumped to the permitted onsite wastewater treatment system once a certain level is reached. **Note that the calculations for permit determination do not include the emission reductions from this scrubber.**

Calculations for this part of the process are calculated and provided in Attachment E. The system is constrained by the size of the PCl3 feed lines; however, the process control system is the main mechanism that prevents feeding PCl3 to more than one reactor at a time. Because the stripping cycle is a longer period of time the process is designed to allow two reactors to be stripping at the same time. The emission calculations are based upon the maximum volumetric flow rate of two of the vacuum pumps (each at 400 CFM) and assume that only two pumps would be running at the same time. Therefore the emissions from the reactors for the stripping cycle are based upon an 800 CFM flow rate (Page E-4). The process controls will also prevent the use of all three pumps at one time.

Once the process is completed the product will be cycled through a product cooler (HX-192, HX-184, HX-282) until it reaches 80 to 100 C and is then pumped to storage tanks T-171 or T-73. T-73 is an

existing 40,000 gallon tank formerly used for TPP storage (product formerly produced in the 174 building) that is being modified for W705 storage. T-171 is a 15,000 gallon tank that was formerly used at Addivant's South Plant facility that is being moved and put into service for W705. Bag filters are placed in the lines servicing both tanks should there be a need for future filtering of the product.

Adding TIPA to the W705 product will create W705T. TIPA and W705 are mixed in T-172 and circulated through a filter. T-172 is a 15,000 gallon tank that was formerly used at Addivant's South Plant facility that is being moved and put into service for W705. W705 and W705T will be loaded into bulk trucks, totes, or drums.

The primary process changes from the 2010 process are listed below:

a. Conversion of K-63 (located at 74 Building), currently used for adding TIPA to make Weston® 705T, to a third reactor:

b. Storage Tank Utilization:
    i. Relocate two tanks (T-225 and T-226) from the South Plant to be used for W705 and W705T storage.
    ii. Convert T-73 TPP storage tank to a W705 storage tank.
    iii. Convert T-167 to an additional amylphenol storage tank.

c. Install new acid adsorption system and refined acid storage tank:
    i. Two new carbon adsorption columns that run in series installed to support the removal of the organics from the hydrochloric acid produced from the W705 scale-up process.
    ii. A new 10,000 gallon storage tank, T-170, for refined acid providing additional storage for the acid from the W705 process.

d. Upgrade vacuum pump capacity for W705:
    i. Additional vacuum pump equipment and controls will be installed to support the three W705 reactors. The design will include a dedicated vacuum pump for each reactor to improve operating reliability and flexibility. Addivant will be utilizing new and more energy efficient vacuum pumps. No increase in emissions or waste generation is anticipated.

e. Convert existing scrubber equipment for use as a scrubber for amylphenol venting (C035) (emission reduction not included when calculating emissions).

f. Process & Operation Optimization:
    i. Added nitrogen sparging at the end of the gassing process to ensure HCl gasses are removed from the reactor prior to starting the vacuum stripping.

g. Utility Upgrade:
    i. Upgrade the existing high temperature glycol system to be utilized by the other two W705 reactor systems.
    ii. Replace existing 6.9 MM BTU/hr steam boiler with new, 13 MM BTU/hr steam boiler.

h. W705 and Amylphenol Loading/Unloading Station:
    i. Currently there is only one loading/unloading station that is mainly used to unload amylphenol. Four new tanker truck stations are being added, such that there will be four with steam heating stations, with one of these stations also having loading / unloading capabilities. This brings this unloading area to five stations total (one already existing) with two of the five having loading/unloading capabilities. During this heating process the truck will vent to scrubber C035.

## Table 1 - Emission Units

Listing of all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status.

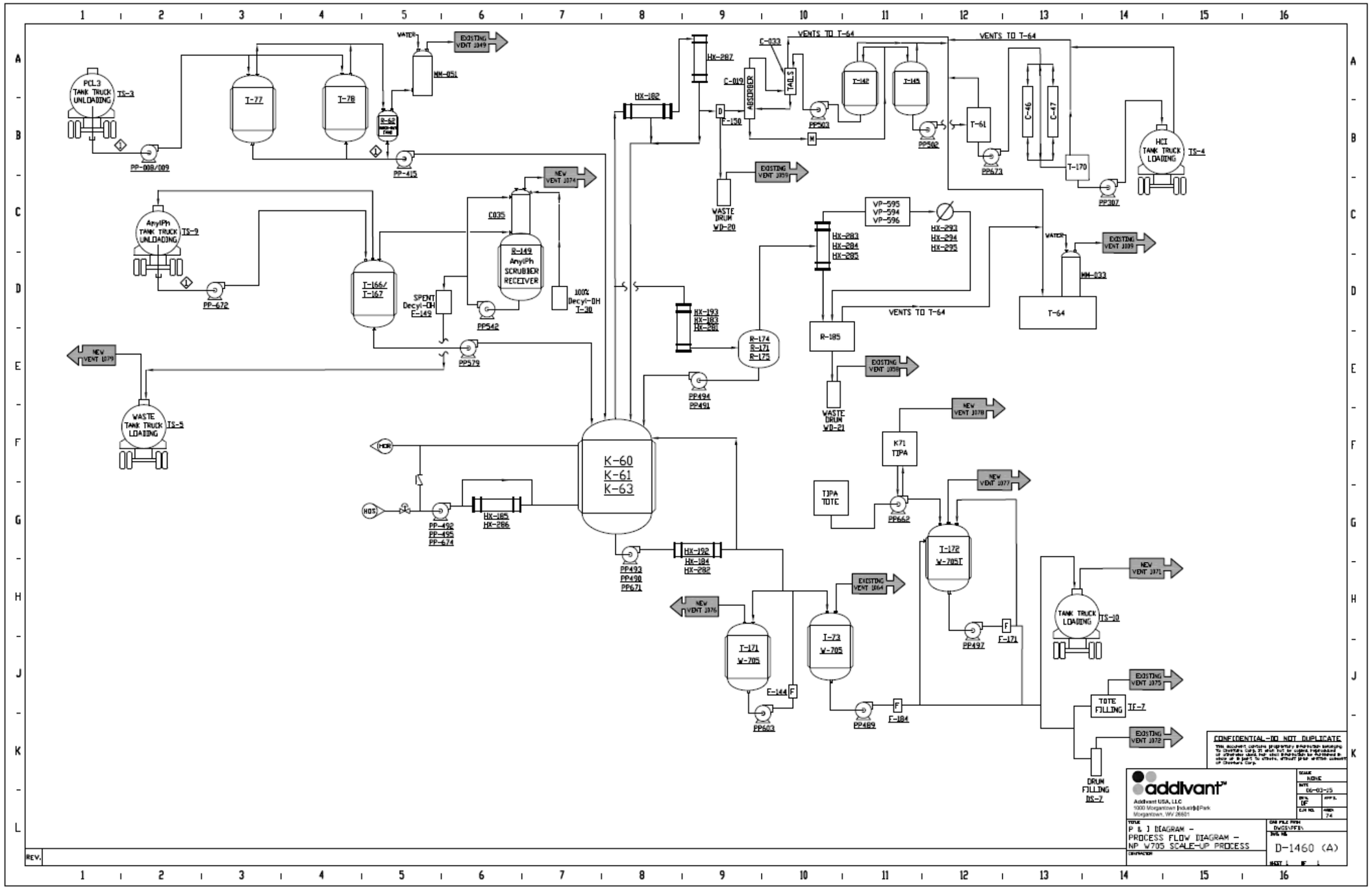
| Emission Unit ID[1] | Emission Point ID[2] | Emission Unit Description | Year Installed/ Modified | Design Capacity | Type[3] and Date of Change | Control Device[4] |
|---|---|---|---|---|---|---|
| TS-3 | No Vent | PCl3 Unloading Bay #1 | 1984 | NA | Existing | NA |
| T-77 | 1049 | Phosphorous Trichloride (PCl3) Storage Tank | 1977 | 10,000 Gallon | Existing | MM-059 Water Scrubber |
| T-78 | 1049 | PCl3 Storage Tank | 1980 | 10,000 Gallon | Existing | MM-059 Water Scrubber |
| R-62 | 1049 | PCl3 Knock Out Tank | 1977 | 100 Gallon | Existing | MM-059 Water Scrubber |
| TS-9 | 1074 | Tanker Truck Unloading Station 174 Bay #2 | 2015 | NA | New | NA |
| T-166 | 1074 | Amylphenol Storage Tank | 2001 | 12,000 Gallon | Existing | C-035 Decyl-alcohol Scrubber |
| T-167 | 1074 | Amylphenol Storage Tank | 2001 | 12,000 Gallon | Existing | C-035 Decyl-alcohol Scrubber |
| R-149 | 1074 | Amylphenol Receiver for Scrubber | 1997 | 500 Gallon | Existing | C-035 Decyl-alcohol Scrubber |
| K-60 | 1009 | Weston 705 (W-705) Reactor | 1996 | 2000 Gallon | Existing | MM-033 Water Scrubber |
| K-61 | 1009 | Weston 705 (W-705) Reactor | 1996 | 2000 Gallon | Existing | MM-033 Water Scrubber |
| K-63 | 1009 | Weston 705 (W-705) Reactor | 1997 | 2000 Gallon | Modification | MM-033 Water Scrubber |
| HX-185 | No Vent | K-60's & K-61's hot oil cooler | 1996 | NA | Existing | NA |
| HX-286 | No Vent | K-63's hot oil cooler | 2016 | NA | New | NA |
| HX-193 | No Vent | K-60's Stripping Condenser | 1996 | NA | Existing | NA |
| HX-183 | No Vent | K-61's Stripping Condenser | 1996 | NA | Existing | NA |
| HX-281 | No Vent | K-63's Stripping Condenser | 2016 | NA | New | NA |
| HX-192 | No Vent | K-61's Product Cooler | 2013 | NA | Existing | NA |
| HX-184 | No Vent | K-60's Product Cooler | 1996 | NA | Existing | NA |
| HX-282 | No Vent | K-63's Product Cooler | 2016 | NA | New | NA |

| Emission Unit ID[1] | Emission Point ID[2] | Emission Unit Description | Year Installed/ Modified | Design Capacity | Type[3] and Date of Change | Control Device[4] |
|---|---|---|---|---|---|---|
| R-174 | 1009 | Receiver for K-60 | 1996 | 1000 Gallon | Existing | MM-033 Water Scrubber |
| R-171 | 1009 | Receiver for K-61 | 1997 | 1000 Gallon | Existing | MM-033 Water Scrubber |
| R-175 | 1009 | Receiver for K-63 | 1997 | 1000 Gallon | Modification | MM-033 Water Scrubber |
| HX-283 | No Vent | Freeze Condenser before K-60's vacuum pump | 2015 | NA | New | NA |
| HX-284 | No Vent | Freeze Condenser before K-61's vacuum pump | 2015 | NA | New | NA |
| HX-285 | No Vent | Freeze Condenser before K-63's vacuum pump | 2016 | NA | New | NA |
| R-185 | 1009 | Shared Receiver for Condensate from three Vacuum Pumps | 1996 | 80 Gallons | Existing | MM-033 Water Scrubber |
| VP-595 | 1009 | Vacuum Pump for K-60 | 2015 | 400 cfm | New | MM-033 Water Scrubber |
| VP-594 | 1009 | Vacuum Pump for K-61 | 2015 | 400 cfm | New | MM-033 Water Scrubber |
| VP-596 | 1009 | Vacuum Pump for K-63 | 2016 | 400 cfm | New | MM-033 Water Scrubber |
| HX-293 | No Vent | Condenser for Vacuum Pump vent line | 2015 | NA | New | NA |
| HX-294 | No Vent | Condenser for Vacuum Pump vent line | 2015 | NA | New | NA |
| HX-295 | No Vent | Condenser for Vacuum Pump vent line | 2016 | NA | New | NA |
| WD-21 | 1058 | Waste Drum for Vacuum Pump Condensate | 1996 | 55 Gallon | Existing | NA |
| T-64 | 1009 | Waste Water Tank | 1999 | 10,000 Gallons | Existing | MM-033 Water Scrubber |
| HX-182 | No Vent | Gassing Line Condenser | 1996 | NA | Existing | NA |
| HX-287 | No Vent | Secondary Gassing Condenser | 2015 | NA | New | NA |
| F-150 | No Vent (fugitive) | Gassing Line Demister | 1996 | 3,000 lbs/hr gas | Existing | MM-033 Water Scrubber |
| WD-20 | 1059 | Waste Drum for Demister | 2008 | 55 Gallon | Existing | NA |
| C-019 | 1009 | Absorber | 1996 | NA | Existing | MM-033 Water Scrubber |

| Emission Unit ID[1] | Emission Point ID[2] | Emission Unit Description | Year Installed/ Modified | Design Capacity | Type[3] and Date of Change | Control Device[4] |
|---|---|---|---|---|---|---|
| C-033 | 1009 | Tails Tower | 1996 | NA | Existing | MM-033 Water Scrubber |
| T-142 | 1009 | HCl Storage Tank | 1996 | 2600 Gallons | Existing | MM-033 Water Scrubber |
| T-145 | 1009 | HCl Storage Tank | 1996 | 2600 Gallons | Existing | MM-033 Water Scrubber |
| T-61 | 1009 | HCl Storage Tank | 2013 | 10,000 Gallons | Existing | MM-033 Water Scrubber |
| C-46 | 1009 | Carbon Column Absorber | 2015 | 1200 Gallons | New | MM-033 Water Scrubber |
| C-47 | 1009 | Carbon Column Absorber | 2015 | 1200 Gallons | New | MM-033 Water Scrubber |
| T-170 | 1009 | HCl Storage Tank | 2015 | 10,000 Gallons | New | MM-033 Water Scrubber |
| TS-4 | 1009 | Tanker Truck Loading 181 Bay #2 HCl Loading | 1988 | NA | Existing | NA |
| T-171 | 1064 | W-705 Storage Tank | 2015 | 15,000 Gallons | Modification | NA |
| T-73 | 1064 | W-705 Storage Tank | 1996 | 40,000 Gallons | Modification | NA |
| F-144 | No Vent (Fugitive) | T-171Bag Filter | 1996 | 3 Gallon | Modification | NA |
| F-184 | No Vent (Fugitive) | T-172 Bag Filter | 2001 | 10 Gallon | Modification | NA |
| T-172 | 1077 | W-705T Storage Tank | 2015 | 15,000 Gallons | Modification | NA |
| F-171 | No Vent (Fugitive) | T-73 Bag Filter | 2001 | 10 Gallon | Modification | NA |
| K-71 | 1078 | Reactor used for storage of Tri-isopropanol (TIPA) | 2001 | 750 Gallons | Existing | NA |
| DS-7 | 1072 | Drumming Station W-705 / W-705T | 2010 | 55 Gallon | Existing | NA |
| TF-7 | 1075 | Tote Filling Station W-705 / W-705T | 2010 | 330 Gallon | Existing | NA |
| TS-10 | 1071 | Tanker Truck Loading Bay 174 #1 W-705 / W-705T and 174 Amylphenol Scrubber Waste | 2001 | NA | Existing | NA |
| TS-5 | 1079 | Existing Tanker Unloading Pad 181 # 4 | 1986 | NA | Existing | NA |

Material Safety Data Sheets (MSDS) for the following chemicals are inserted as pages D-1 through D-73. These MSDS are representative of the materials we will use, but different suppliers may be used in the future. Replacement materials will be similar and would be qualified by laboratory testing and/or evaluation by qualified staff.

PHOSPHOROUS TRICHLORIDE
AMYLPHENOLS
WESTON® 705
WESTON® 705T
TRIISOPROPANOLAMINE
HYDROCHLORIC ACID


PCL3 TANK TRUCK UNLOADING
TS-3
T-77
T-78
R-62
MM-051
EXISTING VENT 1049
PP-008/009
PP-415
WATER
HX-182
HX-287
C-033
C-019
ABSORBER
E-150
TAILS
VENTS TO T-64
T-142
T-145
PP503
PP502
T-61
PP573
C-46
C-47
T-170
PP307
HCl TANK TRUCK LOADING
TS-4
EXISTING VENT 1059
WASTE DRUM WD-20
VP-595
VP-594
VP-596
HX-293
HX-294
HX-295
HX-283
HX-284
HX-285
AnyIPh TANK TRUCK UNLOADING
TS-9
PP-672
T-166/ T-167
C035
NEW VENT 1074
R-149 AnyIPh SCRUBBER RECEIVER
SPENT Decyl-DH E-149
100% Decyl-DH T-30
PP542
PP579
MM-033
T-64
EXISTING VENT 1039
HX-193
HX-183
HX-282
R-174
R-171
R-175
R-185
PP494
PP491
EXISTING VENT 1058
WASTE DRUM WD-21
NEW VENT 1078
NEW VENT 1079
WASTE TANK TRUCK LOADING
TS-5
K71 TJPA
TJPA TOTE
PP662
NEW VENT 1077
HCR
HOS
PP-492
PP-495
PP-674
HX-185
HX-286
K-60
K-61
K-63
T-172 W-705T
PP497
F-171
PP493
PP490
PP671
HX-192
HX-184
HX-282
NEW VENT 1076
EXISTING VENT 1064
T-171 W-705
T-73 W-705
E-144
PP503
PP489
F-184
NEW VENT 1071
TANK TRUCK LOADING
TS-10
EXISTING VENT 1075
TOTE FILLING
TF-7
EXISTING VENT 1078
DRUM FILLING
DS-7
CONFIDENTIAL –DO NOT DUPLICATE
addivant
Addivant USA, LLC
1000 Morgantown Industrial Park
Morgantown, WV 26501
P & I DIAGRAM –
PROCESS FLOW DIAGRAM –
NP W705 SCALE-UP PROCESS
D-1460 (A)
REV.

| Material Safety Data Sheet | SOLVAY |
|---|---|
| **ALBRITE PCL3** | |
| Revision: 1.00 US ( EN ) | Issuing date: 03/19/2014 |

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product identifier**

Trade name : ALBRITE PCL3

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

no data available.

**1.3 Details of the supplier of the safety data sheet**

Company : Solvay USA Inc.,
NOVECARE
8 Cedar Brook Drive
Cranbury, NJ, 08512-7500, US
Telephone number: 800-973-7873

**1.4 Emergency telephone**

USA: FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC (800-424-9300 within the United States or 703-527-3887 for International collect calls) or Solvay CAERS (Communication and Emergency Response System at 800-916-3232)

**SECTION 2: Hazards identification**

**2.1 Emergency overview**

Appearance : Form : fuming
Physical state: liquid
Color: colorless
Odor: pungent

Warning statements : DANGER!
MAY BE FATAL IF INHALED. HIGHLY TOXIC IF SWALLOWED. HARMFUL IF ABSORBED THROUGH SKIN. CORROSIVE. CAUSES SEVERE BURNS. REACTS WITH WATER OR MOIST AIR RELEASING HYDROCHLORIC AND PHOSPHORIC ACIDS. MAY CAUSE FLASH FIRES.

**2.2 Potential Health Effects**

Inhalation effect : Highly toxic if inhaled. May cause a burning sensation, coughing, wheezing, shortness of breath, laryngitis, lung irritation, headache, dizziness, nausea, vomiting, fluid in lungs, death.

Skin effect : Corrosive. Causes burns.

Eye effect : Corrosive. Causes permanent damage to the cornea, irreversible eye damage. Vapor can cause redness, irritation.

| | | |
|---|---|---|
| Ingestion effect | : | Highly toxic if ingested. Causes corrosion, burns to mouth and esophagus, nausea, vomiting, abdominal pain, chest pain. |
| Chronic effects | : | Prolonged contact can cause kidney damage.<br><br>This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens. |

## SECTION 3: Composition/information on ingredients

### 3.1 Information on Components and Impurities

**OSHA Hazardous Ingredients and Impurities**

| Chemical Name | Identification number CAS-No. | Concentration [%] |
|---|---|---|
| Phosphorous trichloride | 7719-12-2 | > 99.5 |
| Phosphoryl Chloride | 10025-87-3 | < 0.5 |

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

| | | |
|---|---|---|
| General advice | : | Show this material safety data sheet to the doctor in attendance.<br>First responder needs to protect himself.<br>Place affected apparel in a sealed bag for subsequent decontamination. |
| If inhaled | : | Move to fresh air.<br>If breathing is difficult, give oxygen.<br>If breathing has stopped, apply artificial respiration.<br>Immediate medical attention is required. |
| Skin contact | : | After contact with skin, first remove product with a dry cloth and then wash the skin with plenty of water.<br>Seek medical advice.<br>Remove contaminated clothing and shoes. |
| Eye contact | : | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.<br>Get immediate medical advice/ attention.<br>Continue the irrigation for an additional 15 minutes if a physician is not immediately available |
| Ingestion | : | Do NOT induce vomiting.<br>Do not give anything to drink.<br>Take victim immediately to hospital. |

**4.2 Most important symptoms and effects, both acute and delayed**

| | | |
|---|---|---|
| Risks | : | Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis<br>Skin contact may aggravate existing skin disease |

**4.3 Indication of any immediate medical attention and special treatment needed**

| | | |
|---|---|---|
| Notes to physician | : | All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.<br><br>Treat symptomatically.<br>There is no specific antidote available. |

## SECTION 5: Firefighting measures

| | | |
|---|---|---|
| Flash point | : | not applicable |
| Autoignition temperature | : | no data available |
| Flammability / Explosive limit | : | no data available |

**5.1 Extinguishing media**

| | | |
|---|---|---|
| Suitable extinguishing media | : | Dry sand<br>Carbon dioxide ($CO_2$)<br>Dry chemical |
| Unsuitable extinguishing media | : | Water<br>Water mist<br>Water spray<br>Foam |

**5.2 Special hazards arising from the substance or mixture**

| | | |
|---|---|---|
| Specific hazards during fire fighting | : | Not combustible.<br>Reacts violently with water.<br>Under fire conditions:<br>Corrosive or suffocating vapors are released.<br>Highly toxic gases are released.<br>Hazardous decomposition products formed under fire conditions.<br>Phosphorus trihydride (phosphine) |

**5.3 Advice for firefighters**

| | | |
|---|---|---|
| Special protective equipment for fire-fighters | : | Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. |
| Specific fire fighting methods | : | Evacuate personnel to safe areas.<br>Stay upwind.<br>Collect contaminated fire extinguishing water separately. This must not be discharged into drains. |

Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Evacuate personnel to safe areas.<br>Stay upwind.<br>Ventilate the area.<br>Remove all incompatible materials as quickly as possible<br>Avoid contact with the skin and the eyes.<br>Do not breathe vapor.<br>Use personal protective equipment.<br>For personal protection see section 8.<br>The product must only be handled by specifically trained employees.<br>If spillage occurs on the public highway, indicate the danger and notify the authorities (police, fire service). |

### 6.2 Environmental precautions

| | | |
|---|---|---|
| Environmental precautions | : | Do not let product enter drains.<br>Do not flush into surface water or sanitary sewer system.<br>Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies |
| Risk Management Measures to control release to soil | : | Pick up contaminated soil. |

### 6.3 Methods and materials for containment and cleaning up

| | | |
|---|---|---|
| Recovery | : | Stop leak if safe to do so.<br>Dam up with sand or inert earth (do not use combustible materials).<br>Pump or collect any free spillage into an appropriate closed container. (see Section 7: Handling and Storage)<br>Soak up with inert absorbent material.<br>Shovel into suitable container for disposal. |
| Decontamination / cleaning | : | Wash with sodium carbonate solution (5% Na2 CO3).<br>Recover the cleaning water for subsequent disposal.<br>Decontaminate tools, equipment and personal protective equipment in a segregated area. |
| Disposal | : | Dispose of in accordance with local regulations. |
| Prohibition | : | Never return spills in original containers for re-use. |

**6.4 Reference to other sections**

no data available

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

| | | |
|---|---|---|
| Technical measures | : | Vapor extraction at source<br>Use product only in closed system.<br>Blanket with inert gas.<br>acid resisting floor |
| Advice on safe handling and usage | : | Keep away from heat and flame.<br>Avoid the formation or spread of mists in the atmosphere.<br>All pipes used to transfer the product must not contain any water or oxygen.<br>Never add water to this product.<br>Do not use compressed air for filling, discharging or handling.<br><br>The product must only be handled by specifically trained employees.<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>Avoid all contact with water or humidity.<br>Handle under nitrogen, protect from moisture.<br><br>** HAZARD WARNING: If this product is used in combination with Trimethylolpropane, Trimethylolpropane derived products or their corresponding Trimethylol alkane homologs, THERE IS A POSSIBILITY that bicyclic phosphates and/or phosphites may be produced as a result of thermal decomposition. Bicyclic phosphates and phosphites have acute neurotoxic properties and may cause convulsive seizures in laboratory test animals. Therefore, this product should not be used in conjunction with Trimethylolpropane or Trimethylolpropane derived products unless tested to determine their decomposition toxicity. Follow all precautionary measures outlined in this Material Safety Data Sheet and/or contact Solvay USA Inc. |
| Hygiene measures | : | Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials:<br>1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.<br>2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.<br>3) Wash exposed skin promptly to remove accidental splashes or contact with material. |

## 7.2 Conditions for safe storage, including any incompatibilities

Technical Measures for storage : The floor of the storage area should be impermeable and designed to form a water-tight basin.

**Storage conditions**

Recommended : Keep in a dry, cool and well-ventilated place.
Keep only in the original container.
Keep tightly closed.
Keep under nitrogen.
Protect from moisture.
Store at room temperature.

To be avoided : Keep away from open flames, hot surfaces and sources of ignition.
Keep away from incompatible materials to be indicated by the manufacturer

Incompatible products : humid air and water
Metals
Strong oxidizing agents
Alkalis and caustic products.
Organic materials

**Packaging Measures**

Packaging conditions : Steel drum varnished with an epoxyphenolic resin.

Packaging materials—Recommended : Keep only in the original container.

Packaging materials—To be avoided : Plastic materials., All other materials.

**Storage stability**

Storage temperature : no data available

## 7.3 Specific end use(s)

no data available

| Material Safety Data Sheet | SOLVAY |
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**SECTION 8: Exposure controls/personal protection**

Introductory Remarks:
These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations.

Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

**8.1 Control parameters**

**Ingredients with workplace control parameters**

| Ingredients | Value type | Value | Basis |
|---|---|---|---|
| Phosphorous trichloride | TWA | 0.2 ppm<br>1.5 mg/m3 | NIOSH |
| Phosphorous trichloride | ST | 0.5 ppm<br>3 mg/m3 | NIOSH |
| Phosphorous trichloride | TWA | 0.2 ppm | ACGIH |
| | Eye, skin, & Upper Respiratory Tract irritation | | |
| Phosphorous trichloride | STEL | 0.5 ppm | ACGIH |
| | Eye, skin, & Upper Respiratory Tract irritation | | |
| Phosphorous trichloride | TWA | 0.5 ppm<br>3 mg/m3 | OSHA Z-1 |
| | The value in mg/m3 is approximate. | | |
| Phosphorous trichloride | TWA | 0.2 ppm<br>1.5 mg/m3 | OSHA Z-1-A |
| Phosphorous trichloride | STEL | 0.5 ppm<br>3 mg/m3 | OSHA Z-1-A |
| Phosphoryl Chloride | TWA | 0.1 ppm<br>0.6 mg/m3 | NIOSH |
| Phosphoryl Chloride | ST | 0.5 ppm<br>3 mg/m3 | NIOSH |
| Phosphoryl Chloride | TWA | 0.1 ppm | ACGIH |
| | Upper Respiratory Tract irritation | | |

| | | | |
|---|---|---|---|
| Phosphoryl Chloride | TWA | 0.1 ppm<br>0.6 mg/m3 | OSHA Z-1-A |

**NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)**

| Ingredients | CAS-No. | Concentration |
|---|---|---|
| Phosphorous trichloride | 7719-12-2 | 25 parts per million |

## 8.2 Exposure controls

**Control measures**

Engineering measures : Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures :

Used in closed system
Vapor extraction at source
effective ventilation in all processing areas

**Personal protective equipment**

Respiratory protection : When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Always wear a self-contained breathing apparatus or full-face airline respirator when using this chemical.
Use NIOSH approved respiratory protection.
Have available emergency self-contained breathing apparatus or full-face airline respirator when using this chemical.

Hand protection : Acid-resistant protective gloves.
Where there is a risk of contact with hands, use appropriate gloves
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Gloves must be inspected prior to use.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Eye contact should be prevented through the use of:

Safety glasses with side-shields
In case of contact through splashing:
Face-shield

Skin and body protection : Acid resistant boots.

Acid resistant apparel.
Complete head face and neck protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials:
1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
3) Wash exposed skin promptly to remove accidental splashes or contact with material.

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.

Always have on hand a first-aid kit, together with proper instructions.
The protective equipment must be selected in accordance with current local standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards, and/or risks that may occur during use.

## SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

### 9.1 Information on basic physical and chemical properties

| | | |
|---|---|---|
| Appearance | : | Form : fuming<br>Physical state: liquid<br>Color: colorless |
| Odor | : | pungent |
| Odor Threshold | : | no data available |
| pH | : | no data available |
| Freezing point | : | -170 °F (-112 °C) |
| Boiling point/boiling range | : | 167 °F (75 °C) ( 760 mmHg (1,013.25 hPa)) |
| Flash point | : | not applicable |
| Evaporation rate (Butylacetate = 1) | : | no data available |
| Flammability (solid, gas) | : | no data available |

| | | |
|---|---|---|
| Flammability (liquids) | : | no data available |
| Flammability / Explosive limit | : | no data available |
| Autoignition temperature | : | no data available |
| Vapor pressure | : | 100.00 mmHg (133.32 hPa) ( 77 °F (25 °C)) |
| Vapor density | : | 4.75 |
| Density | : | 1.58 g/cm3 ( 140 °F (60 °C))<br>Relative density : 1.58 ( 140 °F (60 °C)) |
| Solubility | : | Water solubility :<br>Reacts violently with water. |
| Partition coefficient: n-octanol/water | : | no data available |
| Thermal decomposition | : | no data available |
| Viscosity | : | no data available |
| Explosive properties | : | no data available |
| Oxidizing properties | : | no data available |

**9.2 Other information**

| | | |
|---|---|---|
| Molecular weight | : | 137.32 g/mol |
| Reactions with water / air | : | Reacts violently with water. |

## SECTION 10: Stability and reactivity

**10.1 Reactivity**

no data available

**10.2 Chemical stability**

| | | |
|---|---|---|
| Chemical stability | : | Stable under recommended storage conditions. |

**10.3 Possibility of hazardous reactions**

| | | |
|---|---|---|
| Polymerization | : | Hazardous polymerization does not occur. |

**10.4 Conditions to avoid**

Conditions to avoid : Keep away from heat and sources of ignition.
Exposure to moisture.

**10.5 Incompatible materials**

Materials to avoid : Acids
Air
Alcohols
Alkali metals
Amines
Bases
Combustible material
Humid air
Ketones
Metals
Organic materials
Strong oxidizing agents
Water

**10.6 Hazardous decomposition products**

Decomposition products : On combustion or on thermal decomposition (pyrolysis), releases:
acids
PHOSPHINE

On contact with water, forms:
harmful and corrosive vapors.
Phosphoric acid
Oxides of phosphorus
hydrochloric acid

## SECTION 11: Toxicological information

**11.1 Information on toxicological effects**

**Acute toxicity**

Acute oral toxicity : LD50 : 18 mg/kg - rat

Acute inhalation toxicity : LC50 - 4 h : 0.226 mg/l - rat

Acute dermal toxicity : no data available

Acute toxicity (other routes of administration) : no data available

**Skin corrosion/irritation**

Skin irritation : rabbit
Corrosive

**Serious eye damage/eye irritation**

| | | |
|---|---|---|
| Eye irritation | : | rabbit<br>Corrosive |

**Respiratory or skin sensitization**

| | | |
|---|---|---|
| Sensitization | : | no data available |

**Mutagenicity**

| | | |
|---|---|---|
| Genotoxicity in vitro | : | Ames test<br>negative |
| Genotoxicity in vivo | : | no data available |

**Carcinogenicity**

| | | |
|---|---|---|
| Carcinogenicity | : | no data available |

This product does not contain any ingredient designated as probable or suspected human carcinogens by:
NTP
IARC
OSHA
ACGIH

**Toxicity for reproduction and development**

| | | |
|---|---|---|
| Toxicity to reproduction / fertility | : | no data available |
| Developmental Toxicity/Teratogenicity | : | no data available |

**STOT**

| | | |
|---|---|---|
| STOT-single exposure | : | no data available |
| STOT-repeated exposure | : | no data available |

**Aspiration toxicity**

| | | |
|---|---|---|
| Aspiration toxicity | : | no data available |

## SECTION 12: Ecological information

### 12.1 Toxicity

no data available

### 12.2 Persistence and degradability

no data available

**12.3 Bioaccumulative potential**

no data available

**12.4 Mobility in soil**

no data available

**12.5 Results of PBT and vPvB assessment**

no data available

**12.6 Other adverse effects**

no data available

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

**Product Disposal**

| | | |
|---|---|---|
| Advice on Disposal | : | Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material. |
| Waste Code | : | EPA:<br>Hazardous Waste – YES<br><br>RCRA:<br>D002 - Corrosive waste – (C)<br>D003 - Reactive waste – (R)<br>D004 |

**Advice on cleaning and disposal of packaging**

| | | |
|---|---|---|
| Advice | : | Empty the packaging completely prior to disposal. |
| Other data | : | Dispose of in accordance with local regulations. |

## SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

**DOT**

| | |
|---|---|
| **14.1 UN number** | UN 1809 |
| **14.2 Dangerous Good Description** | UN 1809 PHOSPHORUS TRICHLORIDE, 6.1 (8), I |
| **14.3 Transport hazard class** | 6.1 |

| | |
|---|---|
| Subsidiary hazard class | 8 |

**14.4 Packing group**

| | |
|---|---|
| Packing group | I |
| Label(s) | 6.1 - TOXIC INHALATION HAZARD (8) |
| ERG No | 137 |

**14.5 Environmental hazards** NO
**Marine pollutant**

**14.6 Special precautions for user**

This product contains one or more ingredients identified as a hazardous substance in Appendix A of 49 CFR 172.101. The product quantity, in one package, which triggers the RQ requirements under 49 CFR for each hazardous substance is shown.

Reportable quantities : RQ substance: Phosphorus Trichloride
RQ limit for substance: 1,000 lb
RQ limit for product: 1,005 lb

**TDG**

**14.1 UN number** UN 1809

**14.2 Dangerous Good Description** UN 1809 PHOSPHORUS TRICHLORIDE, 6.1 (8), I

**14.3 Transport hazard class** 6.1
Subsidiary hazard class 8

**14.4 Packing group**

| | |
|---|---|
| Packing group | I |
| Label(s) | 6.1 (8) |
| ERG No | 137 |

**14.5 Environmental hazards** NO
**Marine pollutant**

**14.6 Special precautions for user**
For personal protection see section 8.

**IMDG**

**14.1 UN number** UN 1809

**14.2 Dangerous Good Description** UN 1809 PHOSPHORUS TRICHLORIDE, 6.1 (8), I

**14.3 Transport hazard class** 6.1
Subsidiary hazard class 8

**14.4 Packing group**

| | |
|---|---|
| Packing group | I |
| Label(s) | 6.1 (8) |
| EmS | F-A , S-B |

**14.5 Environmental hazards** NO
**Marine pollutant**

**14.6 Special precautions for user**
For personal protection see section 8.

IATA

| | |
|---|---|
| **14.1 UN number** | UN 1809 |
| **14.2 Dangerous Good Description** | Not permitted for transport |
| **14.3 Transport hazard class** | Not permitted for transport |
| **14.4 Packing group** | |
| Packing instruction (cargo aircraft) | Not permitted for transport |
| Packing instruction (passenger aircraft) | Not permitted for transport |
| **14.5 Environmental hazards** | NO |
| **Marine pollutant** | |

**14.6 Special precautions for user**
For personal protection see section 8.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

## SECTION 15: Regulatory information

### 15.1 Notification status

| | |
|---|---|
| United States TSCA Inventory | : y (positive listing)<br>On TSCA Inventory |
| Canadian Domestic Substances List (DSL) | : y (positive listing)<br>All components of this product are on the Canadian DSL. |
| Australia Inventory of Chemical Substances (AICS) | : y (positive listing)<br>On the inventory, or in compliance with the inventory |
| Japan. CSCL - Inventory of Existing and New Chemical Substances | : y (positive listing)<br>On the inventory, or in compliance with the inventory |
| Korea. Korean Existing Chemicals Inventory (KECI) | : y (positive listing)<br>On the inventory, or in compliance with the inventory |
| China. Inventory of Existing Chemical Substances in China (IECSC) | : y (positive listing)<br>On the inventory, or in compliance with the inventory |

### 15.2 Federal Regulations

**SARA 311/312 Hazards**

| | |
|---|---|
| Fire Hazard | no |
| Reactivity Hazard | yes |
| Sudden Release of Pressure Hazard | no |
| Acute Health Hazard | yes |
| Chronic Health Hazard | no |

**SARA 313** : 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.

**SARA 302** : The following components are subject to reporting levels established by SARA Title III, Section 302:

| Ingredients | CAS-No. | Threshold planning quantity | Remarks |
|---|---|---|---|
| Phosphorous trichloride | 7719-12-2 | 1000 lb | |
| Phosphoryl Chloride | 10025-87-3 | 500 lb | |

**EPCRA - Emergency Planning and Community Right-to-Know**

**CERCLA Reportable Quantity**

| Ingredients | CAS-No. | Reportable quantity |
|---|---|---|
| Arsenic | 7440-38-2 | 1 lb |
| Unlisted hazardous wastes - Characteristic of Corrosivity | | 100 lb |
| Unlisted hazardous wastes - Characteristic of Reactivity | | 100 lb |
| Phosphorous trichloride | 7719-12-2 | 1000 lb |
| Phosphoryl Chloride | 10025-87-3 | 1000 lb |

**SARA 304 Reportable Quantity**

| Ingredients | CAS-No. | Reportable quantity |
|---|---|---|
| Phosphorous trichloride | 7719-12-2 | 1000 lb |
| Phosphoryl Chloride | 10025-87-3 | 1000 lb |

**SARA 302 Reportable Quantity**

| Ingredients | CAS-No. | Reportable quantity |
|---|---|---|
| Phosphorous trichloride | 7719-12-2 | 1000 lb |
| Phosphoryl Chloride | 10025-87-3 | 1000 lb |

**Other regulations**

Weapons Precursor Regulations : This product is regulated by the U.S. Department of Commerce under the provisions of the Chemical Weapons Convention (15 CFR Parts 730-774).

**15.3 State Regulations**

**California Prop 65** : WARNING! This product contains a chemical known in the State of California to cause cancer.
Arsenic

No Significant Risk Levels (NSRLs) have been established for the following:
Arsenic
Value : 0.06 micrograms per day Form of exposure : Inhalation

Arsenic
Value : 10 micrograms per day

## SECTION 16: Other information

**NFPA-Classification**

Health : 3 serious
Flammability : 0 minimal
Instability or Reactivity : 2 moderate

**HMIS-Classification**

Health : 3 serious
Flammability : 0 minimal
Reactivity : 2 moderate

| Material Safety Data Sheet | SOLVAY |
|---|---|
| **ALBRITE PCL3** | |
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**Key or legend to abbreviations and acronyms used in the safety data sheet**

| | | |
|---|---|---|
| ST | : | STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday |
| STEL | : | Short-term exposure limit |
| TWA | : | 8-hour, time-weighted average |
| ACGIH | : | American Conference of Governmental Industrial Hygienists |
| OSHA | : | Occupational Safety and Health Administration |
| WHMIS | : | Workplace Hazardous Materials Information System |
| NTP | : | National Toxicology Program |
| IARC | : | International Agency for Research on Cancer |
| Solvay OEL | : | SAEL (Solvay Acceptable Exposure Limit) |
| NIOSH | : | National Institute for Occupational Safety and Health |
| NFPA | : | National Fire Protection Association |
| HMIS | : | Hazardous Materials Identification System (Paint & Coating) |

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in another manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

| | |
|---|---|
| **Material name** | **TAP / TERT-AMYLPHENOLS** |
| **Version #** | 02 |
| **Issue date** | 04-11-2014 |
| **Revision date** | 04-11-2014 |
| **Chemical name** | TERTIARY-AMYLPHENOLS |
| **CAS #** | N/A |
| **Product code** | N/A |
| **Product use** | Chemical intermediate |
| **Manufacturer information** | SI Group®<br>P.O. Box 1046<br>Schenectady, NY 12301<br>United States<br>sds.info@siigroup.com<br>General 518-887-2400<br>EMERGENCY: USA -- CHEMTREC 1-(800)-424-9300;<br>International [Call Collect] +1 (703)-527-3887 |
| **Trade secret** | This information is not considered to represent confidential business information to SI Group |
| **Other information** | The material, or components, is either on the TSCA inventory list or is exempt from the requirement to be listed.<br><br>Not classified as dangerous in the meaning of transport regulations. |

## 2. Hazards Identification

| | |
|---|---|
| **Emergency overview** | DANGER<br><br>Harmful in contact with skin and if swallowed. Causes severe skin burns and eye damage. May cause irritation of respiratory tract. May affect mucous membranes May cause gastrointestinal disturbances. Prolonged exposure may cause chronic effects.<br><br>Each person who could potentially be exposed to this material, via any route of entry, while performing their assignments, routine and non-routine; from piping; and/or during an emergency situation, should review this MSDS in order to better understand the hazards associated with the material. Accordingly, please note an * in a HMIS® field indicates this material may potentially involve certain chronic health issues such as cancer -- HMIS is a registered trade and service mark of the NPCA. To work safely with this material : keep away from heat and ignition sources do not get in eyes, on skin or clothing do not breath in material's vapors, dust, or fumes keep container closed use with adequate ventilation -- do not enter any confined spaces without first verifying air quality wash thoroughly after handling |
| **OSHA regulatory status** | This preparation is classified as dangerous according to Directive 1999/45/EC and its amendments. This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). |
| **Potential health effects** | |
| **Routes of exposure** | Eye contact. Skin contact. Ingestion. Inhalation. |
| **Eyes** | Contact may irritate or burn eyes. Risk of serious damage to eyes. Do not get this material in contact with eyes. |
| **Skin** | Causes skin burns. Harmful in contact with skin. Avoid contact with skin. |
| **Inhalation** | Dust may irritate respiratory system. Prolonged inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray. |
| **Ingestion** | Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Do not ingest. |
| **Target organs** | Eyes. Skin. Gastro-intestinal tract. Respiratory system. |
| **Signs and symptoms** | May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. |

**Potential environmental effects** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 3. Composition / Information on Ingredients

| Components | CAS # | Percent |
|---|---|---|
| PARA-tertiary-AMYLPHENOL | 80-46-6 | 60 - 70 |
| 2,4-DI-tertiary-AMYLPHENOL | 120-95-6 | 30 - 40 |

## 4. First Aid Measures

**First aid procedures**

**Eye contact** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if symptoms occur. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: irritation to burns

**Skin contact** rash to irritation to burns Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. For minor skin contact, avoid spreading material on unaffected skin. Get medical attention if irritation develops and persists. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include:

**Inhalation** Move to fresh air. For breathing difficulties, oxygen may be necessary. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not use mouth-to-mouth method if victim inhaled the substance. Get medical attention if symptoms occur. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: irritation -- respiratory tract

**Ingestion** IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: nausea ; vomiting ; diarrhea ; gastritis

**Notes to physician** In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Provide general supportive measures and treat symptomatically. Please consider other resources such as a regional Poison Control Center or web sites like the National Library of Medicine TOXNET @ http://toxnet.nlm.nih.gov. A specific antidote is not known. Some of the symptoms presented may become life threatening if the exposure is a result of an emergency or an unexpected acute overexposure. Additionally, some workers with certain pre-existing medical conditions such as: asthma, allergies, or impaired pulmonary and/or liver functions, or who may be particularly susceptible to this material, may be affected by exposure to this material.

**General advice** Take off contaminated clothing and shoes immediately. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. Fire Fighting Measures

**Flammable properties** Dust may form explosive mixture with air.

**Extinguishing media**

**Suitable extinguishing media** Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

**Protection of firefighters**

**Specific hazards arising from the chemical** Fire may produce irritating, corrosive and/or toxic gases.

**Protective equipment and precautions for firefighters** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection.

**Fire fighting equipment/instructions** Cool containers exposed to heat with water spray and remove container, if no risk is involved. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. High concentrations of dust may form explosive mixture with air. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

| | |
|---|---|
| **Specific methods** | In the event of fire and/or explosion do not breathe fumes. Cool containers exposed to flames with water until well after the fire is out. |
| **Hazardous combustion products** | Irritating and toxic gases or fumes may be released during a fire. |
| **General fire hazards** | High concentration of airborne dust may form explosive mixture with air. The Minimum Ignition Energy for some organic solids as a dust may be as low as 3 mJ [millijoules]. The Minimum Explosive Concentration for some organic solids as a dust may be as low as 0.025 oz/ft3 or ~20 g/m3. |

## 6. Accidental Release Measures

| | |
|---|---|
| **Personal precautions** | Remove all sources of ignition. Avoid inhalation of vapors and spray mists. Keep out of low areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Follow facility/company's emergency plans. |
| **Environmental precautions** | Prevent further leakage or spillage if safe to do so. Eliminate sources of ignition. Ventilate the contaminated area. Prevent spreading over a wide area (e.g. by containment or oil barriers). In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. |
| **Methods for containment** | ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. |
| **Methods for cleaning up** | Ventilate the contaminated area. Eliminate ignition sources including sources of electrical, static or frictional sparks. Avoid dust formation. Wear appropriate protective equipment and clothing during clean-up.<br><br>Large Spills: Dike far ahead of spill for later disposal.<br><br>Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean contaminated floors and objects thoroughly while observing environmental regulations. |

## 7. Handling and Storage

| | |
|---|---|
| **Handling** | DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Use good personal hygiene practices Guard against dust accumulation of this material. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes. Avoid contact with skin. Wear personal protective equipment. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. "Empty" containers retain product residue (liquid or vapor) and can be dangerous. Do not re-use empty containers. As with all chemicals, good industrial hygiene practices should be followed when handling this material. When the container(s) is empty it may retain product residue including vapors which could accumulate. Therefore, do not cut, drill, grind, or weld empty containers. Additionally, do not conduct such activity(ies) near full, partially full, or empty product containers without appropriate workplace safety authorization(s) or permit(s). |
| **Storage** | Guard against dust accumulation of this material. Keep away from heat, sparks and open flame. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Use care in handling/storage. |

## 8. Exposure Controls / Personal Protection

| | |
|---|---|
| **Exposure guidelines** | This material does not have established exposure limits. Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled. All PPE use is to be determined by a qualified person. |
| **Occupational exposure limits** | No exposure limits noted for ingredient(s). |

| | |
|---|---|
| **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. High concentration of airborne dust may form explosive mixture with air. Ensure that good housekeeping practices are followed as well as applicable guidelines such as the National Fire Protection Association [NFPA] 654, "Prevention of Fire and Dust Explosions from the Manufacturing., Processing, and Handling of Combustible Particulate Solids". Ventilation should be sufficient to effectively remove, and prevent buildup of, any vapors, dusts, or fumes that may be generated during handling or thermal processing. In order to ensure appropriate electrical safety practices are followed, consult applicable standards. These may include guidelines such as the National Fire Protection Association [NFPA] 70, "The National Electrical Code" and NFPA 499, "Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas ". NOTE: since this material's vapors, dust or fumes can form explosive mixtures in air, ensure that any potential areas where explosions may occur are designed to minimize potential damage. For recommendations to prevent such explosions and associated damage, consult applicable guidelines such as NFPA 69, "Standard on Explosion Prevention Systems" and/or NFPA 68, "Guide for Venting Deflagrations". |

**Personal protective equipment**

| | |
|---|---|
| **Eye / face protection** | Avoid contact with eyes. Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear: Face-shield. Eye wash fountain is recommended. |
| **Skin protection** | Avoid contact with the skin. Wear suitable protective clothing. Wear impervious gloves for prolonged contact. |
| **Respiratory protection** | Do not breathe dust/fume/gas/mist/vapors/spray. In case of insufficient ventilation wear suitable respiratory equipment. Dust safety masks are recommended when the dust concentration is more than 10 mg/m3. 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. 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. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use. |
| **General hygiene considerations** | Avoid contact with eyes. Avoid contact with skin. Do not breathe dust. Wash hands after handling and before eating. Handle in accordance with good industrial hygiene and safety practice. |

## 9. Physical & Chemical Properties

| | |
|---|---|
| **Appearance** | Colorless to yellowish solid, or molten material, with a weak, phenolic odor. |
| **Physical state** | Solid. |
| **Form** | Not available. |
| **Color** | Not available. |
| **Odor** | Not available. |
| **Odor threshold** | Not available. |
| **pH** | Not available. |
| **Vapor pressure** | N/A |
| **Vapor density** | >Air |
| **Boiling point** | Not available. |
| **Melting point/Freezing point** | 167 °F (75 °C) |
| **Solubility (water)** | Not very soluble [<1%] |
| **Specific gravity** | Not available. |
| **Relative density** | Not available. |
| **Flash point** | > 201.0 °F (> 93.9 °C) Tag Closed Cup |
| **Flammability limits in air, upper, % by volume** | Not available. |
| **Flammability limits in air, lower, % by volume** | Not available. |
| **Auto-ignition temperature** | Not available. |

| | |
|---|---|
| **Evaporation rate** | <Ether |
| **Other data** | |
| **Flash point class** | Combustible IIIB |

## 10. Chemical Stability & Reactivity Information

| | |
|---|---|
| **Chemical stability** | Stable under normal conditions [e.g., 70°F (21°C) & 14.7 psig (760 mmHg)]. |
| **Conditions to avoid** | Heat, flames and sparks. Avoid dust close to ignition sources. |
| **Incompatible materials** | Incompatible with strong acids and bases. |
| **Hazardous decomposition products** | Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons. Phenolic vapors may be released upon decomposition. |
| **Possibility of hazardous reactions** | Will not occur under normal conditions [e.g., 70°F (21°C) & 14.7 psig (760 mmHg)]. |

## 11. Toxicological Information

**Human experience** While OSHA 29 CFR 1910.1200 emphasizes the use of industrial -- human -- data for workplace hazard evaluations, relatively few materials have such data available as toxicological information is primarily obtained from tests conducted on, or with, animals used as surrogates for humans. Therefore, the effects and symptoms represented, and/or summarized, may not reflect actua workplace exposures. All materials used in a given work area should be evaluated by a competent person who can then advise involved workers of health effects, or symptoms, if any, they may experience from their assigned tasks.

**Toxicological data**

| Components | Species | Test Results |
|---|---|---|
| 2,4-DI-tertiary-AMYLPHENOL (CAS 120-95-6) | | |
| **Acute** | | |
| *Oral* | | |
| LD50 | Rat | 330 mg/kg |
| PARA-tertiary-AMYLPHENOL (CAS 80-46-6) | | |
| **Acute** | | |
| *Dermal* | | |
| LD50 | Rabbit | 2000 mg/kg |
| *Oral* | | |
| LD50 | Rat | 1830 mg/kg |

| | |
|---|---|
| **Sensitization** | May cause sensitization of susceptible persons. |
| **Acute effects** | Harmful in contact with skin and if swallowed. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. |
| **Local effects** | May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. |
| **Chronic effects** | Prolonged exposure may cause chronic effects. |
| **Carcinogenicity** | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| **Skin corrosion/irritation** | Corrosive effects. |
| **Epidemiology** | No epidemiological data is available for this product. |
| **Mutagenicity** | Not expected to be hazardous by OSHA criteria. |
| **Neurological effects** | No data available for this product. |
| **Reproductive effects** | Not expected to be hazardous by OSHA criteria. |
| **Teratogenicity** | No data available for this product. |
| **Symptoms and target organs** | In animal studies, target organs for toxicity are the: eyes skin gastrointestinal system respiratory system |
| **Further information** | The toxicological properties of this product have not been thoroughly investigated. Use appropriate precautions. |

## 12. Ecological Information

**Ecotoxicity** Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the environment.

**Ecotoxicological data**

| Components | | Species | Test Results |
|---|---|---|---|
| 2,4-DI-tertiary-AMYLPHENOL (CAS 120-95-6) | | | |
| | EC50 | Bacteria | > 10 mg/l, 3 hours |
| **Aquatic** | | | |
| Fish | LC50 | Rainbow trout,donaldson trout (Oncorhynchus mykiss) | > 0.1 mg/l, 96 hours |
| PARA-tertiary-AMYLPHENOL (CAS 80-46-6) | | | |
| **Aquatic** | | | |
| Fish | LC50 | Carp (Cyprinus carpio) | 1.6 mg/l, 96 hours |
| | | Fathead minnow (Pimephales promelas) | 1.87 - 3.34 mg/l, 96 hours |

**Environmental effects** Harmful to aquatic organisms.

**Persistence and degradability** PARA-tertiary-AMYLPHENOL: Terrestrial Fate: may leach. Aquatic Fate:volatilizes slowly [half-lives: river ~23 days; lake ~173 days]. Atmospheric Fate: photochemically degrades [half-life ~9 hours]

2,4-DI-TERTIARY-AMYLPHENOL: Aquatic Fate: biodegrades [BOD28 ~33%].

**Bioaccumulation / accumulation**

**Bioaccumulative potential**

**Octanol/water partition coefficient log Kow**

| | |
|---|---|
| PARA-tertiary-AMYLPHENOL | 4.03 |

**Mobility in environmental media** The product is slightly soluble in water.

## 13. Disposal Considerations

**Disposal instructions** Dispose in accordance with all applicable regulations. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

## 14. Transport Information

**Comments** NOTE: This section's data are provided as a guide to the overall classification of the product. However, transportation classifications may be subject to change as, for example, with changes in package size. Consult shipper requirements under IMO, ICAO (IATA), TDG and 49 CFR to assure regulatory compliance. Additionally, please contact the Transportation & Regulatory Affairs Specialist with SI Group @ (518)-370-4200 if there are questions regarding the cleaning of containers, or vessels. Remember that the reuse, treatment, or disposal, of any related residuals or wastes must be in accordance with all federal, state, and local environmental regulations.

**General information** IMDG Regulated Marine Pollutant.

**ROAD/RAIL (US DOT)**

**Packaging Type:** BULK– TANK TRUCK/TANK CAR
**UN Number:** UN2430
**Proper Shipping Name:** Alkylphenols, solid, n.o.s., molten
**Class/Subclass:** 8
**Packing group:** PG III
**Marine Pollutant:** Marine Pollutant (para-tert-amylphenol; 2,4 di-tert-amylphenol)
**NA ERG Number:** 153

**Packaging Type:** DRUM(s)/BAG(s)
**UN Number:** UN2430
**Proper Shipping Name:** Alkylphenols, solid, n.o.s.
**Class/Subclass:** 8
**Packing group:** PG III
**NA ERG Number:** 153

**Packaging Type:** INTERMEDIATE BULK CONTAINER
**UN Number:** UN2430
**Proper Shipping Name:** Alkylphenols, solid, n.o.s.
**Class/Subclass:** 8

| | |
|---|---|
| **Packing group:** | PG III |
| **Marine Pollutant:** | Marine Pollutant (para-tert-amylphenol; 2,4 di-tert-amylphenol) |
| **NA ERG Number:** | 153 |

| | |
|---|---|
| **Packaging Type:** | PAIL(s)/CAN(s) |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | Alkylphenols, solid, n.o.s. |
| **Class/Subclass:** | 8 |
| **Packing group:** | PG III |
| **NA ERG Number:** | 153 |

**AIR (ICAO/IATA)**

| | |
|---|---|
| **Packaging Type:** | PAIL(s)/CAN(s) |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | Alkylphenols, solid, n.o.s. |
| **Class:** | 8 |
| **Packing group:** | PG III |
| **ERG Code/ICAO:** | 8L |

**VESSEL (IMDG)**

| | |
|---|---|
| **Packaging Type:** | BULK-- TANK TRUCK/TANK CAR |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | HOT ALKYLPHENOLS, SOLID, N.O.S. (para-tert-amylphenol) |
| **Class:** | 8 |
| **Packing group:** | PG III |
| **Marine Pollutant:** | MARINE POLLUTANT (para-tert-amylphenol) |
| **EmS/IMDG:** | EmS F-A, S-B |

| | |
|---|---|
| **Packaging Type:** | DRUM(s)/BAG(s) |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | ALKYLPHENOLS, SOLID, N.O.S. (para-tert-amylphenol; 2,4 di-tert-amylphenol) |
| **Class:** | 8 |
| **Packing group:** | PG III |
| **Marine Pollutant:** | MARINE POLLUTANT (para-tert-amylphenol; 2,4 di-tert-amylphenol0 |
| **EmS/IMDG:** | EmS F-A, S-B |

| | |
|---|---|
| **Packaging Type:** | INTERMEDIATE BULK CONTAINER |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | ALKYLPHENOLS, SOLID, N.O.S. (para-tert-amylphenol; 2,4 di-tert-amylphenol) |
| **Class:** | 8 |
| **Packing group:** | PG III |
| **Marine Pollutant:** | MARINE POLLUTANT (para-tert-amylphenol; 2,4 di-tert-amylphenol0 |
| **EmS/IMDG:** | EmS F-A, S-B |

| | |
|---|---|
| **Packaging Type:** | PAIL(s)/CAN(s) |
| **UN Number:** | UN2430 |
| **Proper Shipping Name:** | ALKYLPHENOLS, SOLID, N.O.S. (para-tert-amylphenol; 2,4 di-tert-amylphenol) |
| **Class:** | 8 |
| **Packing group:** | PG III |
| **Marine Pollutant:** | MARINE POLLUTANT (para-tert-amylphenol; 2,4 di-tert-amylphenol0 |
| **EmS/IMDG:** | EmS F-A, S-B |

## 15. Regulatory Information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**CERCLA (Superfund) reportable quantity, lbs**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories**

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

**Section 302 extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical**

Yes

**US state regulations**

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US. New Jersey Worker and Community Right-to-Know Act**

Not listed.

## 16. Other Information

**Further information**

HMIS® is a registered trade and service mark of the NPCA.

**HMIS® ratings**

Health: 3
Flammability: 1
Physical hazard: 0
Personal protection: E

**NFPA ratings**

Health: 2
Flammability: 1
Instability: 0

**Disclaimer**

The health and safety information is that available to SI Group as of the date published and SI Group makes no representation of the information's completeness or accuracy. Any data provided is based on either: reference sources, testing performed on a representative sample(s), or professional judgement. The physical data should not be construed as either representing specifications or a guaranteed analysis. This material has been classified in accordance with the hazard criteria of the Controlled Products Regulation and the MSDS contains information required by Controlled Products Regulation. SI Group provides its MSDS in several languages using English as the primary language. While SI Group uses reasonable efforts to provide accurate translations, SI Group assumes no liability, or responsibility, for errors, omissions or ambiguities in any translations. SI Group expects those persons who receive this MSDS to exercise their independent professional judgement, or consult with a competent health/safety professional, to determine how to utilize this material safely. This includes, but is not exclusive to, the material's appropriateness for a specific use, the type of personal protection equipment necessary, and the use of engineering controls. In no event is SI Group liable for any damages whatsoever arising out of your use of this material based upon information obtained from this MSDS including: direct, indirect, incidental, consequential or punitive claims or damages.

**This data sheet contains changes from the previous version in section(s):**

Composition / Information on Ingredients: Used in Reach Calculation
Physical & Chemical Properties: Multiple Properties
HazReg Data: North America

addivant™

# WESTON® 705T

| | |
|---|---|
| Version | 15 |
| Revision Date | 10/30/2014 |
| Print Date | 02/19/2015 |
| Country | US |
| Language: | EN |

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product code : 000000021941

### Details of the supplier of the safety data sheet

Company: Addivant USA, LLC
1801 Sagamore Parkway
West Lafayette, IN
United States of America
47906
Telephone : 1-800-962-8641 (US) only

Prepared by msdsrequest@addivant.com

Further information for the safety data sheet :
msdsrequest@addivant.com

### Emergency telephone number

Emergency telephone number: 866-928-0789
For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Disposal considerations : msdsrequest@addivant.com

### Recommended use of the chemical and restrictions on use

Recommended use : Antioxidant

Restrictions on use : Reserved for industrial and professional use.

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

| | |
|---|---|
| Appearance | liquid |
| Colour | colourless |
| Odour | odourless |

addivant™

# WESTON® 705T

| | |
|---|---|
| Version | 15 |
| Revision Date | 10/30/2014 |
| Print Date | 02/19/2015 |
| Country | US |
| Language: | EN |

| | |
|---|---|
| Hazard Summary | Keep containers dry and tightly closed to avoid moisture absorption and contamination.<br>A component of this material could be hydrolyzed by moisture to phosphorus acid and phenol. |

**OSHA Regulatory status** : This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

**GHS Classification**

Not a hazardous substance or mixture.

**GHS Label element**

Not a hazardous substance or mixture.

**Potential Health Effects**

Aggravated Medical Condition : None known.

Symptoms of Overexposure : No information available.

**Carcinogenicity:**

**IARC**

No se identifica ningún componente de este producto, que presente niveles mayores que o igual a 0,1% como agente carcinógeno humano probable, posible o confirmado por la (IARC) Agencia Internacional de Investigaciones sobre Carcinógenos.

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.

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**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.

**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.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Mixture

**Hazardous components**

No ingredients are hazardous according to OSHA criteria.

## SECTION 4. FIRST AID MEASURES

General advice : No hazards which require special first aid measures.

If inhaled : Move to fresh air in case of accidental inhalation of dust or fumes from overheating or combustion.
If symptoms persist, call a physician.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.

In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : No information available.
No information available.

Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

## SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during firefighting : No information available.

Specific extinguishing methods :

Further information : Standard procedure for chemical fires.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

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| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Avoid contact with skin and eyes.<br>Wear suitable protective equipment. |
| Environmental precautions | : | No special environmental precautions required. |
| Methods and materials for containment and cleaning up | : | Wipe up with absorbent material (e.g. cloth, fleece).<br>Keep in suitable, closed containers for disposal. |

## SECTION 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Advice on safe handling | : | For personal protection see section 8.<br>No special handling advice required.<br><br>A component of this material could be hydrolyzed by moisture to phosphorus acid and phenol.<br>Keep away from water. |
| Conditions for safe storage | : | Keep container tightly closed in a dry and well-ventilated place.<br><br>Protect from moisture. |
| Materials to avoid | : | No special restrictions on storage with other products. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**
Contains no substances with occupational exposure limit values.

**Personal protective equipment**

| | | |
|---|---|---|
| Respiratory protection | : | No personal respiratory protective equipment normally required. |
| Hand protection<br>Remarks | : | For prolonged or repeated contact use protective gloves. |
| Eye protection | : | Safety glasses |
| Skin and body protection | : | Protective suit |
| Hygiene measures | : | General industrial hygiene practice. |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | liquid |

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| | | |
|---|---|---|
| Colour | : | colourless |
| Odour | : | odourless |
| pH | : | 6.5 - 7.5 |
| Melting point/range | : | Not applicable |
| Boiling point/boiling range | : | 260 °C |
| Flash point | : | 228 °C<br>Method: closed cup |
| Upper explosion limit | : | No data available |
| Lower explosion limit | : | No data available |
| Density | : | 1.02 g/cm3 |
| Solubility(ies) | | |
| Water solubility | : | < 0.0001 g/l |
| | | hydrolyses |
| Solubility in other solvents | : | partly soluble |
| Auto-ignition temperature | : | ><br>400 °C |
| Oxidising potential | : | No information available. |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Reactivity | : | No dangerous reaction known under conditions of normal use. |
| Chemical stability | : | No decomposition if stored and applied as directed. |
| | | Decomposes when moist. |
| Possibility of hazardous reactions | : | Hazardous polymerisation does not occur. |
| | | No hazards to be specially mentioned. |
| Conditions to avoid | : | Exposure to moisture.<br>Contamination |
| | | No data available |
| Incompatible materials | : | Oxidizing agents |

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Water
Humid air

Hazardous decomposition products : Carbon oxides
Nitrogen oxides (NOx)
Other hazardous decomposition products may be formed.

## SECTION 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Product:**

Acute inhalation toxicity : Remarks: Not classified due to lack of data.

**Skin corrosion/irritation**

**Product:**

Species: Rabbit
Assessment: No skin irritation
Result: No skin irritation

**Serious eye damage/eye irritation**

**Product:**

Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation

**Respiratory or skin sensitisation**

**Product:**

Result: Did not cause sensitisation on laboratory animals.

**Germ cell mutagenicity**

**Product:**

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

Germ cell mutagenicity- : Animal testing did not show any mutagenic effects.

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Assessment

**Carcinogenicity**

**Product:**

Carcinogenicity - Assessment : Not classified due to lack of data.

**Reproductive toxicity**

**Product:**

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.

**Repeated dose toxicity**

**Product:**

Species: Rat
Application Route: Oral
Exposure time: days/week

**Further information**

**Product:**

Remarks: No data available

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Product:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h

Toxicity to bacteria : EC50 (activated sludge): > 320 mg/l
Exposure time: 3 h

**Persistence and degradability**

**Product:**

Biodegradability : Result: Not readily biodegradable.

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**Bioaccumulative potential**

**Product:**

Bioaccumulation : Remarks: No data available

**Mobility in soil**

**Product:**

Mobility : Remarks: No data available

**Other adverse effects**

**Product:**

Results of PBT and vPvB assessment : No data available

Additional ecological information : There is no data available for this product.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Empty remaining contents.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

## SECTION 14. TRANSPORT INFORMATION

**DOT**
Not dangerous goods

**TDG**
Not dangerous goods

**ADR**
Not dangerous goods

**IATA**

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Not dangerous goods

**IMDG**
Not dangerous goods

**RID**
Not dangerous goods

## SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : No OSHA Hazards

**EPCRA - Emergency Planning and Community Right-to-Know Act**

**CERCLA Reportable Quantity**
This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**
This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : No SARA Hazards

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**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.

**US State Regulations**

**Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

| | | |
|---|---|---|
| Reaction mass of Tris[4-(1,1-dimethylpropyl)phenyl] phosphite, Bis[2,4-bis(2-methylbutan-2-yl)phenyl] [4-(2-methylbutan-2-yl0phenyl] | 939402-02-5 | - 100 % |

**New Jersey Right To Know**

| | | |
|---|---|---|
| Reaction mass of Tris[4-(1,1-dimethylpropyl)phenyl] phosphite, Bis[2,4-bis(2-methylbutan-2-yl)phenyl] [4-(2-methylbutan-2-yl0phenyl] | 939402-02-5 | - 100 % |

**California Prop 65** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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| Language: | EN |

**The components of this product are reported in the following inventories:**

| | | |
|---|---|---|
| TSCA | : | On TSCA Inventory |
| DSL | : | All components of this product are on the Canadian DSL. |
| AICS | : | On the inventory, or in compliance with the inventory |
| NZIoC | : | On the inventory, or in compliance with the inventory |
| ENCS | : | On the inventory, or in compliance with the inventory |
| KECI | : | On the inventory, or in compliance with the inventory |
| PICCS | : | On the inventory, or in compliance with the inventory |

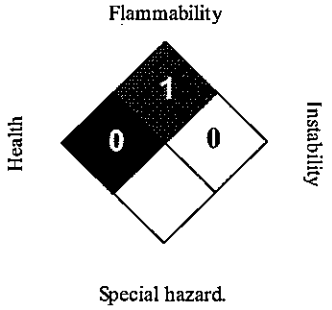
**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA:**




**HMIS III:**

| | |
|---|---|
| HEALTH | 0 |
| FLAMMABILITY | 1 |
| PHYSICAL HAZARD | 0 |

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Carechem24 International Worldwide Coverage - *Addivant***

**Emergency Phone Numbers:**

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| | | |
|---|---|---|
| Europe: | All European Countries | +44 (0) 1235 239 670 |
| Asia Pacific: | East/ South East Asia | Regional Number: +65 3158 1074 |
| | Australia | +61 2801 44558 |
| | New Zealand | +64 9929 1483 |
| | China Taiwan | +86 10 5100 3039 |
| | Japan | +81 345 789 341 |
| | Indonesia | 00780 3011 0293 |
| | :Malaysia | +60 3 6207 4347 |
| | Thailand | 001800 1 2066 6751 |
| | Korea | +65 3158 1285 |
| | Vietnam | +65 3158 1255 |
| | India | +65 3158 1198 |
| | Pakistan | +65 3158 1329 |
| | Philippines | +65 31581203 |
| | Sri Lanka | +65 3158 1195 |
| | Bangladesh | +65 3158 1200 |
| Middle East/ Africa: | Arabic speaking countries | +44 (0) 1235 239 671 |
| | All other countries | +44 (0) 1235 239 670 |
| America | United States / Canada | 001866 928 0789 |
| Latin America: | Brazil | +55 113 711 9144 |
| | All other countries | +44 (0) 1235 239 670 |
| | Mexico | +52 555 004 8763 |

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| | |
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| Language: | Z8 |

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : WESTON® 705

Product code : 400000001182

Chemical nature : Polymer stabilizer

### Details of the supplier of the safety data sheet

Company:

Addivant USA, LLC
4 Mountainview Terrace
Suite 200
Danbury, CT
United States of America
06810
Telephone : 1-800-962-8641 (US) only

Prepared by

msdsrequest@addivant.com

Further information for the material safety data sheet :
msdsrequest@addivant.com

### Emergency telephone

Emergency telephone:

866-928-0789
For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Disposal considerations : msdsrequest@addivant.com

### Recommended use of the chemical and restrictions on use

Recommended use : Antioxidant
Polymer additive

Restrictions on use : Restricted to professional users.

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## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

| | |
|---|---|
| Appearance | liquid |
| Color | colorless |
| Odor | odorless |
| Hazard Summary | A component of this material could be hydrolyzed by moisture to phosphorus acid and phenol. |

**OSHA Regulatory status** : This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

### GHS Classification

Not a hazardous substance or mixture.

### GHS Label element

Not a hazardous substance or mixture.

### Potential Health Effects

Aggravated Medical Condition : None known.

Symptoms of Overexposure : No information available.

### Carcinogenicity:

**IARC**

No se identifica ningún componente de este producto, que presente niveles mayores que o igual a 0,1% como agente carcinógeno humano probable, posible o confirmado por la (IARC) Agencia Internacional de Investigaciones sobre Carcinógenos.

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.

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**OSHA**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential

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carcinogen by OSHA.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Pure substance

Chemical nature : Polymer stabilizer

**Hazardous ingredients**

No hazardous ingredients

## SECTION 4. FIRST AID MEASURES

General advice : No hazards which require special first aid measures.

If inhaled : Remove to fresh air.
Give oxygen or artificial respiration if needed.
Call a physician if irritation develops or persists.

In case of skin contact : Remove contaminated clothing and shoes.
Wash off with warm water and soap.
If skin irritation occurs, seek medical advice/attention.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
If eye irritation persists, consult a specialist.

If swallowed : Do NOT induce vomiting.
Drink 1 or 2 glasses of water.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : No information available.
No information available.

Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

## SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Extinguishing media - large fires
Alcohol-resistant foam
(on small fires)
Carbon dioxide (CO2)

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Dry chemical

Unsuitable extinguishing media : Water spray jet

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Specific extinguishing methods :

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters : Body covering protective clothing, full "turn-out" gear.
Self-contained breathing apparatus operated in the pressure demand mode.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Wear suitable protective equipment.
Avoid contact with skin and eyes.

Environmental precautions : Do not allow contact with soil, surface or ground water.
Do not flush into surface water or sanitary sewer system.

Methods and materials for containment and cleaning up : Dam up.
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Pick up and transfer to properly labeled containers.
Large spills should be collected mechanically (remove by pumping) for disposal.

## SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice.
Avoid contact with skin, eyes and clothing.
Avoid inhalation of vapor or mist.
Use with adequate ventilation.
Wash thoroughly after handling.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Protect from moisture.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ingredients with workplace control parameters**
Contains no substances with occupational exposure limit values.

**Engineering measures** : Ensure that eyewash stations and safety showers are close to the workstation location.
Effective exhaust ventilation system

**Personal protective equipment**

Respiratory protection : In the case of vapor formation use a respirator with an approved filter.

Hand protection
Remarks : Impervious gloves

Eye protection : Safety glasses with side-shields

Skin and body protection : impervious clothing

Hygiene measures : Provide adequate ventilation.
Avoid contact with skin, eyes and clothing.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| Appearance | : liquid |
| Color | : colorless |
| Odor | : odorless |
| pH | : 6.5 - 7.5 |
| Melting point/range | : Not applicable |
| Boiling point/boiling range | : 260 °C |
| Flash point | : 228 °C<br>Method: closed cup |
| Upper explosion limit | : No data available |
| Lower explosion limit | : No data available |

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| | | |
|---|---|---|
| Density | : | 1.02 g/cm3 |
| Solubility(ies) | | |
| Water solubility | : | < 0.0001 g/l<br>hydrolyzes |
| Solubility in other solvents | : | partly soluble |
| Autoignition temperature | : | > 400 °C |
| Oxidizing potential | : | No information available. |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Reactivity | : | No dangerous reaction known under conditions of normal use. |
| Chemical stability | : | No decomposition if stored and applied as directed. |
| Possibility of hazardous reactions | : | Hazardous polymerization does not occur. |
| Conditions to avoid | : | Exposure to moisture.<br>Contamination |
| Incompatible materials | : | Oxidizing agents |
| Hazardous decomposition products | : | Carbon oxides<br>Nitrogen oxides (NOx)<br>Other hazardous decomposition products may be formed. |

## SECTION 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Product:**

Acute inhalation toxicity : Remarks: Not classified due to lack of data.

**Skin corrosion/irritation**

**Product:**

Species: Rabbit
Assessment: No skin irritation
Result: No skin irritation

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Remarks: According to the classification criteria of the European Union, the product is not considered as being a skin irritant.

**Serious eye damage/eye irritation**

**Product:**

Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation

Remarks: According to the classification criteria of the European Union, the product is not considered as being an eye irritant.

**Respiratory or skin sensitization**

**Product:**

Result: Did not cause sensitization on laboratory animals.

Remarks: No data available

**Germ cell mutagenicity**

**Product:**

Genotoxicity in vitro : Test Type: Ames test
Result: negative

Test Type: Chromosome aberration test in vitro
Result: negative

Germ cell mutagenicity-Assessment : Animal testing did not show any mutagenic effects.

**Carcinogenicity**

**Product:**

Carcinogenicity - Assessment : Not classified due to lack of data.

**Reproductive toxicity**

**Product:**

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.

**Product:**

Assessment: Not classified due to lack of data.

**Product:**
Assessment: Not classified due to lack of data.

**Repeated dose toxicity**

**Product:**
Species: Rat
Application Route: Oral
Exposure time: days/week

**Aspiration toxicity**

**Product:**
No aspiration toxicity classification

**Further information**

**Product:**
Remarks: The product contains no substances known to be hazardous to health in concentrations which need to be taken into account.

Remarks: No data available

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**
No data available

**Persistence and degradability**
No data available

**Bioaccumulative potential**

**Product:**
Bioaccumulation : Remarks: No data available

**Mobility in soil**

**Product:**
Mobility : Remarks: No data available

**Other adverse effects**
No data available

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**Product:**

Additional ecological information : There is no data available for this product.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

Waste from residues : Dispose of waste material in compliance with all federal, state, and local regulations.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

## SECTION 14. TRANSPORT INFORMATION

**DOT**
Not dangerous goods

**TDG**
Not dangerous goods

**ADR**
Not dangerous goods

**IATA**
Not dangerous goods

**IMDG**
Not dangerous goods

**RID**
Not dangerous goods

## SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : No OSHA Hazards

**EPCRA - Emergency Planning and Community Right-to-Know**

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**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : No SARA Hazards

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**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.

**California Prop 65** This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**The ingredients of this product are reported in the following inventories:**

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AICS : On the inventory, or in compliance with the inventory

NZIoC : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

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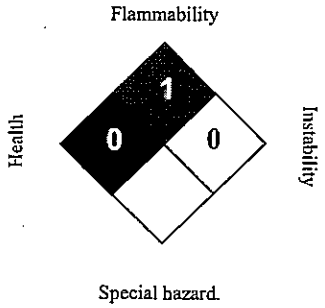
| Langùage: | Z8 |

## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA:**




**HMIS III:**

| | |
|---|---|
| HEALTH | 0 |
| FLAMMABILITY | 1 |
| PHYSICAL HAZARD | 0 |

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Carechem24 International Worldwide Coverage - *Addivant***

**Emergency Phone Numbers:**

| | | |
|---|---|---|
| Europe: | All European Countries | +44 (0) 1235 239 670 |
| Asia Pacific: | East / South East Asia | Regional Number : +65 3158 1074 |
| | Australia | +61 2801 44558 |
| | New Zealand | +64 9929 1483 |
| | China Taiwan | +86 10 5100 3039 |
| | Japan | +81 345 789 341 |
| | Indonesia | 00780 3011 0293 |
| | :Malaysia | +60 3 6207 4347 |
| | Thailand | 001800 1 2066 6751 |
| | Korea | +65 3158 1285 |
| | Vietnam | +65 3158 1255 |
| | India | +65 3158 1198 |
| | Pakistan | +65 3158 1329 |
| | Philippines | +65 31581203 |
| | Sri Lanka | +65 3158 1195 |
| | Bangladesh | +65 3158 1200 |

addivant™

# WESTON® 705

| | |
|---|---|
| Version | 17 |
| Revision Date | 05/21/2015 |
| Print Date | 05/28/2015 |
| Country | US |
| Language: | Z8 |

| | | |
|---|---|---|
| Middle East / Africa: | Arabic speaking countries | +44 (0) 1235 239 671 |
| | All other countries | +44 (0) 1235 239 670 |
| America | United States / Canada | 001866 928 0789 |
| Latin America: | Brazil | +55 113 711 9144 |
| | All other countries | +44 (0) 1235 239 670 |
| | Mexico | +52 555 004 8763 |

# Material Safety Data Sheet
The Dow Chemical Company

**Product Name:** Triisopropanolamine 99

**Issue Date:** 01/03/2014
**Print Date:** 08 Feb 2014

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. Product and Company Identification

**Product Name**
Triisopropanolamine 99

**COMPANY IDENTIFICATION**
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
United States

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** 989-636-4400
**Local Emergency Contact:** 989-636-4400

## 2. Hazards Identification

**Emergency Overview**
**Color:** White
**Physical State:** Crystalline solid
**Odor:** Slightly ammoniacal
**Hazards of product:**

WARNING! Causes eye irritation. May cause skin irritation. Isolate area.

**OSHA Hazard Communication Standard**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential Health Effects**
**Eye Contact:** May cause moderate eye irritation. May cause moderate corneal injury.
**Skin Contact:** Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause more severe response if skin is abraded (scratched or cut). May cause more severe response on covered skin (under clothing, gloves).

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.
**Inhalation:** At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation and other effects.
**Ingestion:** Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation.
**Aspiration hazard:** Based on physical properties, not likely to be an aspiration hazard.

## 3. Composition Information

| Component | CAS # | Amount |
|---|---|---|
| Triisopropanolamine | 122-20-3 | 99.5 - 100.0 % |

## 4. First-aid measures

### Description of first aid measures

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
**Inhalation:** Move person to fresh air; if effects occur, consult a physician.
**Skin Contact:** Wash skin with plenty of water. Suitable emergency safety shower facility should be available in work area.
**Eye Contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.
**Ingestion:** If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

### Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

### Indication of immediate medical attention and special treatment needed

If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

## 5. Fire Fighting Measures

### Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
**Extinguishing Media to Avoid:** Do not use direct water stream. May spread fire.

### Special hazards arising from the substance or mixture

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.
**Unusual Fire and Explosion Hazards:** Container may rupture from gas generation in a fire situation.

### Advice for firefighters

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Burning liquids may be extinguished by dilution with water. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.
**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Small spills: Absorb with materials such as: Non-combustible material. Sand. Clay. Vermiculite. Zorb-all®. Do NOT use absorbent materials such as: Cellulose. Sawdust. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

### Handling

**General Handling:** Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

Do not store in: Aluminum. Carbon steel. Copper. Copper alloys. Galvanized containers.

**Storage Period:**
**Bulk**
6 Months
**Metal drums.**
18 Months

## 8. Exposure Controls / Personal Protection

### Exposure Limits

| Component | List | Type | Value |
|---|---|---|---|
| Triisopropanolamine | Dow IHG | TWA | 10 mg/m3 |

### Personal Protection

**Eye/Face Protection:** Use chemical goggles.

**Skin Protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Butyl rubber. Natural rubber ("latex"). Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Respiratory Protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

### Engineering Controls

**Ventilation:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

## 9. Physical and Chemical Properties

| | |
|---|---|
| **Appearance** | |
| **Physical State** | Crystalline solid |
| **Color** | White |
| **Odor** | Slightly ammoniacal |
| **Odor Threshold** | No test data available |
| **pH** | 10.3 *Literature* 1% aqueous solution. |
| **Melting Point** | 45 °C (113 °F) *Literature* |
| **Freezing Point** | Not applicable to solids |
| **Boiling Point (760 mmHg)** | 301 °C (574 °F) *Literature* . |
| **Flash Point - Closed Cup** | 174 °C (345 °F) *Literature* |
| **Evaporation Rate (Butyl Acetate = 1)** | No test data available |
| **Flammability (solid, gas)** | No |
| **Flammable Limits In Air** | **Lower:** Not determined<br>**Upper:** Not determined |
| **Vapor Pressure** | 0.0007 mmHg @ 20 °C *Literature* |
| **Vapor Density (air = 1)** | 6.6 *Literature* |
| **Specific Gravity (H2O = 1)** | 0.988 70 °C/4.00 °C *Literature* |
| **Solubility in water (by weight)** | 830 g/l *Literature* |
| **Partition coefficient, n-octanol/water (log Pow)** | -0.015 *Measured* |
| **Autoignition Temperature** | 285 °C (545 °F) *Literature* |
| **Decomposition Temperature** | No test data available |
| **Dynamic Viscosity** | 100 cps @ 60 °C *Literature* |

| | |
|---|---|
| **Kinematic Viscosity** | No test data available |
| **Explosive properties** | No |
| **Oxidizing properties** | No |
| **Liquid Density** | 1 g/cm3 @ 20 °C *Literature* |
| **Molecular Weight** | No test data available |
| **Henry's Law Constant (H)** | 1E-06 Pa m³/mol; 25 °C Estimated. |

## 10. Stability and Reactivity

**Reactivity**
No dangerous reaction known under conditions of normal use.

**Chemical stability**
Stable under recommended storage conditions. See Storage, Section 7.

**Possibility of hazardous reactions**
Polymerization will not occur.

**Conditions to Avoid:** Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible Materials:** Avoid contact with: Nitrites. Strong acids. Strong oxidizers. Product may potentially react with various halogenated organic solvents, resulting in temperature and/or pressure increases Avoid contact with metals such as: Zinc. Galvanized metals. Heating above 60°C in the presence of aluminum can result in corrosion and generation of flammable hydrogen gas. Avoid unintended contact with: Halogenated hydrocarbons.

**Hazardous decomposition products**
Decomposition products depend upon temperature, air supply and the presence of other materials.

## 11. Toxicological Information

**Acute Toxicity**
**Ingestion**
LD50, rat 4,000 mg/kg
**Dermal**
LD50, rabbit > 5,000 mg/kg
**Inhalation**
No deaths occurred following exposure to a saturated atmosphere. , 8 h, rat
**Eye damage/eye irritation**
May cause moderate eye irritation. May cause moderate corneal injury.
**Skin corrosion/irritation**
Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause more severe response if skin is abraded (scratched or cut). May cause more severe response on covered skin (under clothing, gloves).
**Sensitization**
**Skin**
Did not cause allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.
**Respiratory**
No relevant data found.
**Repeated Dose Toxicity**
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.
**Chronic Toxicity and Carcinogenicity**

Did not cause cancer in laboratory animals.

### Developmental Toxicity

Did not cause birth defects or any other fetal effects in laboratory animals.

### Reproductive Toxicity

In animal studies, did not interfere with reproduction.

### Genetic Toxicology

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

## 12. Ecological Information

### Toxicity

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

**Fish Acute & Prolonged Toxicity**
LC50, Leuciscus idus (Golden orfe), static test, 96 h: 3,158.4 mg/l
**Aquatic Invertebrate Acute Toxicity**
EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: > 500 mg/l
**Aquatic Plant Toxicity**
EC50, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: 710 mg/l
**Toxicity to Micro-organisms**
EC10; activated sludge, 30 min: > 1,195 mg/l

### Persistence and Degradability

Material is not readily biodegradable according to OECD/EEC guidelines. Biodegradation rate may increase in soil and/or water with acclimation.

**OECD Biodegradation Tests:**

| Biodegradation | Exposure Time | Method | 10 Day Window |
|---|---|---|---|
| 0 % | 28 d | OECD 301F Test | fail |

**Indirect Photodegradation with OH Radicals**

| Rate Constant | Atmospheric Half-life | Method |
|---|---|---|
| 1.2E-10 cm3/s | 3 h | Estimated. |

**Biological oxygen demand (BOD):**

| BOD 5 | BOD 10 | BOD 20 | BOD 28 |
|---|---|---|---|
| 47 % | 70 % | | |

**Theoretical Oxygen Demand:** 2.35 mg/mg

### Bioaccumulative potential

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
**Partition coefficient, n-octanol/water (log Pow):** -0.015 Measured
**Bioconcentration Factor (BCF):** < 0.57; Fish; Measured

### Mobility in soil

**Mobility in soil:** Potential for mobility in soil is very high (Koc between 0 and 50).
**Partition coefficient, soil organic carbon/water (Koc):** 10 Estimated.
**Henry's Law Constant (H):** 1E-06 Pa m³/mol; 25 °C Estimated.

## 13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and

regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

## 14. Transport Information

**DOT Non-Bulk**
NOT REGULATED

**DOT Bulk**
NOT REGULATED

**IMDG**
NOT REGULATED
**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Product Name: TRIISOPROPANOLAMINE
Ship Type: 3
Pollution Category: Z

**ICAO/IATA**
NOT REGULATED

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

## 15. Regulatory Information

**OSHA Hazard Communication Standard**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312**

| | |
|---|---|
| **Immediate (Acute) Health Hazard** | Yes |
| **Delayed (Chronic) Health Hazard** | No |
| **Fire Hazard** | No |
| **Reactive Hazard** | No |
| **Sudden Release of Pressure Hazard** | No |

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313**
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:**
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

| Component | CAS # | Amount |
|---|---|---|
| Triisopropanolamine | 122-20-3 | >= 99.5 % |

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:**
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

**US. Toxic Substances Control Act**
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
**CEPA - Domestic Substances List (DSL)**
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

## 16. Other Information

### Product Literature
Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

### Hazard Rating System

| NFPA | Health | Fire | Reactivity |
|---|---|---|---|
| | 2 | 1 | 0 |

### Recommended Uses and Restrictions
**Identified uses**
Chemical intermediate. Cement grinding aid. Chemical additive. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

### Revision
Identification Number: 50065 / 1001 / Issue Date 01/03/2014 / Version: 4.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

| | |
|---|---|
| N/A | Not available |
| W/W | Weight/Weight |
| OEL | Occupational Exposure Limit |
| STEL | Short Term Exposure Limit |
| TWA | Time Weighted Average |
| ACGIH | American Conference of Governmental Industrial Hygienists, Inc. |
| DOW IHG | Dow Industrial Hygiene Guideline |
| WEEL | Workplace Environmental Exposure Level |
| HAZ_DES | Hazard Designation |
| Action Level | A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded. |

*The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.*

addivant™

# Hydrochloric Acid 36%

| | |
|---|---|
| Version | 12 |
| Revision Date | 11/11/2014 |
| Print Date | 05/28/2015 |
| Country | US |
| Language: | Z8 |

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Hydrochloric Acid 36%

Product code : 400000004387

### Details of the supplier of the safety data sheet

Company:
Addivant USA, LLC
1801 Sagamore Parkway
West Lafayette, IN
United States of America
47906
Telephone : 1-800-962-8641 (US) only

Prepared by
msdsrequest@addivant.com

Further information for the material safety data sheet :
msdsrequest@addivant.com

### Emergency telephone

Emergency telephone:
866-928-0789
For additional emergency telephone numbers see section 16 of the Safety Data Sheet.

Disposal considerations : msdsrequest@addivant.com

### Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate

Restrictions on use : Reserved for industrial and professional use.

## SECTION 2. HAZARDS IDENTIFICATION

### Emergency Overview

| DANGER! | |
|---|---|
| Appearance | liquid |

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| | |
|---|---|
| Color | colorless, to, light yellow |
| Odor | pungent, irritating, strong |
| Hazard Summary | Corrosive |

**OSHA Regulatory status** :

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

**GHS Classification**

Corrosive to Metals : Category 1

Acute toxicity (Inhalation) : Category 3

Skin corrosion : Category 1

Serious eye damage : Category 1

Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

**GHS Label element**

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.

Precautionary Statements : **Prevention:**
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
**Response:**
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off

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immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P363 Wash contaminated clothing before reuse.
P390 Absorb spillage to prevent material damage.
**Storage:**
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant stainless steel container with a resistant inliner.
**Disposal:**
P501 Dispose of contents/ container to an approved waste disposal plant.

**Potential Health Effects**

| | | |
|---|---|---|
| Primary Routes of Entry | : | Eye contact<br>Skin contact<br>Inhalation<br>Ingestion |
| Target Organs | : | Eyes<br>Skin<br>Respiratory Tract |
| Inhalation | : | Harmful if inhaled and may cause delayed lung injury.<br>Irritating to respiratory system. |
| Skin | : | Causes skin burns.<br>Causes skin irritation. |
| Eyes | : | Causes eye burns.<br>Causes eye irritation. |
| Ingestion | : | Harmful or fatal if swallowed. |
| Aggravated Medical Condition | : | None known. |
| Symptoms of Overexposure | : | corrosive effects |

**Carcinogenicity:**

**IARC** No se identifica ningún componente de este producto, que presente niveles mayores que o igual a 0,1% como agente carcinógeno humano probable, posible o confirmado por la

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# Hydrochloric Acid 36%

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(IARC) Agencia Internacional de Investigaciones sobre Carcinógenos.

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.

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**OSHA** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Chemical nature :

**Hazardous ingredients**

| Chemical Name | CAS-No. | Concentration (%) |
|---|---|---|
| hydrogen chloride | 7647-01-0 | >= 30 - < 50 |

## SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

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| | | |
|---|---|---|
| In case of eye contact | : | Small amounts splashed into eyes can cause irreversible tissue damage and blindness.<br>In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.<br>Protect unharmed eye.<br>Keep eye wide open while rinsing. |
| If swallowed | : | Clean mouth with water and drink afterwards plenty of water.<br>Do NOT induce vomiting.<br>Do not give milk or alcoholic beverages.<br>Never give anything by mouth to an unconscious person.<br>Take victim immediately to hospital. |
| Most important symptoms and effects, both acute and delayed | : | corrosive effects<br>corrosive effects |
| Notes to physician | : | The first aid procedure should be established in consultation with the doctor responsible for industrial medicine. |

## SECTION 5. FIRE-FIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Specific hazards during fire fighting | : | No information available. |
| Specific extinguishing methods | : | |
| Further information | : | Standard procedure for chemical fires. |
| Special protective equipment for fire-fighters | : | In the event of fire, wear self-contained breathing apparatus. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Ensure adequate ventilation.<br>Evacuate personnel to safe areas. |
| Environmental precautions | : | Do not flush into surface water or sanitary sewer system. |
| Methods and materials for containment and cleaning up | : | Neutralize with chalk, alkali solution or ammonia.<br>Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).<br>Keep in suitable, closed containers for disposal. |

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## SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ingredients with workplace control parameters**

| Ingredients | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| hydrogen chloride | 7647-01-0 | C | 2 ppm | ACGIH |
| | | C | 5 ppm<br>7 mg/m3 | OSHA Z-1 |
| | | C | 5 ppm<br>7 mg/m3 | OSHA P0 |
| | | C | 5 ppm<br>7 mg/m3 | NIOSH REL |
| | | C | 2 ppm | ACGIH |
| | | C | 5 ppm<br>7 mg/m3 | OSHA Z-1 |
| | | C | 5 ppm<br>7 mg/m3 | OSHA P0 |
| | | C | 5 ppm<br>7 mg/m3 | NIOSH REL |
| | | C | 2 ppm | ACGIH |
| | | C | 5 ppm<br>7 mg/m3 | OSHA Z-1 |
| | | C | 5 ppm<br>7 mg/m3 | OSHA P0 |
| | | C | 5 ppm<br>7 mg/m3 | NIOSH REL |

**Personal protective equipment**

Respiratory protection : In the case of vapor formation use a respirator with an approved filter.

Hand protection
Remarks : Polyvinyl alcohol or nitrile- butyl-rubber gloves The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the

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standard EN 374 derived from it. Before removing gloves clean them with soap and water.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| Appearance | : liquid |
| Color | : colorless, to, light yellow |
| Odor | : pungent, irritating, strong |
| pH | : 1 |
| Melting point/range | : No data available |
| Freezing point | No data available |
| Boiling point/boiling range | : 83 °C |
| Flash point | : No data available |
| Evaporation rate | : No data available |
| Upper explosion limit | : No data available |
| Lower explosion limit | : No data available |
| Vapor pressure | : 20 hPa (20 °C) |
| Relative density | : 1,120 (> 20 °C) |
| Density | : 1,160 g/cm3 (20 °C) |

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| | | |
|---|---|---|
| Bulk density | : | No data available |
| Solubility(ies) | | |
| Water solubility | : | soluble in hot water, soluble in cold water |
| Solubility in other solvents | : | soluble<br>Solvent: Diethyl ether |
| Partition coefficient: n-octanol/water | : | No data available |
| Autoignition temperature | : | No data available |
| Thermal decomposition | : | No data available |
| Viscosity | | |
| Viscosity, dynamic | : | 600 - 1,000 mPa.s (20 °C) |
| Viscosity, kinematic | : | 1.7 mm2/s |
| Flow time | : | No data available |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Reactivity | : | Stable under recommended storage conditions. |
| Chemical stability | : | No decomposition if stored and applied as directed. |
| Possibility of hazardous reactions | : | Stable under recommended storage conditions.<br>No decomposition if used as directed. |
| Conditions to avoid | : | No data available |
| Incompatible materials | : | Strong bases<br>Metals |
| Hazardous decomposition products | : | Chlorine |

## SECTION 11. TOXICOLOGICAL INFORMATION

| | | |
|---|---|---|
| Information on likely routes of exposure | : | Eye contact<br>Skin contact<br>Inhalation<br>Ingestion |

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**Acute toxicity**

**Product:**

Acute oral toxicity : Remarks: Not classified due to lack of data.

Acute inhalation toxicity : Acute toxicity estimate : 8.33 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Acute dermal toxicity : Remarks: Not classified due to lack of data.

**Skin corrosion/irritation**

**Product:**

Remarks: Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation**

**Product:**

Remarks: May cause irreversible eye damage.

**Respiratory or skin sensitization**

**Product:**

Remarks: No data available

**Germ cell mutagenicity**

**Product:**

Germ cell mutagenicity- Assessment : Not classified due to lack of data.

**Carcinogenicity**

**Product:**

Carcinogenicity - Assessment : Not classified due to lack of data.

**Reproductive toxicity**

**Product:**

Reproductive toxicity - Assessment : Not classified due to lack of data.

**Product:**

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Assessment: Not classified due to lack of data.

**Product:**
Assessment: Not classified due to lack of data.

**Further information**

**Product:**
Remarks: No data available

## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**
No data available

**Persistence and degradability**

**Product:**
Biodegradability : Remarks: No data available

**Bioaccumulative potential**

**Product:**
Bioaccumulation : Remarks: No data available

**Mobility in soil**

**Product:**
Mobility : Remarks: No data available

**Other adverse effects**

**Product:**
Results of PBT and vPvB assessment : No data available

Additional ecological information : There is no data available for this product.

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**
Waste from residues : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or

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used container.
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

## SECTION 14. TRANSPORT INFORMATION

**DOT**

| | |
|---|---|
| UN number | : 1789 |
| Description of the goods | : HYDROCHLORIC ACID |
| Class | : 8 |
| Packing group | : II |
| Labels | : 8 |
| Emergency Response Guidebook Number | : 157 |
| Environmentally hazardous | : no |

**IATA**

| | |
|---|---|
| UN number | : 1789 |
| Description of the goods | : HYDROCHLORIC ACID |
| Class | : 8 |
| Packing group | : II |
| Labels | : 8 |
| Packing instruction (cargo aircraft) | : 813 |
| Packing instruction (passenger aircraft) | : 809 |
| Packing instruction (passenger aircraft) | : Y809 |
| Marine pollutant | : no |

**IMDG**

| | |
|---|---|
| UN number | : 1789 |
| Description of the goods | : HYDROCHLORIC ACID |
| Class | : 8 |
| Packing group | : II |
| Labels | : 8 |
| EmS Number 1 | : F-A |
| EmS Number 2 | : S-B |

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| | |
|---|---|
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| Language: | Z8 |

Marine pollutant : no

## SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : Toxic by inhalation., Corrosive to eyes, Corrosive to skin, Corrosive to respiratory system.

**SARA 302** : The following components are subject to reporting levels established by SARA Title III, Section 302:

| | | |
|---|---|---|
| hydrogen chloride | 7647-01-0 | 36 % |

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

| | | |
|---|---|---|
| hydrogen chloride | 7647-01-0 | 36 % |

**California Prop 65** This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**The ingredients of this product are reported in the following inventories:**

TSCA : On TSCA Inventory

DSL : All components of this product are on the Canadian DSL.

AICS : On the inventory, or in compliance with the inventory

NZIoC : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

CH INV : The mixture contains substances listed on the Swiss Inventory

: water

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

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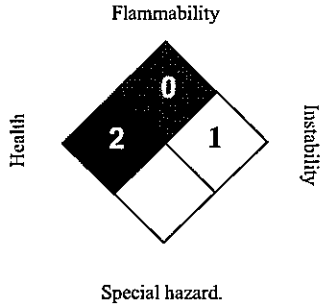
## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA:**




**HMIS III:**

| | |
|---|---|
| HEALTH | 3 |
| FLAMMABILITY | 0 |
| PHYSICAL HAZARD | 1 |

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

## Carechem24 International Worldwide Coverage - *Addivant*

## Emergency Phone Numbers:

| | | |
|---|---|---|
| Europe: | All European Countries | +44 (0) 1235 239 670 |
| Asia Pacific: | East / South East Asia | Regional Number : +65 3158 1074 |
| | Australia | +61 2801 44558 |
| | New Zealand | +64 9929 1483 |
| | China Taiwan | +86 10 5100 3039 |
| | Japan | +81 345 789 341 |
| | Indonesia | 00780 3011 0293 |
| | :Malaysia | +60 3 6207 4347 |
| | Thailand | 001800 1 2066 6751 |
| | Korea | +65 3158 1285 |
| | Vietnam | +65 3158 1255 |
| | India | +65 3158 1198 |
| | Pakistan | +65 3158 1329 |
| | Philippines | +65 31581203 |
| | Sri Lanka | +65 3158 1195 |
| | Bangladesh | +65 3158 1200 |

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| | | |
|---|---|---|
| Middle East / Africa: | Arabic speaking countries | +44 (0) 1235 239 671 |
| | All other countries | +44 (0) 1235 239 670 |
| America | United States / Canada | 001866 928 0789 |
| Latin America: | Brazil | +55 113 711 9144 |
| | All other countries | +44 (0) 1235 239 670 |
| | Mexico | +52 555 004 8763 |

**Uncontrolled Emission Summary**
**Addivant**
**Morgantown, WV**

**Potential Emission Rates**

| | Building 174 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Source | VOC (ton/yr) | VOC (lbs/day) | VOC (lbs/hr) | HCl (ton/yr) | HCl (lbs/hr) | Ethylene Glycol (ton/yr) | Ethylene Glycol (lbs/hr) | Total HAP (ton/yr) | Total HAP (lbs/hr) | Total NOx (ton/yr) | Total NOx (lbs/day) | Total NOx (lbs/hr) | Total SOx (ton/yr) | Total SOx (lbs/day) | Total SOx (lbs/hr) | Total CO (ton/yr) | Total CO (lbs/day) | Total CO (lbs/hr) |
| Vacuum system - reactors* | 2.26 | 12.40 | 0.52 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| HCl byproduct - reactors | - | - | - | 0.22 | 0.10 | - | - | 0.22 | 0.10 | - | - | - | - | - | - | - | - | - |
| Loading Operations - HCl | - | - | - | 0.01 | 0.33 | - | - | 0.01 | 0.33 | - | - | - | - | - | - | - | - | - |
| Loading Operations - Product | 0.01 | 0.99 | 0.33 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Loading Operations - Waste Amylphenol | 0.00 | 0.12 | 0.15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Loading Operations - Waste Decyl Alcohol | 0.0000 | 0.03 | 0.03 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| PCl3 Water Scrubber | - | - | - | 0.01 | 0.00 | - | - | 0.01 | 0.003 | - | - | - | - | - | - | - | - | - |
| Isotainer Heat Up | 0.01 | 0.12 | 0.06 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Equipment Leaks - VOC | 6.01 | 38.02 | 6.15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Equipment Leaks - HCl | - | - | - | 1.38 | 0.31 | - | - | 1.38 | 0.31 | - | - | - | - | - | - | - | - | - |
| K71 | 0.00 | 0.00 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T166* | 0.05 | 0.25 | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T167* | 0.05 | 0.25 | 0.01 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T171* | 0.07 | 0.37 | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T73* | 0.15 | 0.81 | 0.03 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T172* | 0.08 | 0.44 | 0.02 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| T142 | - | - | - | 0.03 | 0.01 | - | - | 0.03 | 0.01 | - | - | - | - | - | - | - | - | - |
| T145 | - | - | - | 0.05 | 0.01 | - | - | 0.05 | 0.01 | - | - | - | - | - | - | - | - | - |
| T61 | - | - | - | 0.09 | 0.02 | - | - | 0.09 | 0.02 | - | - | - | - | - | - | - | - | - |
| T170 | - | - | - | 0.09 | 0.02 | - | - | 0.09 | 0.02 | - | - | - | - | - | - | - | - | - |
| F149* | 0.000005 | 0.00003 | 0.000001 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| R185* | 0.00 | 0.00 | 0.00 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| R-181 | - | - | - | - | - | 0.00 | 0.00 | 0.00 | 0.00 | - | - | - | - | - | - | - | - | - |
| 13 MMBtu Natural Gas Boiler* | 0.31 | 1.68 | 0.07 | - | - | - | - | 0.11 | 0.02 | 5.58 | 30.59 | 1.27 | 0.03 | 0.18 | 0.01 | 4.69 | 25.69 | 1.07 |
| Total | 9.00 | 55.49 | 7.39 | 1.88 | 0.81 | 0.00 | 0.00 | 1.98 | 0.83 | 5.58 | 30.59 | 1.27 | 0.03 | 0.18 | 0.01 | 4.69 | 25.69 | 1.07 |
| **Permit Limits** | **10.00** | **144.00** | **6.00** | **-** | **-** | **-** | **-** | **5.00** | **2.00** | **10.00** | **144.00** | **6.00** | **10.00** | **144.00** | **6.00** | **10.00** | **144.00** | **6.00** |