

**CLASS II ADMINISTRATIVE
UPDATE APPLICATION FOR
PERMIT R13-0882P AND MINOR
MODIFICATION TO R30-03900001**

REDACTED APPLICATION

Prepared for:

Optima Belle, LLC
901 W. DuPont Avenue
Belle, West Virginia 25015

Prepared by:

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Project No. 0101-14-0162-016

December 2017

POTESTA

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SECTION I - III

GENERAL APPLICANT INFORMATION



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

601 57th Street, SE
 Charleston, WV 25304
 (304) 926-0475
www.dep.wv.gov/daq

**APPLICATION FOR NSR PERMIT
 AND
 TITLE V PERMIT REVISION
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):

- CONSTRUCTION MODIFICATION RELOCATION
 CLASS I ADMINISTRATIVE UPDATE TEMPORARY
 CLASS II ADMINISTRATIVE UPDATE AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT MINOR MODIFICATION
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office): Optima Belle, LLC		2. Federal Employer ID No. (FEIN): 465403006	
3. Name of facility (if different from above): Optima Belle Plant		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: 901 W. DuPont Avenue Belle, West Virginia 25015		5B. Facility's present physical address: 901 W. DuPont Avenue Belle, West Virginia 25015	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇒ If YES, provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. ⇒ If NO, provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A.			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: NA			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇒ If YES, please explain: The site is owned and operated by the applicant. ⇒ If NO, you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Chemical Manufacturing		10. North American Industry Classification System (NAICS) code for the facility: 325199	
11A. DAQ Plant ID No. (for existing facilities only): 039-00663		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): R13-0882P, R30-03900001	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

12A.

- ⇒ For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- ⇒ For **Construction** or **Relocation permits**, please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

I-64 to Belle exit, then Rt. 60 East to Belle exit, turn right onto DuPont Avenue, travel approximately 500 feet and the plant entrance is on the left.

12.B. New site address (if applicable):

Same

12C. Nearest city or town:

Belle

12D. County:

Kanawha

12.E. UTM Northing (KM): 4,232.60

12F. UTM Easting (KM): 451.90

12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility:

The facility proposes to install a filter dryer, a reactor, and a condenser along with the proposed product changes and additions.

14A. Provide the date of anticipated installation or change: January 15, 2018

- ⇒ If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: NA

14B. Date of anticipated Start-Up if a permit is granted:

March 15, 2018

14C. Provide a **Schedule** of the planned **Installation of/Change to** and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved? YES NO

17. **Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18. **Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (*if known*). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (*if known*). Provide this information as **Attachment D**.

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to **Plot Plan Guidance**).

- ⇒ Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F**.

23. Provide a **Process Description** as **Attachment G**.

- ⇒ Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.
 ⇨ For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

General Emission Unit, specify: LAME, STPB, TMBX and Nylon Washing Production.

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

Other Collectors, specify:

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and *Example Legal Advertisement* for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES NO

➤ If YES, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "*Precautionary Notice – Claims of Confidentiality*" guidance found in the *General Instructions* as **Attachment Q**.

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R**.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned **Responsible Official** / **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE  DATE: 12/8/17
(Please use blue ink) (Please use blue ink)

35B. Printed name of signee: K. Gene Williams		35C. Title: President
35D. E-mail: gwilliams@optimachem.com	36E. Phone: (912) 384-6330	36F. FAX: Use email
36A. Printed name of contact person (if different from above): Timothy J. Ryan		36B. Title: EHS Manager
36C. E-mail: tryan@optimachem.com	36D. Phone: (304) 949-7162	36E. FAX: Use email

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

<input checked="" type="checkbox"/> Attachment A: Business Certificate	<input type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet
<input checked="" type="checkbox"/> Attachment B: Map(s)	<input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s)
<input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule	<input type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s)
<input checked="" type="checkbox"/> Attachment D: Regulatory Discussion	<input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations
<input checked="" type="checkbox"/> Attachment E: Plot Plan	<input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans
<input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s)	<input checked="" type="checkbox"/> Attachment P: Public Notice
<input checked="" type="checkbox"/> Attachment G: Process Description	<input checked="" type="checkbox"/> Attachment Q: Business Confidential Claims
<input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS)	<input type="checkbox"/> Attachment R: Authority Forms
<input checked="" type="checkbox"/> Attachment I: Emission Units Table	<input checked="" type="checkbox"/> Attachment S: Title V Permit Revision Information
<input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet	<input checked="" type="checkbox"/> Application Fee

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY - IF THIS IS A TITLE V SOURCE:

Forward 1 copy of the application to the Title V Permitting Group and:

For Title V Administrative Amendments:

NSR permit writer should notify Title V permit writer of draft permit,

For Title V Minor Modifications:

Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,

NSR permit writer should notify Title V permit writer of draft permit.

For Title V Significant Modifications processed in parallel with NSR Permit revision:

NSR permit writer should notify a Title V permit writer of draft permit,

Public notice should reference both 45CSR13 and Title V permits,

EPA has 45 day review period of a draft permit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

ATTACHMENT A
BUSINESS CERTIFICATE

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

**ISSUED TO:
OPTIMA BELLE LLC
901 W DUPONT AVE
BELLE, WV 25015-1555**

BUSINESS REGISTRATION ACCOUNT NUMBER: 2298-1773

This certificate is issued on: 05/8/2015

*This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

ATTACHMENT B

AREA MAP



DATE: June 2016

PROJECT NO. 0101-14-0162

MAPPING FOR VISUAL REPRESENTATION ONLY

SITE LOCATION MAP 1 of 2
OPTIMA BELLE, LLC
BELLE, KANAWHA COUNTY, WV

NOT TO SCALE



DATE: June 2016

PROJECT NO. 0101-14-0162

MAPPING FOR VISUAL REPRESENTATION ONLY

**SITE LOCATION MAP 2 of 2
OPTIMA BELLE, LLC
BELLE, KANAWHA COUNTY, WV**

NOT TO SCALE

ATTACHMENT C
INSTALLATION AND START UP SCHEDULE

ATTACHMENT C

SCHEDULE OF INSTALLATION

Optima Belle, LLC anticipates installation and startup of operations to begin on January 15, 2018 and after approval of the permit. Actions which are not considered construction under 45CSR13, Section 5 may proceed prior to issuance of the revised permit.

ATTACHMENT D
REGULATORY DISCUSSION

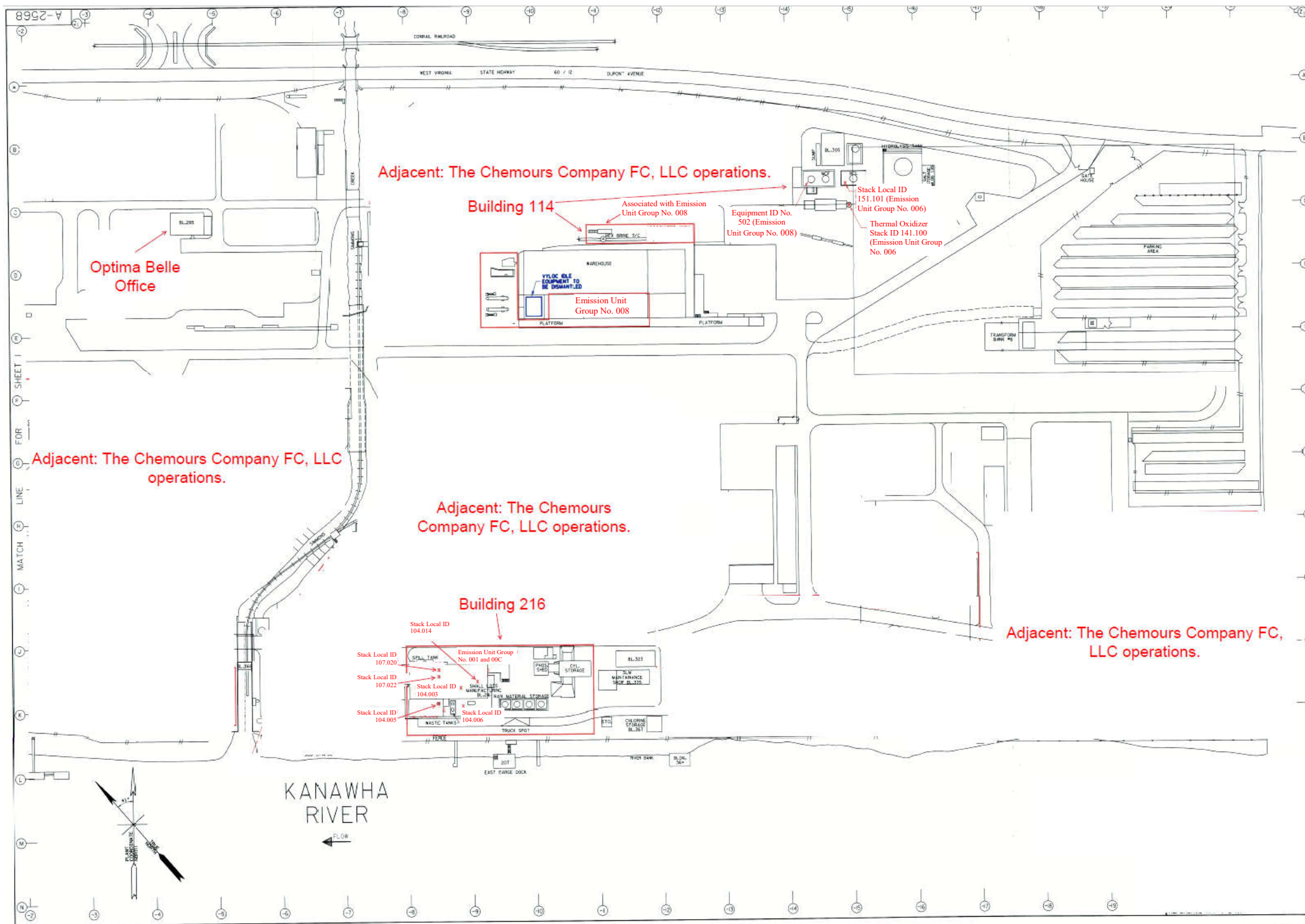
ATTACHMENT D

REGULATORY DISCUSSION

The addition of the Filter Dryer, Reactor 10, Reactor 10 Condenser, and manufacturing/process changes and additions for LAME, STPB, TMBX and Nylon Washing does not modify the regulatory basis for the permit. New equipment will utilize existing, permitted control devices.

ATTACHMENT E

PLOT PLAN



7012 MacCorkle Avenue, S.E
 Charleston, West Virginia 25304
 Phone: (304) 342-1400
 Fax: (304) 343-9031

Optima Belle, LLC
 Kanawha County, West Virginia
 Project No. 0101-14-0162

ATTACHMENT F
DETAILED PROCESS FLOW DIAGRAM

L-Alanine Methyl Ester
Process

News JRW 11/15/17

REDACTED
Information claimed confidential
by Optima Belle, LLC
December 1, 2017

Sodium Tetra Phenyl Borate Process

JBW 11-14-17

REDACTED

Information claimed confidential
by Optima Belle, LLC
December 1, 2017

**Trimethoxyboroxine (TMBX)
Process**

Rev0 JBW 05/27/17

REDACTED
Information claimed confidential
by Optima Belle, LLC
December 1, 2017

Nylon Pellet Washing Process

Rev0 JBW 11/09/17

REDACTED
Information claimed confidential
by Optima Belle, LLC
December 1, 2017

ATTACHMENT G
PROCESS DESCRIPTION

ATTACHMENT G

PROCESS DESCRIPTION

This permit application is to permit the following changes: L-alanine methyl ester (LAME) revision to the process, Sodium tetraphenyl borate (STPB) revision to the process, new production of Trimethoxyboroxine (TMBX), new production of Nylon Washing, adding a Filter Dryer, adding Reactor No. 10, and adding Reactor No. 10 Condenser. The Filter Dryer, adding Reactor No. 10, and adding Reactor No. 10 Condenser may be used in the revised production and new production proposed herein. However, Optima Belle, LLC wishes to maintain the ability to produce the proposed and revised materials in any process configuration which meets the production requirements (material and equipment compatibility) which could include using any of the equipment (reactors, reactor condensers, tanks and existing control devices listed in Attachment D).

The following are the process descriptions for each of the four chemicals being revised or added by this application. Process flow diagrams are included in the application for each material.

Process Description – LAME

LAME is a crystalline solid used as a food additive. LAME can be dried at the facility or shipped off site as a wet material. The facility proposes equipment and process modifications and an increase in production for dried and undried LAME. The process modification is to allow greater flexibility to use different reactors during production.

Process Summary:

Varying amounts of the required components are charged to reactors then agitated for mixing. These mixtures are then combined and react to form the final product. Through decanting, stripping, and drying, the final product is isolated and purified from the reaction mixtures and solvents. Waste materials are loaded to totes and tanker trucks for off-site disposal.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Process Description – STPB

STPB, a white powdered solid, is produced from reactions of mixtures which include: trimethyl borate, magnesium, chlorobenzene, tetrahydrofuran, toluene, THF, hexane, methanol, benzene, sulfuric acid, sodium chloride, sodium hydroxide, and water.

STPB is typically used to generate other tetraphenylborate salts or as a precipitating agent in other chemistries.

Process Summary:

Varying amounts of the listed components are charged to nitrogen-blanketed reactors, then agitated for mixing and heated. These mixtures are then combined and react to form the final product. Through decanting, stripping, and drying, the final product is isolated and purified from the reaction mixtures and solvents. Waste materials are loaded to totes and tanker trucks for off-site disposal.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Process Description - Trimethoxyboroxine (“TMBX”)

TMB is charged to a reactor. Boron oxide powder is then charged and mixed with the TMB. The mixture is allowed to react, forming TMBX, and heat is applied to ensure completion of the reaction. After the completion of the reaction, the TMBX is cooled, filtered, and loaded out into drums or totes.

Process Description – Nylon Washing

Nylon pellets are loaded to the filter dryer, and methanol is added. The mixture of nylon pellets and methanol will stir at temperature for a period of time in order to leech nylon oligomer impurities from the pellets. Nylon oligomers are not regulated air pollutants. When the nylon impurities are within specification, the methanol is filtered through the bottom screen and transferred to a reactor. The nylon pellets are then washed with fresh methanol. Once washed, the nylon pellets will be dried by pulling vacuum on the filter dryer, and heating the filter dryer evaporates off the methanol. The methanol removed in the drying process is condensed into a reactor to be recycled for later use. The collected used methanol is recovered by boiling in a reactor, and condensed into a second reactor leaving the impurities behind. This methanol can then be reused in the process.

ATTACHMENT H
MATERIAL SAFETY DATA SHEETS (MSDS)

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Methanol

Product Number : 322415

Brand : Sigma-Aldrich

Index-No. : 603-001-00-X

CAS-No. : 67-56-1

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Inhalation (Category 3), H331

Acute toxicity, Dermal (Category 3), H311

Specific target organ toxicity - single exposure (Category 1), H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.

H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.

H370 Causes damage to organs.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves/ eye protection/ face protection.
 P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.
 P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
 P362 Take off contaminated clothing and wash before reuse.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P403 + P235 Store in a well-ventilated place. Keep cool.
 P405 Store locked up.
 P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : Methyl alcohol
 Formula : CH₄O
 Molecular weight : 32.04 g/mol
 CAS-No. : 67-56-1
 EC-No. : 200-659-6
 Index-No. : 603-001-00-X
 Registration number : 01-2119433307-44-XXXX

Hazardous components

Component	Classification	Concentration
Methanol	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370	90 - 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further Information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

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.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Methanol	67-56-1	TWA	200.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		STEL	250.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		TWA	200.000000 ppm 260.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		ST	250.000000 ppm 325.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200.000000 ppm 260.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption		
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		

		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		STEL	250 ppm 325 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		TWA	200 ppm 260 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		C	1,000 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		PEL	200 ppm 260 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
		STEL	250 ppm 325 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Methanol	67-56-1	Methanol	15.0000 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
		Methanol	15 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Skin contact	Long-term systemic effects	40mg/kg BW/d
Consumers	Skin contact	Long-term systemic effects	8mg/kg BW/d
Consumers	Ingestion	Long-term systemic effects	8mg/kg BW/d
Workers	Skin contact	Acute systemic effects	40mg/kg BW/d
Consumers	Skin contact	Acute systemic effects	8mg/kg BW/d
Consumers	Ingestion	Acute systemic effects	8mg/kg BW/d
Workers	Inhalation	Acute systemic effects	260 mg/m3
Workers	Inhalation	Acute local effects	260 mg/m3
Workers	Inhalation	Long-term systemic effects	260 mg/m3
Workers	Inhalation	Long-term local effects	260 mg/m3
Consumers	Inhalation	Acute systemic effects	50 mg/m3
Consumers	Inhalation	Acute local effects	50 mg/m3
Consumers	Inhalation	Long-term systemic effects	50 mg/m3
Consumers	Inhalation	Long-term local effects	50 mg/m3

Predicted No Effect Concentration (PNEC)

Compartment	Value
Soil	23.5 mg/kg

Marine water	15.4 mg/l
Fresh water	154 mg/l
Fresh water sediment	570.4 mg/kg
Onsite sewage treatment plant	100 mg/kg

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eyeface protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 31 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---------------------------------|---------------------------------------|
| a) Appearance | Form: liquid
Colour: colourless |
| b) Odour | pungent |
| c) Odour Threshold | No data available |
| d) pH | No data available |
| e) Melting point/freezing point | Melting point/range: -98 °C (-144 °F) |

- | | |
|---|---|
| f) Initial boiling point and boiling range | 64.7 °C (148.5 °F) |
| g) Flash point | 9.7 °C (49.5 °F) - closed cup |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 36 %(V)
Lower explosion limit: 6 %(V) |
| k) Vapour pressure | 130.3 hPa (97.7 mmHg) at 20.0 °C (68.0 °F)
546.6 hPa (410.0 mmHg) at 50.0 °C (122.0 °F)
169.27 hPa (126.96 mmHg) at 25.0 °C (77.0 °F) |
| l) Vapour density | 1.11 |
| m) Relative density | 0.791 g/mL at 25 °C (77 °F) |
| n) Water solubility | completely miscible |
| o) Partition coefficient: n-octanol/water | log Pow: -0.77 |
| p) Auto-ignition temperature | 455.0 °C (851.0 °F) at 1,013 hPa (760 mmHg) |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | Not explosive |
| t) Oxidizing properties | The substance or mixture is not classified as oxidizing. |

9.2 Other safety information

- | | |
|-------------------------|-----------|
| Minimum ignition energy | 0.14 mJ |
| Conductivity | < 1 µS/cm |
| Relative vapour density | 1.11 |

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LDLO Oral - Human - 143 mg/kg

Remarks: Lungs, Thorax, or Respiration:Dyspnea. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

LD50 Oral - Rat - 1,187 - 2,769 mg/kg

LC50 Inhalation - Rat - 4 h - 128.2 mg/l

LC50 Inhalation - Rat - 6 h - 87.6 mg/l

LD50 Dermal - Rabbit - 17,100 mg/kg

No data available

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

Respiratory or skin sensitisation

Maximisation Test - Guinea pig

Does not cause skin sensitisation.

(OECD Test Guideline 406)

Germ cell mutagenicity

Ames test

S. typhimurium

Result: negative

in vitro assay

fibroblast

Result: negative

Mutation in mammalian somatic cells.

Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)

Mouse - male and female

Result: negative

Carcinogenicity

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

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.

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.

Reproductive toxicity

Damage to fetus not classifiable

Fertility classification not possible from current data.

Specific target organ toxicity - single exposure

Causes damage to organs.

Specific target organ toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

No aspiration toxicity classification

Additional Information

RTECS: PC1400000

Effects due to ingestion may include:, Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures., Methyl alcohol may be fatal or cause blindness if swallowed.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	mortality LC50 - Lepomis macrochirus (Bluegill) - 15,400.0 mg/l - 96 h NOEC - Oryzias latipes - 7,900 mg/l - 200 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 10,000.00 mg/l - 48 h
Toxicity to algae	Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) - 22,000.0 mg/l - 96 h

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 5 d Result: 72 % - rapidly biodegradable
Biochemical Oxygen Demand (BOD)	600 - 1,120 mg/g
Chemical Oxygen Demand (COD)	1,420 mg/g
Theoretical oxygen demand	1,500 mg/g

12.3 Bioaccumulative potential

Bioaccumulation	Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l Bioconcentration factor (BCF): 1.0
-----------------	--

12.4 Mobility in soil

Will not adsorb on soil.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

Additional ecological information	Avoid release to the environment.
Stability in water	at 19 °C 83 - 91 % - 72 h Remarks: Hydrolyses on contact with water. Hydrolyses readily.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol
Reportable Quantity (RQ): 5000 lbs
Poison Inhalation Hazard: No

IMDG

UN number: 1230 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D
Proper shipping name: METHANOL

IATA

UN number: 1230 Class: 3 (6.1) Packing group: II
Proper shipping name: Methanol

15. REGULATORY INFORMATION**SARA 302 Components**

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

SARA 313 Components

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

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.	67-56-1	2012-03-16

Methanol

16. OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

Acute Tox.	Acute toxicity
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

Further Information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 6.4

Revision Date: 10/02/2017

Print Date: 11/20/2017

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifiers

Product name : Boric oxide

Product Number : B3032

Brand : Sigma

CAS-No. : 1303-86-2

1.2 Relevant Identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Reproductive toxicity (Category 1B), H360

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word : Danger

Hazard statement(s)

H360 : May damage fertility or the unborn child.

Precautionary statement(s)

P201 : Obtain special instructions before use.

P202 : Do not handle until all safety precautions have been read and understood.

P281 : Use personal protective equipment as required.

P308 + P313 : IF exposed or concerned: Get medical advice/ attention.

P405 : Store locked up.

P501 : Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : B₂O₃
Molecular weight : 69.62 g/mol
CAS-No. : 1303-86-2
EC-No. : 215-125-8

Hazardous components

Component	Classification	Concentration
Diboron trioxide	Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)	
	Repr. 1B; H360	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Moisture sensitive.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No	Value	Control parameters	Basis
Diboron trioxide	1303-86-2	TWA	10.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation		
		TWA	10.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	15.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		PEL	10 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls

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

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrik® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---|---|
| a) Appearance | Form: crystalline
Colour: white |
| b) Odour | odourless |
| c) Odour Threshold | No data available |
| d) pH | 5.46 at 25 °C (77 °F) |
| e) Melting point/freezing point | Melting point/range: 450 °C (842 °F) |
| f) Initial boiling point and boiling range | No data available |
| g) Flash point | Not applicable |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | The product is not flammable. - Flammability (solids) |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapour pressure | No data available |
| l) Vapour density | No data available |
| m) Relative density | 2.460 g/cm ³ |
| n) Water solubility | No data available |
| o) Partition coefficient: n-octanol/water | No data available |
| p) Auto-ignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |

- t) Oxidizing properties No data available
- 9.2 Other safety information**
- Dissociation constant 8.94 at 20 °C (68 °F)

10. STABILITY AND REACTIVITY

- 10.1 Reactivity**
No data available
- 10.2 Chemical stability**
Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions**
No data available
- 10.4 Conditions to avoid**
Exposure to moisture may affect product quality.
- 10.5 Incompatible materials**
acids, Strong oxidizing agents
- 10.6 Hazardous decomposition products**
Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Borane/boron oxides
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 2,600 mg/kg
(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - > 2.12 mg/l
(OECD Test Guideline 403)

LD50 Dermal - Rabbit - male and female - > 2,000 mg/kg

LD50 Intravenous - Rat - 1,330 mg/kg

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 24 h

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation - 24 h

Respiratory or skin sensitisation

Buehler Test - Guinea pig

Result: Does not cause skin sensitisation.
(OECD Test Guideline 406)

Germ cell mutagenicity

Hamster

ovary

Result: negative

Ames test

S. typhimurium

Result: negative

Mutagenicity (micronucleus test)

Mouse - male and female

Result: negative

Carcinogenicity

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

Reproductive toxicity

Presumed human reproductive toxicant

Presumed human reproductive toxicant

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

Repeated dose toxicity Rat - male and female - NOAEL : 100 mg/kg - LOAEL : 334 mg/kg

RTECS: ED7900000

Cough, Difficulty in breathing, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish static test LC50 - Pimephales promelas (fathead minnow) - 79.7 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates static test LC50 - Daphnia dubia (water flea) - 115 mg/l - 48 h (OECD Test Guideline 202)

static test LC50 - Daphnia magna (Water flea) - 133 mg/l - 48 h

Toxicity to algae static test EC50 - Selenastrum capricornutum (green algae) - 52.5 mg/l - 74.5 h (OECD Test Guideline 201)

Toxicity to bacteria Respiration inhibition EC50 - Sludge Treatment - > 175 mg/l - 3 h

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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION**SARA 302 Components**

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

SARA 313 Components

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.

Massachusetts Right To Know Components

Diboron trioxide

CAS-No.
1303-86-2

Revision Date
1993-04-24

Pennsylvania Right To Know Components

Diboron trioxide

CAS-No.
1303-86-2

Revision Date
1993-04-24

New Jersey Right To Know Components

Diboron trioxide

CAS-No.
1303-86-2

Revision Date
1993-04-24

California Prop. 65 Components

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

16. OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

H360
Repr. May damage fertility or the unborn child.
 Reproductive toxicity

HMIS Rating

Health hazard: 0
Chronic Health Hazard: *
Flammability: 0
Physical Hazard 0

NFPA Rating

Health hazard: 0
Fire Hazard: 0
Reactivity Hazard: 0

Further information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.7

Revision Date: 05/25/2016

Print Date: 09/16/2017

SAFETY DATA SHEET

Version 4.2
Revision Date 01/29/2015
Print Date 09/17/2017

1. PRODUCT AND COMPANY IDENTIFICATION**1.1 Product identifiers**

Product name : Trimethoxyboroxine

Product Number : T70203

Brand : Aldrich

CAS-No. : 102-24-9

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

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable liquids (Category 2), H225

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225

Highly flammable liquid and vapour.

H314

Causes severe skin burns and eye damage.

H318

Causes serious eye damage.

Precautionary statement(s)

P210

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233

Keep container tightly closed.

P240

Ground/bond container and receiving equipment.

P241

Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242

Use only non-sparking tools.

P243

Take precautionary measures against static discharge.

P264

Wash skin thoroughly after handling.

P280

Wear protective gloves/ protective clothing/ eye protection/ face

P301 + P330 + P331 protection.
 P303 + P361 + P353 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 IF ON SKIN (or hair): Take off immediately all contaminated clothing.
 Rinse skin with water/shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep 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.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to
 extinguish.
 P403 + P235 Store in a well-ventilated place. Keep cool.
 P405 Store locked up.
 P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : $C_3H_9B_3O_6$
 Molecular weight : 173.53 g/mol
 CAS-No. : 102-24-9
 EC-No. : 203-016-8

Hazardous components

Component	Classification	Concentration
Trimethoxyboroxine	Flam. Liq. 2; Skin Corr. 1B; Eye Dam. 1; H225, H314	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, Borane/boron oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

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.

Handle and store under inert gas. Moisture sensitive.

Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

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

Personal protective equipment

Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	Form: clear, liquid Colour: colourless
b) Odour	No data available
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	Melting point/range: 10 °C (50 °F) - lit.
f) Initial boiling point and boiling range	130 °C (266 °F) - lit.
g) Flash point	9 °C (48 °F) - closed cup
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	40 hPa (30 mmHg) at 25 °C (77 °F)
l) Vapour density	No data available
m) Relative density	1.195 g/cm ³ at 25 °C (77 °F)
n) Water solubility	No data available
o) Partition coefficient: n-octanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available

t) Oxidizing properties No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

- 10.1 Reactivity**
No data available
- 10.2 Chemical stability**
Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions**
Vapours may form explosive mixture with air.
- 10.4 Conditions to avoid**
Heat, flames and sparks.
- 10.5 Incompatible materials**
Strong oxidizing agents Strong oxidizing agents
- 10.6 Hazardous decomposition products**
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 5,160 mg/kg

Remarks: Behavioral: Convulsions or effect on seizure threshold. Respiratory disorder

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

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

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.

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.

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.

Reproductive toxicity

No data available

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: ED8720000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2924 Class: 3 (8) Packing group: II
Proper shipping name: Flammable liquids, corrosive, n.o.s. (Trimethoxyboroxine)
Reportable Quantity (RQ):

Poison Inhalation Hazard: No

IMDG

UN number: 2924 Class: 3 (8) Packing group: II EMS-No: F-E, S-C
Proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Trimethoxyboroxine)

IATA

UN number: 2924 Class: 3 (8) Packing group: II
Proper shipping name: Flammable liquid, corrosive, n.o.s. (Trimethoxyboroxine)

15. REGULATORY INFORMATION

SARA 302 Components

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

SARA 313 Components

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 311/312 Hazards

Fire Hazard, Acute Health Hazard

Massachusetts Right To Know Components

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

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Trimethoxyboroxine	102-24-9	

New Jersey Right To Know Components

	CAS-No.	Revision Date
Trimethoxyboroxine	102-24-9	

California Prop. 65 Components

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

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Eye Dam.	Serious eye damage
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
Skin Corr.	Skin corrosion

HMIS Rating

Health hazard:	3
Chronic Health Hazard:	
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	3
Fire Hazard:	3
Reactivity Hazard:	0

Further Information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 4.2

Revision Date: 01/29/2015

Print Date: 09/17/2017

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifiers

Product name : Trimethyl borate

Product Number : 447218
Brand : Aldrich
Index-No. : 005-005-00-1

CAS-No. : 121-43-7

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

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225

Acute toxicity, Dermal (Category 4), H312

Eye irritation (Category 2A), H319

Reproductive toxicity (Category 1B), H360

Specific target organ toxicity - single exposure, Oral (Category 1), Central nervous system, Eyes, H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225

Highly flammable liquid and vapour.

H312

Harmful in contact with skin.

H319

Causes serious eye irritation.

H360

May damage fertility or the unborn child.

H370

Causes damage to organs (Central nervous system, Eyes) if swallowed.

Precautionary statement(s)

P201

Obtain special instructions before use.

P202

Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P233 Keep container tightly closed.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.
 P363 Wash contaminated clothing before reuse.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
 P403 + P235 Store in a well-ventilated place. Keep cool.
 P405 Store locked up.
 P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : Methyl borate
 Boric acid trimethyl ester
 Formula : C₃H₉BO₃
 Molecular weight : 103.91 g/mol
 CAS-No. : 121-43-7
 EC-No. : 204-468-9
 Index-No. : 005-005-00-1

Hazardous components

Component	Classification	Concentration
Trimethyl borate	Flam. Liq. 2; Acute Tox. 4; Eye Irrit. 2A; Repr. 1B; STOT SE 1; H225, H312, H319, H360, H370	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, Borane/boron oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

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.

Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

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

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 240 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|--|---|
| a) Appearance | Form: liquid
Colour: light yellow |
| b) Odour | No data available |
| c) Odour Threshold | No data available |
| d) pH | No data available |
| e) Melting point/freezing point | Melting point/range: -34 °C (-29 °F) - lit. |
| f) Initial boiling point and boiling range | 68 - 69 °C (154 - 156 °F) - lit. |

- g) Flash point -7.99 °C (17.62 °F) - closed cup
- h) Evaporation rate No data available
- i) Flammability (solid, gas) No data available
- j) Upper/lower flammability or explosive limits No data available
- k) Vapour pressure 148 hPa (111 mmHg) at 25 °C (77 °F)
- l) Vapour density 3.59 - (Air = 1.0)
- m) Relative density 0.932 g/cm³ at 20 °C (68 °F)
- n) Water solubility hydrolyses
- o) Partition coefficient: n-octanol/water No data available
- p) Auto-ignition temperature 308 °C (586 °F) at 991.0 hPa (743.3 mmHg)
- q) Decomposition temperature No data available
- r) Viscosity No data available
- s) Explosive properties Not explosive
- t) Oxidizing properties The substance or mixture is not classified as oxidizing.

9.2 Other safety information

- Bulk density 925.0 - 940.0 kg/m³
- Relative vapour density 3.59 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Oxidizing agents

10.6 Hazardous decomposition products

Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 6,140 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - 1,845 mg/kg

No data available

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation

Serious eye damage/eye Irritation

Eyes - Rabbit

Result: Moderate eye irritation
(OECD Test Guideline 405)**Respiratory or skin sensitisation**

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

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

Reproductive toxicity

No data available

Presumed human reproductive toxicant May damage fertility. May damage the unborn child.

Specific target organ toxicity - single exposureOral - Causes damage to organs. - Central nervous system, Eyes
The value is given in analogy to the following substances:, Methanol**Specific target organ toxicity - repeated exposure****Aspiration hazard**

No data available

Additional Information

RTECS: ED5600000

Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, and erythematous lesions on the skin and mucous membranes. Other symptoms include: circulatory collapse, tachycardia, cyanosis, delirium, convulsions, and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams., Headache, Incoordination., Nausea, Vomiting, Gastrointestinal disturbance, Ataxia., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

No data available

12.2 Persistence and degradabilityBiodegradability aerobic - Exposure time 10 d
Result: 88 % - Readily biodegradable**12.3 Bioaccumulative potential**

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2416 Class: 3 Packing group: II

Proper shipping name: Trimethyl borate

Reportable Quantity (RQ):

Poison Inhalation Hazard: No

IMDG

UN number: 2416 Class: 3 Packing group: II EMS-No: F-E, S-D

Proper shipping name: TRIMETHYL BORATE

IATA

UN number: 2416 Class: 3 Packing group: II

Proper shipping name: Trimethyl borate

15. REGULATORY INFORMATION

SARA 302 Components

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

SARA 313 Components

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 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Trimethyl borate	CAS-No. 121-43-7	Revision Date 1993-04-24
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Pennsylvania Right To Know Components

Trimethyl borate	CAS-No. 121-43-7	Revision Date 1993-04-24
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New Jersey Right To Know Components

Trimethyl borate	CAS-No. 121-43-7	Revision Date 1993-04-24
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California Prop. 65 Components

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

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H360	May damage fertility or the unborn child.
H370	Causes damage to organs if swallowed.
Repr.	Reproductive toxicity
STOT SE	Specific target organ toxicity - single exposure

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

Further information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.5

Revision Date: 06/02/2015

Print Date: 09/18/2017

SAFETY DATA SHEET



Date Prepared : 23.02.2011

MSDS No : 9050220

Date Revised : 02.03.2011

Revision No : 2

Grilon XE 3912 Natural

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Grilon XE 3912 Natural
PRODUCT DESCRIPTION: PA 612 (acc. to ISO 1874)
PRODUCT CODE: 9050220 (XE3912NT)
CHEMICAL FAMILY: polyamide

MANUFACTURER

EMS-CHEMIE (North America) Inc.
 EMS GRIVORY America
 2060 Corporate Way
 PO Box 1717
 Sumter, SC 29151-1717
Emergency Contact: QA/MT Manager - (803) 481-9173
 EMS-CHEMIE AG
 Business Unit EMS-GRIVORY
 Via Innovativa 1
 Domat/Ems, CH-7013
 Switzerland
Emergency Phone: ++41(0)81-632-6111

24 HR. EMERGENCY TELEPHONE NUMBERS

Poison Control Center (Medical) : (877) 800-5553
CHEMTREC (US Transportation) : (800) 424-9300

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Clear and colorless 1/8 " cube-shaped granules

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt. %	CAS
PA612: No hazardous components present	100	24936-74-1

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for several minutes. Get medical attention, if irritation persists.

SKIN: For hot product, immediately immerse in or flush the affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention. Do not attempt to remove material from skin or contaminated clothing as the flesh can be easily torn.

INGESTION: Get immediate medical attention. Do not induce vomiting unless instructed to do so by poison center or physician.

INHALATION: If problems arise due to excessive fuming, remove subject to fresh air.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use carbon dioxide, extinguishing powder, or water spray. Fight larger fires with water spray or alcohol-resistant foam.

HAZARDOUS COMBUSTION PRODUCTS: Potential decomposition gases have not been fully determined. Complete thermal decomposition may generate very small amounts of CO, CO₂, and water vapor, plus trace amounts of HCN and oxides of nitrogen.

OTHER CONSIDERATIONS: Avoid temperatures above 315 ° C (599 ° F). Avoid exposure to strong oxidizing agents.



SAFETY DATA SHEET

Date Prepared : 23.02.2011
 MSDS No : 9050220
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 Revision No : 2

Grilon XE 3912 Natural

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Sweep up and deposit in dry waste container to avoid loose granules causing a fall hazard.

COMMENTS: Waste disposal method is not critical. Treat as conventional solid waste in accordance with local, state, and federal regulations.

7. HANDLING AND STORAGE

STORAGE: Hygroscopic material - keep dry in closed container or sealed bags. Excessive moisture results in degradation during processing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Use appropriate eye protection during processing, in accordance with accepted industry safety precautions.

SKIN: Use appropriate protective gloves during processing to avoid thermal burns from molten material, hot molded, or extruded end-products.

RESPIRATORY: Not necessary if room is well-ventilated.

WORK HYGIENIC PRACTICES: Provide exhaust over processing machinery in common with accepted practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid

ODOR: odorless

APPEARANCE: granules with geometry of ca. 1/8 in³

COLOR: colorless

FLASH POINT AND METHOD: > 400°C (752°F)

THERMAL DECOMPOSITION: > 315°C

SPECIFIC GRAVITY: > 1

Notes: (Water = 1.00)

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

STABILITY: Stable

CONDITIONS TO AVOID: Temperatures above 315 ° C (600 ° F). Strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: None known.

SKIN EFFECTS: None known.

COMMENTS: When used and handled according to specifications, the product has no harmful effects to our experience and the information provided to us.

12. ECOLOGICAL INFORMATION

COMMENTS: Not known to be hazardous to water.

SAFETY DATA SHEET



Date Prepared : 23.02.2011

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Revision No : 2

Grilon XE 3912 Natural

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Contact waste processors for recycling information. Can be reused after reprocessing. Dispose of large quantities can after consulting with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations. Dispose of smaller quantities with household waste.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

MARINE POLLUTANT #1: Not a marine pollutant.

OTHER SHIPPING INFORMATION: Not dangerous according to the above specifications.

15. REGULATORY INFORMATION

UNITED STATES**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

TSCA STATUS: All ingredients used to produce this material are listed in the TSCA inventory as require by federal law. The material itself is also listed in the TSCA inventory.

FDA (FOOD AND DRUG ADMINISTRATION): This product is in compliance with either the FDA regulation CFR 21 or a Food Contact Notification (FCN) . Please inquire with EMS-GRIVORY for the specific food compliance statement regarding this product.

GENERAL COMMENTS :**ROHS WEEE:**

Our products do not contain any lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr-VI), PBB (polybrominated biphenyl) or PBDE (polybrominated diphenyl ethers) as part of their formulation and are therefore in compliance with RoHS-Directive 2002/95/EC. Parts produced from this product are not subject to "selective treatment" according to Directive 2002/96/EC on Waste Electrical and Electronic Equipment.

In the glass fiber reinforced materials, lead as a natural impurity of the raw materials can be found with a concentration < 0.01 %. According to amendment 2005/618/EC relating to directive 2002/95/EC, article 5, 1, lead with a concentration of maximum 0.1 % shall be tolerated.

Our products do not contain any Deca-BDE as a part of their formulation and are therefore in compliance with the Commission decision 2005/717/EC of October 13, 2005.

ALLERGENS:

Our products do not contain the following allergens: sulfites, seeds (e.g., poppy, sesame, etc.), soybeans or soy-based products, tree nuts (e.g., walnuts, almonds, pecans, etc.), glutens, egg or egg products, milk or milk products, peanuts or peanut-based products, wheat or wheat-based products, seafood (e.g., fish or shellfish), latex, celery, sesame, mustard, or PVC.

GENERAL INFORMATION:

Our products do not contain

-benzophenone,

-2,2-bis(4-hydroxyphenyl)propane bis(2,3-epoxypropyl)ether ('BADGE' i.e. Bisphenol-A DiGlycidyl Ether),



SAFETY DATA SHEET

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bis(hydroxyphenyl)methane bis(2,3-epoxypropyl) ethers ('BFDGE' i.e. Bisphenol-F DiGlycidyl Ether) and novolac glycidyl ethers (NOGE),

-chlorofluorocarbons (CFC's), perfluorochemicals (PFC's), or fluoroelastomers,

-melamine,

-butylated hydroxytoluene (BHT),

-dimethylphthalate (DMP), benzylbutylphthalate (BBP), diisononylphthalate (DINP), diisodecylphthalate (DIDP), di-n-octylphthalate (DNOP), Diisobutylphthalate (DIBP), dicyclohexylphthalate (DCHP), di-(2-ethylhexyl)phthalate (DEHP), dibutylphthalate (DBP), or diisooheptylphthalate (DIHP), bis(2-methoxyethyl)phthalate (DMEP), di-n-pentylphthalate (DnPP), di-isopentylphthalate (DIPP), or n-pentyl-isopentylphthalate.

They are in compliance with Commission Decision 1999/815/EC and Directive 2005/84/EC.

Our products also comply with EC Directive No. 1895/2005.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

Our products nor their components are listed in the Canadian Environmental Protection Act, 1999 (CEPA).

CALIFORNIA PROPOSITION 65:

Our products nor their components are on the updated (June 11, 2010) list of California Proposition 65.

HEAVY METALS:

Our products do not contain components consisting of Ag, As, Bi, Cd, Cu, Hg, Pb, Sn and hexavalent chromium, or contain trace quantities of these elements in a combined concentration exceeding 2 ppm (part per million) by weight.

TOXICS IN PACKAGING CLEARINGHOUSE (TPCH):

Our products comply with the requirements of the toxics in packaging law(s) as defined by Toxics in Packaging Clearinghouse (TPCH) in 1989. Specifically:

The regulated metals - lead, mercury, cadmium, and hexavalent chromium - are not intentionally added to any product(s) during the manufacturing process or distribution.

The sum of the incidental concentration levels of lead, mercury, cadmium and hexavalent chromium present in any product(s) do not exceed 100 parts per million by weight.

Our products comply with EC Directive 94/62/CE.

COSMETIC PRODUCTS:

Our products do not contain components within Annex II or Annex III of the EC Directive 76/768/EEC.

SENSITIVE SUBSTANCES:

Our products do not contain components within RPP900/E, "List of Sensitive Substances" and "Requirements



SAFETY DATA SHEET

Date Prepared : 23.02.2011

MSDS No : 9050220

Date Revised : 02.03.2011

Revision No : 2

Grilon XE 3912 Natural

Toward Non-Wovens" - Annex II.

AGENCY/ REGULATORY INFORMATION CONTACT:

If your agency and regulatory needs are not found in the above text, contact Dr. Andrea Gatzke (Agency Compliance Specialist) at andrea.gatzke@us.emsgrivory.com for further assistance.

16. OTHER INFORMATION

APPROVED BY: Heather Steffy **TITLE:** QA/MT Manager

PREPARED BY: Andrea Gatzke **Date Revised:** 02.03.2011

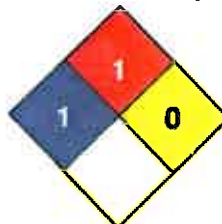
INFORMATION CONTACT: (803) 481-1815

REVISION SUMMARY: This MSDS replaces the 02.03.2011 MSDS.

HMS RATING

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

NFPA CODES



MANUFACTURER DISCLAIMER: This Material Safety Data Sheet (MSDS) is presented in good faith, based on currently available information, and is accurate to the best of our knowledge. It does not replace the precautions, directions, and information contained on the product label. The user is solely responsible for: 1) following all instructions, recommendations, and directions; 2) deciding whether this product or the information about this product is suitable for its use; 3) providing this MSDS and all other information about this product to any subsequent users; 4) meeting all applicable health and safety standards and regulations; and 5) ensuring that no patent infringement occurs.

NO LIABILITY IS ASSUMED AND NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, ARE MADE WITH RESPECT TO THE INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

ATTACHMENT I
EMISSION UNITS TABLE

Attachment I
Emission Units Table
(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)
Blue = New Equipment (Existing Being Added to Permit).

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
003	104.014	Main Scrubber	2007	60 gpm	Existing	Incinerator Incinerator Scrubber
012	104.014	Brine Tank	1999	<20,000 gal	Existing	Incinerator Incinerator Scrubber
009	104.014	Incinerator	1977	10 MMBtu/hr	Existing	Incinerator Scrubber
010	104.014	Incinerator Scrubber	1977	80 gpm	Existing	None
013	104.006	Brine Tank	1977	<20,000 gal	Existing	None
101	104.014	Xylene/Toluene Storage Tank	1980	<20,000 gal	Existing	Incinerator, Incinerator Scrubber
103	104.014	BI Tank	2002	7,400 gal	Existing	Main Scrubber (See Note on Page I5) Incinerator Incinerator Scrubber
104	104.014	Methanol Tank	2005	<20,000 gal	Existing	Incinerator Incinerator Scrubber
108	104.014	Flammable Waste Tank	1961	1,900 gal	Existing	Main Scrubber Incinerator Incinerator Scrubber
108L	104.014	Transfer Rack	1968	NA	Existing	Incinerator Incinerator Scrubber
109	104.014	Extraction Tank	1968	<20,000 gal	Existing	Incinerator Incinerator Scrubber
109L/ WWL	104.014	Transfer Rack	1968	NA	Existing	Incinerator Incinerator Scrubber
112	104.014	J Tank	1951	8,000 gal	Existing	Incinerator Incinerator Scrubber

1 For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S, or other appropriate designation.

2 For Emission Points use the following numbering system: 1E, 2E, 3E, or other appropriate designation.

3 New, modification, removal

4 For Control Devices use the following numbering system: 1C, 2C, 3C, or other appropriate designation.

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Emission Units Table
(includes all emission units and air pollution control devices
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Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of	Control Device ⁴
114A	104.003	Reactor #3 Charge Hopper	2005	360 cfh	Existing	Dust Collector (114)
115A	104.003B	Reactor #6 Charge Hopper	NA	NA	Existing	Dust Collector (115)
116A	107.020	Solids Charge Station	NA	NA	Existing	Dust Collector (116)
901	104.014	Bulk Liquid Transfer	1981	NA	Existing	Incinerator Incinerator Scrubber
002	104.014	Dryer	1977	500 pph	Existing	Dryer Condenser Incinerator
004	104.014	Dryer Condenser	1977	113 cuft	Existing	Incinerator
201	104.014	Centrifuge	1961	500 pph	Existing	Incinerator Incinerator Scrubber
201A	104.014	Wet Cake Bin	NA	NA	Existing	Incinerator Incinerator Scrubber
202	104.014	M/L Disengaging Tank	1988	925 gal	Existing	Incinerator Incinerator Scrubber
203	104.014	Reactor #3	NA	2,000 gal	Existing	Incinerator Incinerator Scrubber
203C	104.014	Reactor #3 Condenser	1977	NA	Existing	Incinerator Incinerator Scrubber
205	104.014	Reactor #1	1988	750 gal	Existing	Main Scrubber Incinerator Incinerator Scrubber
206	104.014	Reactor #2	1977	2,000 gal	Existing	Incinerator Incinerator Scrubber
206PC	104.014	Reactor #2 Primary Condenser	1980	NA	Existing	Incinerator Incinerator Scrubber

1 For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S, or other appropriate designation.

2 For Emission Points use the following numbering system: 1E, 2E, 3E, or other appropriate designation.

3 New, modification, removal

4 For Control Devices use the following numbering system: 1C, 2C, 3C, or other appropriate designation.

Attachment I
Emission Units Table
(includes all emission units and air pollution control devices
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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
206SC	104.014	Reactor #2 Secondary Condenser	1983	NA	Existing	Incinerator Incinerator Scrubber
208	104.014	Reactor #6	1977	4,000 gal	Existing	Main Scrubber (During Reaction Step Only) Incinerator Incinerator Scrubber
208P	104.014	Reactor #6 Pump	NA	NA	Existing	Incinerator Scrubber
208C	104.014	Reactor #6 Condenser	NA	NA	Existing	Main Scrubber Incinerator Incinerator Scrubber
209	104.014	Reactor #8	1977	4,000 gal	Existing	Main Scrubber Incinerator Incinerator Scrubber
210	107.022	Product Packout	2005	825 scfh	Existing	Dust Collector
219	104.014	Reactor #5	1984	2,000 gal	Existing	Main Scrubber Incinerator Incinerator Scrubber
219C	104.014	Reactor #5 Condenser	1987	NA	Existing	Main Scrubber Incinerator Incinerator Scrubber
226	104.014	ISO Tank	1988	8,000 gal	Existing	Incinerator Incinerator Scrubber
227	104.014	CWT Tank	2005	8,000 gal	Existing	Incinerator Incinerator Scrubber
228	104.014	Centrifuge Feed Tank	2016	500 gal	Existing	Incinerator Scrubber

1 For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

2 For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

3 New, modification, removal

4 For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

**Attachment I
Emission Units Table**
(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)
Blue = New Equipment (Existing Being Added to Permit).

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
229	104.014	Tanker Truck	2016	NA	Existing	Incinerator Scrubber
232	104.014	Reactor #7	2016	2,000 gal	Existing	Incinerator Scrubber
232C	104.014	Reactor #7 Condenser	2016	NA	Existing	Incinerator Scrubber
230	104.014	Double Cone Dryer (during Dried LAME Process only)	2016	165 CF	Existing	Incinerator Incinerator Scrubber
233	104.014	Reactor	2016	NA	Existing	Incinerator
234	107.03	Super Sack/Drum Loading	2016	NA	Existing	Dust Collector 116
235	107.03	Super Sack/Drum Unloading	2016	NA	Existing	Dust Collector 117
Fugitive	Fugitive	One (1) Filter	2016	NA	Existing	None
Fugitive	Fugitive	Two (2) Polish Filter (Change Outs)	NA	NA	Existing	None
SLM0056	NA	Caustic Weigh Tank (Insignificant/de Minimis Source)	2017	800 gal	Existing	NA
SLM0071	NA	Caustic Weigh Tank (Insignificant/de Minimis Source)	2017	800 gal	Existing	NA
SLM0070	104.014	Dean-Stark Tank	2017	200 gal	Existing	Incinerator Incinerator Scrubber

1 For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

2 For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

3 New, modification, removal

4 For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

**Attachment I
Emission Units Table**
(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)
Blue = New Equipment (Existing Being Added to Permit).

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
023	107.22	Dust Collector 023	2005	250 cfm	Existing	NA
117	107.03	Dust Collector 117	2016	1,200 cfm	Existing	NA
116	107.020	Dust Collector 116	1988	2,800 cfm	Existing	NA
115	104.003B	Dust Collector 115	1978	1,300 cfm	Existing	NA
114	104.003	Dust Collector 114	2001	400 cfm	Existing	NA
236	104.014	Filter Dryer	2018	NA	New	Main Scrubber, Incinerator, Incinerator Scrubber
237	104.014	Reactor #10	2018	NA	New	Main Scrubber, Incinerator, Incinerator Scrubber
237C	104.014	Reactor #10 Condenser	2018	NA	New	Main Scrubber, Incinerator, Incinerator Scrubber

Note: The Main Scrubber is an acid gas scrubber. It will only be used if a process generates an acid gas. If the process does not generate an acid gas, the Main Scrubber will not be in operation.

¹ For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.
Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.
removal
⁴ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

² For Emission
³ New, modification,

ATTACHMENT J

EMISSION POINTS DATA SUMMARY SHEET

Attachment J Emission Points Data Summary Sheet DRIED LAME

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants Chemical Name/CAS ³ (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
104-014	Upward Vertical	*	Various	003, 009, 010	Main Scrubber**, Incinerator, Incinerator Scrubber	NA	NA	VOC SO2 Acetonitrile Hydrogen Chloride Methanol Methyl Tert-Butyl Ether Total HAPs	24.45 118.88 0.46 67.75 3.05 20.93 92.20	1.53 38.04 0.02 21.68 0.95 0.57 23.21	0.51 0.01 0.01 0.01 0.12 0.38 0.51	0.04 0.01 0.01 0.01 0.03 0.01 0.06	Gas	EE	NA
104-003B	Upward Vertical	115A	Reactor 6 Charge Hopper	115	Dust Collector	NA	NA	PM PM10 PM2.5	0.32 0.15 0.02	0.01 0.01 0.01	0.32 0.15 0.02	0.01 0.01 0.01	Solid	AP-42	NA
107-03	Upward Vertical	234	Super Sack/Drum Loading	116 or 117	Dust Collector	NA	NA	PM PM10 PM2.5	0.43 0.20 0.03	0.01 0.01 0.01	0.43 0.20 0.03	0.01 0.01 0.01	Solid	AP-42	NA

* - Sources venting through this emission point during LAME production include 003, 009, 010, 103, 108, 112, 201, 201A, 202, 203, 205, 206, 206PC, 208, 208C, 209, 219, 219C, 226, 227, 229, and 230.
 ** - Only Sources 208 (only during its reaction step), 208C, 103, 108, 205, 209, and 219 feed to the Main Scrubber.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

1 Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
 2 Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
 3 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS2, VOCs, H2S, Inorganics, Lead, Organics, O3, NO, NO2, SO2, SO3, all applicable Greenhouse Gases (including CO2 and methane), etc. DO NOT LIST H2, H2O, N2, O2, and Noble Gases.
 4 Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
 5 Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
 6 Indicate the method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
 7 Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the pollutant is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO2, use units of ppmv (See 45CSR10).

Table 2: Release Parameter Data

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Exit Gas				Emission Point Elevation (ft)			UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)	Northing	Easting		
104.014*	0.875	169	2,000	56	642	80	4,232.60	451.90		
104.003B	0.83	75	1,300	1.8	637	30	4,232.60	451.90		
107.03	NA	NA	1,200	3.1	NA	NA	4,232.60	451.90		

¹ Give at operating conditions. Include inerts.
² Release height of emissions above ground level.

*NOTE: Information from stack test conducted in 2008.

Attachment J Emission Points Data Summary Sheet STPB

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ² (hr/yr)	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
104.014	Upward Vertical	**	Various	009	Incinerator	NA	NA	VOC Benzene Hexane Methanol Toluene*	25.47 0.06 7.03 0.06 1.08	0.72 0.01 0.07 0.01 0.09	1.17 0.01 0.43 0.01 0.39	0.15 0.01 0.04 0.01 0.05	Gas	EE	NA
107.003	Upward Vertical	234	Super Sack/Drum Loading	116 or 117	Dust Collector	NA	NA	PM PM10 PM2.5	0.06 0.03 0.01	0.01 0.01 0.01	0.06 0.03 0.01	0.01 0.01 0.01	Solid	AP-42	NA
104.003A	Upward Vertical	114A	Reactor #3 Charge Hopper	114	Dust Collector	NA	NA	PM PM10 PM2.5	0.05 0.03 0.01	0.01 0.01 0.01	0.05 0.03 0.01	0.01 0.01 0.01	Solid	AP-42	NA
219	***	219	Mg to Reactor No. 5	NA	NA	NA	NA	PM PM10 PM2.5	0.02 0.01 0.01	0.01 0.01 0.01	0.02 0.01 0.01	0.01 0.01 0.01	Solid	AP-42	NA

* - Includes toluene tank uncontrolled emissions during storage only.

** - Sources venting through this emission point during STPB production: 002, 009, 103, 201, 202, 203, 205 1, 206, 208, 209, 219, and 228

*** - Magnesium is manually charged (personnel dumping Mg) to Reactor No. 5 through the access port at the top of the reactor. When the top is open on the reactor it does not vent to the scrubber and incinerator. This reactor is located within the building and this is a conservative estimate of the emissions associated with the feeding of Mg through the port.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncontrolled process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncontrolled emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 10 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/week).
³ List all regulated air pollutants. Speciate VOCs, including all HAPS. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁶ Indicate the method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

Table 2: Release Parameter Data

Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)			UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)	Northing	Easting	
104.014	1.5	140	2,375	15	642	35	4,232.60	451.90	
107.022	0.33	Ambient	250	45.8	667	60	4,232.60	451.90	
104.003A	2.5	Ambient	400	2	686	79	4,232.60	451.90	
219	NA	Reactor #5 loading may vent through the top of the reactor.							

¹ Give at operating conditions. Include inerts.

² Release height of emissions above ground level.

Attachment J

Emission Points Data Summary Sheet

TMBX

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
107.022*	Upward Vertical	114A*	Reactor Charge Hopper	114*	Dust Collector	NA	NA	PM PM10 PM2.5	0.80 0.38 0.06	0.05 0.02 0.01	0.80 0.38 0.06	0.05 0.02 0.01	Solid	AP-42	NA
104.014	Upward Vertical	*	*	009 010	Incinerator* Incinerator Scrubber	NA	NA	VOC**	6.98	0.77	5.99	0.60	Gas	EE	NA

*TMBX may be produced with any reactor. The equipment shown is only for identification purposes only. If an alternate equipment setup is used, the emission point identifications will change.
 **Includes filter changeout and drum out emissions which do not vent to control.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
³ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Services (CAS) number. LIST Acids, CO, CS2, VOCs, H2S, Inorganics, Lead, Organics, O3, NO, NO2, SO2, SO3, all applicable Greenhouse Gases (including CO2 and methane), etc. DO NOT LIST H2, H2O, N2, O2, and Noble Gases.
⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁶ Indicate the method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO2, use units of ppmv (See 45CSR10).

Table 2: Release Parameter Data

Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height ² <i>(Release height of emissions above ground level)</i>	Nothing	Easting
107.022	0.33	Ambient	250	45.8	667	60	4,232.60	451.90
104.014	1.5	140	2,375	15	642	35	4,232.60	451.90

¹ Give at operating conditions. Include inerts.

² Release height of emissions above ground level.

Attachment J Emission Points Data Summary Sheet NYLON WASHING

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
104.014	Upward Vertical	236	Filter Dryer	009	Incinerator	NA	NA	VOC	2.20	0.22	0.59	0.18	Gas	EE	NA
		108	Any Reactor/	010	Incinerator			Methanol	2.20	0.22	0.59	0.18			
		229	Condenser Setup		Scrubber										

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
³ List all regulated air pollutants. Speciate VOCs, including all HAPS. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.
⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
⁶ Indicate the method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂, use units of ppmv (See 45CSR10).

Table 2: Release Parameter Data

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Temp. (°F)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
			Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)	Northing	Easting	
104.014	1.5	140	2,375	15	642	35	4,232.60	451.90	

¹ Give at operating conditions. Include inerts.

² Release height of emissions above ground level.

ATTACHMENT L
EMISSION UNIT DATA SHEETS

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): Various (See Attachment I)

1. Name or type and model of proposed affected source:

Dried LAME production is being revised for the Small Lots Manufacturing (SLM) Building 216. [REDACTED]

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

LAME

Total Batches Per Year: 40

Single Batch Time: [REDACTED] hours (Dried LAME) or [REDACTED] (Undried LAME)

4. Name(s) and maximum amount of proposed material(s) produced per hour:

L-Alanine Methyl Ester (LAME): [REDACTED] lb

Hydrogen Chloride: [REDACTED] lb

SO₂: [REDACTED] lb

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

N/A

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ _____ °F and _____ psia

a. NO _x		lb/hr		grains/ACF
b. SO ₂	118.88	lb/hr	NA	grains/ACF
c. CO		lb/hr		grains/ACF
d. PM ₁₀	0.36	lb/hr	NA	grains/ACF
e. Hydrocarbons		lb/hr		grains/ACF
f. VOCs	24.45	lb/hr	NA	grains/ACF
g. Pb		lb/hr		grains/ACF
h. Specify other(s)				
HAPS	92.20	lb/hr	NA	grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

None

RECORDKEEPING

Amount of LAME produced.

REPORTING

None

TESTING

None

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None.

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

**Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): Various (See Attachment I)

1. Name or type and model of proposed affected source:

STPB production is being revised for the Small Lots Manufacturing (SLM) Building 216.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

Total Batches Per Year: 30

Single Batch Time: [REDACTED] hours

Batch Loading:

4. Name(s) and maximum amount of proposed material(s) produced per hour:

Sodium Tetrphenylborate (STPB): [REDACTED] lbs.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

Magnesium Chloride Methoxide + MTPB + Phenyl Magnesium Chloride + Sodium Chloride + Water → Benzene + Magnesium Chloride + Methanol + Sodium Hydroxide + STPB

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

N/A

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

		@	°F and	psia
a.	NO _x		lb/hr	grains/ACF
b.	SO ₂		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM ₁₀	0.07	lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs	25.47	lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
	HAPS	8.95	lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

None

RECORDKEEPING

Amount of STPB produced

REPORTING

None

TESTING

None

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None.

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): Various (See Attachment I)

1. Name or type and model of proposed affected source:

TMBX Production is a one reactor production process which produces a liquid Trimethoxyboroxine (TMBX) product from the reaction of Tri Methyl Borate (TMB) and Boron Oxide Powder (BO).

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

Total Batches Per Year: 100
Single Batch Time: [REDACTED] hours
Batch Loading:
[REDACTED]

4. Name(s) and maximum amount of proposed material(s) produced per hour:

TMBX: [REDACTED]

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

$TMB + BO \rightarrow TMBX$

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable): NA

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ _____ °F and _____ psia

a. NO _x		lb/hr		grains/ACF
b. SO ₂		lb/hr		grains/ACF
c. CO		lb/hr		grains/ACF
d. PM ₁₀	0.38	lb/hr	NA	grains/ACF
e. Hydrocarbons		lb/hr		grains/ACF
f. VOCs	6.98	lb/hr	NA	grains/ACF
g. Pb		lb/hr		grains/ACF
h. Specify other(s)		lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF
		lb/hr		grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING
 None.

RECORDKEEPING
 Amount of TMBX produced.

REPORTING
 None.

TESTING
 None.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None.

**Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): Various (See Attachment I)

1. Name or type and model of proposed affected source:

Nylon Washing Process is a process to remove short chain nylon oligomers from Nylon pellets. The washing is conducted with methanol which dissolves the short chain groups from the pellets.

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

Total Batches Per Year: 200
Single Batch Time: [REDACTED] hours
Batch Loading:
Nylon: [REDACTED] lbs.
[REDACTED] lbs.

4. Name(s) and maximum amount of proposed material(s) produced per hour:

Nylon (washed): [REDACTED] lbs.
Methanol: [REDACTED] lbs.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

Nylon + Methanol \longrightarrow Nylon (washed) + Methanol

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable): NA

(a) Type and amount in appropriate units of fuel(s) to be burned:

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@	°F and	psia		
a. NO _x			lb/hr	grains/ACF
b. SO ₂			lb/hr	grains/ACF
c. CO			lb/hr	grains/ACF
d. PM ₁₀			lb/hr	grains/ACF
e. Hydrocarbons			lb/hr	grains/ACF
f. VOCs	2.20		lb/hr	NA grains/ACF
g. Pb			lb/hr	grains/ACF
h. Specify other(s)				
Methanol	2.20		lb/hr	NA grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING
 None

RECORDKEEPING
 Amount of Nylon washed.

REPORTING
 None

TESTING
 None

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None.

ATTACHMENT N
SUPPORTING EMISSIONS CALCULATIONS

Optima Belle, LLC
Dried LAME

Potesta & Associates, Inc.
Project Number 0101-14-0162-016

By: PEW
Date: 12/1/2017

Checked By: ADM
Date: 12/1/2017

Total Emissions Estimate for a Campaign of Dried LAME

Number of Batches in Process 1 No.
Number of Batches Per Year 40 No.

Total Emissions

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (40 batches)	pph (Max Rate)	tpy (40 batches)
PM	0.75	0.02	0.75	0.02
PM10	0.36	0.02	0.36	0.02
PM2.5	0.05	0.02	0.05	0.02
SO2	118.88	38.04	0.01	0.01
VOC	24.45	1.53	0.51	0.04

HAPS (Process)

Acetonitrile	0.46	0.02	0.01	0.001
Hydrogen Chloride	67.75	21.68	0.01	0.003
Methanol	3.05	0.95	0.12	0.024
Methyl Tert-Butyl Ether	20.93	0.57	0.38	0.012
Total Process HAPS	92.20	23.21	0.51	0.040

Requested Permit Limits

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (40 batches)	pph (Max Rate)	tpy (40 batches)
PM	0.75	0.02	0.75	0.02
PM10	0.36	0.02	0.36	0.02
PM2.5	0.05	0.02	0.05	0.02
SO2	118.88	38.04	0.01	0.01
VOC	24.45	1.53	0.51	0.04

HAPS (Process)

Acetonitrile	0.46	0.02	0.01	0.01
Hydrogen Chloride	67.75	21.68	0.01	0.01
Methanol	3.05	0.95	0.12	0.03
Methyl Tert-Butyl Ether	20.93	0.57	0.38	0.01
Total HAPS	92.20	23.21	0.51	0.06

By: PEW
Date: 12/1/2017

Checked By: ADM
Date: 12/1/2017

Current Emissions (Previous Requested Permit Limits)

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (20 batches)	pph (Max Rate)	tpy (20 batches)
PM	0.75	0.02	0.75	0.02
PM10	0.36	0.02	0.36	0.02
PM2.5	0.05	0.02	0.05	0.02
SO2	118.88	19.02	0.01	0.01
VOC	24.63	1.23	1.63	0.05

HAPS (Process)

Acetonitrile	0.61	0.02	0.02	0.01
Hydrogen Chloride	67.75	10.84	0.01	0.01
Methanol	1.88	0.37	0.02	0.01
Methyl Tert-Butyl Ether	20.93	0.83	0.39	0.02
Total HAPS	91.18	12.06	0.44	0.05

HAPS (Filter Changeout)

Methanol	1.21	0.01	1.21	0.01
Total HAPS (Filter Changeout and Process)	92.38	12.07	1.65	0.06

Change in Emissions

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (40 batches)	pph (Max Rate)	tpy (40 batches)
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
PM2.5	0.00	0.00	0.00	0.00
SO2	0.00	19.02	0.00	0.00
VOC	-0.18	0.30	-1.12	-0.01

HAPS (Process)

Acetonitrile	-0.15	0.00	-0.01	0.00
Hydrogen Chloride	0.00	10.84	0.00	0.00
Methanol	-0.03	0.56	-1.11	0.01
Methyl Tert-Butyl Ether	0.00	-0.26	-0.01	-0.01
Total HAPS	-0.18	11.14	-1.13	0.00

Product: LAME
 Process Name: LAME via SOCL2 Route
 Production Quantity: XXXXXXXXXX
 Process Cycle Time: XXXXXXXXXX
 Date: 1/13/2017
 File: N:\Emission Master Files\Ajinomoto\Bell EM Files\LAME Belle Dried R_4.emm
 Comments:

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017

Compound	Activities Emitting	Emissions		Emissions
		Uncontrolled (lb)	Controlled (lb)	Percent Removal
Acetonitrile	20	0.935683522	0.01764418	98.11470346
Hydrogen Chloride	1	1084	0.1084	99.99
	8	0	0	
	28	0	0	
Methanol	45	47.27593324	1.189282732	97.48436021
MTBE	15	28.33076701	0.556637836	98.02815845
	60	197.8251872	197.8251872	0
	21	0	0	
	2	0	0	
	58	0	0	
	2	0	0	
Sulfur Dioxide	1	1902	0.1902	99.99
	18	6.674046212	7.1186E-05	99.99893339
Water	58	0.056842525	2.58130707	-4441.154834
Total VOC		76.54258378	1.765564748	

Compound	Process Cycle	Compound Emission		Max Uncontrolled lb/hr	Max Rate (lb/hr) Within 1 hour	Criteria	HAPS
	Average (lb/hr)	Hours	Average (lb/hr)				
Acetonitrile	0.000136936		0.000383602	0.46492	0.013465757	VOC	HAP
Hydrogen Chloride	0.000841288		0.006775	67.75	0.006775		HAP
	0		0		0		
	0		0		0		
Methanol	0.009229979		0.009357595	3.0531	0.115281658	VOC	HAP
MTBE	0.004335587		0.012697036	20.9347	0.376883227	VOC	HAP
	1.535313831		1.737790007		24.01761776		
	0		0		0		
	0		0		0		
	0		0		0		
	0		0		0		
Sulfur Dioxide	0.001476135		0.0118875	118.875	0.0118875	SO2	
	5.52472E-07		1.16511E-06		3.7953E-05		
Water	0.020033427		0.019880974		0.364365141		

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours
 (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Activities Emitting	Emissions		Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	62	3287.09866	202.4707302	93.80273597
Acid	0	0	0	
Acid Gases	1	1084	0.1084	99.99
Hydrogen Chloride	1	1084	0.1084	99.99
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CATEGORY I	0	0	0	
ASBESTOS	0	0	0	
BIOLOGICAL	0	0	0	
Cr(+6)	0	0	0	
DIOXIN	0	0	0	
HAP-PARTICULATE	0	0	0	
METAL	0	0	0	
OTHER PARTICULATE	0	0	0	
RADIONUCLIDE	0	0	0	
CATEGORY II	0	0	0	
HAP-VOC	0	0	0	
OTHER VOC	0	0	0	
CATEGORY III	0	0	0	
ACID	0	0	0	
HAP-ACID	0	0	0	
CATEGORY IV	0	0	0	
CATEGORY V (CO)	0	0	0	
CATEGORY VI (NOx)	0	0	0	
CATEGORY VII (SO2)	0	0	0	
CATEGORY VIII	0	0	0	
CO	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Gas	0	0	0	
HAP	46	1180.542584	1.873964748	99.83852684
Acetonitrile	20	0.935883522	0.01764418	99.11470346
Hydrogen Chloride	1	1084	0.1084	99.99
Methanol	45	47.27593324	1.189282732	97.48438021
MTBE	15	28.33076701	0.558637836	98.02815845
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
Radionuclide	0	0	0	
SO2	1	1902	0.1902	99.99
Sulfur Dioxide	1	1902	0.1902	99.99
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	46	78.54258378	1.785564748	97.89335622
Acetonitrile	20	0.935883522	0.01764418	99.11470346
Methanol	45	47.27593324	1.189282732	97.48438021
MTBE	15	28.33076701	0.558637836	98.02815845
Sodium Methoxide	2	0	0	
Unclassified	62	204.5560759	200.4085654	2.028544233
	8	0	0	
	28	0	0	
	60	197.8251872	197.8251872	0
	21	0	0	
	2	0	0	
	58	0	0	
	18	6.674046212	7.1186E-05	99.98893339
Water	58	0.056842525	2.58130707	-4441.154834

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Process Cycle	Emission Hours	Emission	Max Rate (lb/hr)
	Average (lb/hr)		Average (lb/hr)	Within 1 hour
All Emissions	1.571387715		1.558423098	24.43492422
Acid	0		0	0
Acid Gases	0.000841288		0.006775	0.006775
Asbestos	0		0	0
Base	0		0	0
Biological	0		0	0
CATEGORY I	0		0	0
ASBESTOS	0		0	0
BIOLOGICAL	0		0	0
Cr(+6)	0		0	0
DIOXIN	0		0	0
HAP-PARTICULATE	0		0	0
METAL	0		0	0
OTHER PARTICULATE	0		0	0
RADIONUCLIDE	0		0	0
CATEGORY II	0		0	0
HAP-VOC	0		0	0
OTHER VOC	0		0	0
CATEGORY III	0		0	0
ACID	0		0	0
HAP-ACID	0		0	0
CATEGORY IV	0		0	0
CATEGORY V (CO)	0		0	0
CATEGORY VI (NOx)	0		0	0
CATEGORY VII (SO2)	0		0	0
CATEGORY VIII	0		0	0
CO	0		0	0
CR+6	0		0	0
Dioxin	0		0	0
ETG	0		0	0
EVOS	0		0	0
Gas	0		0	0
HAP	0.01454377		0.014744921	0.376983914
Hydrogen	0		0	0
LOC	0		0	0
Metal	0		0	0
NOx	0		0	0
Particulate	0		0	0
Pb	0		0	0
PM10	0		0	0
Radionuclide	0		0	0
SO2	0.001478135		0.0118875	0.0118875
TSP	0		0	0
TVOS	0		0	0
VCM	0		0	0
VOC	0.013702482		0.013881997	0.376983914
Unclassified	1.555347811		1.543524967	24.3820029

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours
- (2) Emission Average = Classification emission quantity / Classification emission time in hours

Vessel	Vent ID	Device # 1	Device # 2	Device # 3	Device # 4	Device # 5
CWT Belle Drum	CWT-XX-TO	Incinerator Belle	Scrubber Incinerator Belle			
Drums #2	RX-3-TO					
Isococontainer		Incinerator Belle	Scrubber Incinerator Belle			
J Tank Belle	J-TK-XX-TO	Incinerator Belle	Scrubber Incinerator Belle			
Rosenmund 3M ² Nutsche Filter/dryer Belle		Condenser RX-10 Belle	Condenser RX-5 Hast C	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-1 Belle	RX-1-TO	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle		
RX-1 Belle	RX-1-TO	Scrubber Main Belle	Scrubber Incinerator Belle	Scrubber Incinerator Belle		
RX-10 Belle	Cent-XX-TO	Condenser RX-10 Belle	Condenser RX-5 Hast C	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle	RX-2-TO	Incinerator Belle	Scrubber Incinerator Belle			
RX-3 Belle	RX-3-TO					
RX-3 Belle	RX-3-TO	Condenser RX-3 Hast C	Condenser RX-5 Hast C	Scrubber Incinerator Belle	Incinerator Belle	Scrubber Main Belle
RX-3 Belle	RX-3-TO	Condenser RX-3 Hast C	Condenser RX-5 Hast C	Scrubber Main Belle	Scrubber Incinerator Belle	Incinerator Belle
RX-5 Belle	RX-5-TO	Condenser RX-3 Hast C	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle	
RX-5 Belle	RX-5-TO	Condenser RX-5 Hast C	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle	
RX-5 Belle	RX-5-TO	Condenser RX-5 Hast C	Scrubber Main Belle	Incinerator Belle	Scrubber Incinerator Belle	
Supper Sack						
Virtual Tanker		Belle Vapor Return Loop				

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Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Uncontrolled Emissions

Process: LAME via SOCL2 Route

Emissions reported in Pounds

Activity	Recipe Step Duration (hrs)	Vessel	Acetonitrile		Hydrogen Chloride		Methanol	
			lbs	lb/hr	lbs	lb/hr	lbs	lb/hr
1		RX-3 Belle					0	
2		RX-1 Belle						
3		RX-3 Belle					0	
4		RX-3 Belle					0	
5		RX-3 Belle					0	
6		RX-1 Belle					0.21348	0.21348
7		RX-3 Belle					0	0
8		RX-3 Belle					0	0
9		RX-1 Belle					0.93928	1.87856
10		RX-1 Belle						
10		RX-3 Belle					0	
11		RX-3 Belle					7.71E-02	0.077123
12		RX-3 Belle			1084	67.75	0	0
13		RX-3 Belle					0	15.8867 0.893106
14		RX-3 Belle					0	15.8864 0.89165
15		RX-3 Belle					0	4.35E-03 0.043538
16		RX-3 Belle					0	8.34E-02 0.027796
17		RX-3 Belle					0	0
17		RX-5 Belle					0	0
18		RX-3 Belle					6.0916	0.253817
19		RX-3 Belle					0	0.16827 0.16827
19		RX-2 Belle					0	3.0531 3.0531
20		RX-2 Belle					0	0.50251 0.125628
21		RX-2 Belle					0	0
22		RX-5 Belle					0	0
23		RX-5 Belle					0.25124	0.50248
24		RX-2 Belle					0	0
24		RX-3 Belle					0	0.34858 0.057783
25		RX-5 Belle						
25		Isocantainer					0.23881	0.23881
26		RX-3 Belle					0	3.81E-03 0.003815
27		RX-3 Belle					0	0
27		RX-2 Belle					4.82E-03	0.00402
28		Drums #2					0.25815	0.128075
29		RX-3 Belle	2.84E-04	0.000189			0	1.24E-03 0.000828
30		RX-3 Belle	0	0			0	0
30		RX-5 Belle	0.19631	0.39262			0	0.61935 1.2387
31		RX-3 Belle	0.46492	0.46492			0	1.4498 1.4498
32		RX-3 Belle	2.14E-04	0.000107			0	4.73E-04 0.000237
33		RX-5 Belle						
33		Isocantainer	0.14622	0.14622			0.48281	0.48281
34		RX-3 Belle	0	0			0	0
35		CWT Belle					0	0
35		RX-3 Belle	0	0			0	0
36		RX-10 Belle	8.07E-03	0.000505			0	1.35E-02 0.000847
37		RX-10 Belle	0	0			0	0
37		Rosenmur	4.04E-03	0.004038			0	6.77E-03 0.006772
38		Rosenmur	1.89E-03	0.001886			0	3.16E-03 0.003165
39		Isocantainer						
39		Virtual Tank	9.72E-02	0.097207			0.57883	0.57883
40		Rosenmur	0	0			0	0
41		RX-10 Belle					0	0
41		J Tank Belle	5.11E-03	0.005106			8.57E-03	0.008567
42		J Tank Belle						
42		Virtual Tank	1.01E-02	0.010142			0.1498	0.1498
43		Rosenmur	0	0			0	0
43		Supper Sack					0	0
44		RX-10 Belle						
44		Rosenmur	1.49E-03	0.001485			0	2.49E-03 0.002492
45		Rosenmur	0	0			0	0
45		Rosenmur	0	0			0	0
45		Drum					0	0
Maximum Uncontrolled Emission Value			0.46492		67.75			3.0531

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

MTBE							Sulfur Dioxide		Water	
lbs	lb/hr					lbs	lb/hr			
		2.0734								
		2.1974						2.241		
		0								
		0								
		6.9119								
		7.8564						3.7976		
		0								
		0								
		3.1494						0.37008		
		0								
		4.3178						0.27009		
		0						0		
								2.20E-03		
						1902	118.875	2.19E-03		
		0.14098						7.17E-08		
		2.7003						9.43E-06		
		0						0		
		0						0		
		19.6307						7.74E-04		
		5.1251						6.34E-06		
		0								
		9.1789						5.40E-05		
		1.5131			0			8.05E-06		
		0			0			0		
		2.4903		0				3.77E-05	3.40E-02	
		0		0				0	0	
		0								
		11.2227	0							
		0								
		10.0912	0						6.31E-03	
		0.11704	0							
		0	0							
		0.14601								
		0.61592	0							
		4.77E-02	0							
		0	0							
		3.7195								
		11.8982	0							
0.15871	0.079355	0.10688	0							
		0								
		17.5935	0						7.59E-03	
0	0	0	0							
20.9347	20.9347	11.2719								
0	0	0	0							
2.5259	0.157869	13.8077	0							
0	0	0	0							
1.2825	1.2825	6.9018	0							
0.58983	0.58983	1.1745	0							
		0								
		23.0185	0						7.07E-03	
0	0	0	0							
		0								
1.5971	1.5971	9.3602	0							
		0								
0.79775	0.79775	4.066	0						1.91E-03	
0	0	0								
		2.6888	0							
		0								
0.46427	0.46427	0.20305								
0	0	0								
0	0	0								
		2.6888								
	20.9347						118.875			

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Controlled Emissions

Process: LAME via SOCL2 Route

Emissions reported in Pounds

Activity	Recipe Step	Vessel	Acetonitrile	Hydrogen Chloride			Methanol	RTSE
1		RX-3 Belle			0			
2		RX-1 Belle						
3		RX-3 Belle			0			
4		RX-3 Belle			0			
5		RX-3 Belle			0		4.27E-03	
6		RX-1 Belle						
7		RX-3 Belle			0		0	
8		RX-3 Belle			0		0	
9		RX-1 Belle					1.88E-02	
10		RX-1 Belle						
10		RX-3 Belle			0		1.54E-03	
11		RX-3 Belle			0		0	
12		RX-3 Belle		0.1084		0	0.31779	
13		RX-3 Belle				0	0.31733	
14		RX-3 Belle				0	8.71E-05	
15		RX-3 Belle				0	1.67E-03	
16		RX-3 Belle				0	0	
17		RX-3 Belle				0	0	
17		RX-5 Belle					0.12183	
18		RX-3 Belle				0	3.17E-03	
19		RX-3 Belle						
19		RX-2 Belle				0	6.11E-02	
20		RX-2 Belle				0	1.01E-02	
21		RX-2 Belle				0	0	
22		RX-5 Belle					5.02E-03	
23		RX-5 Belle					0	
24		RX-2 Belle						
24		RX-3 Belle				0	6.93E-03	
25		RX-5 Belle						
25		Isocontainer					4.80E-03	
26		RX-3 Belle				0	7.23E-05	
27		RX-3 Belle				0	0	
27		RX-2 Belle					9.65E-05	
28		Drums #2					0.25615	
29		RX-3 Belle	5.67E-06			0	2.48E-05	
30		RX-3 Belle	0				0	
30		RX-5 Belle	3.93E-03				1.24E-02	
31		RX-3 Belle	9.30E-03			0	2.90E-02	
32		RX-3 Belle	4.28E-06			0	9.47E-06	3.17E-03
33		RX-5 Belle						
33		Isocontainer	2.92E-03				9.26E-03	
34		RX-3 Belle	0			0	0	0
35		CWT Belle						0.41869
36		RX-3 Belle	0				0	0
36		RX-10 Belle	1.61E-04			0	2.71E-04	5.05E-02
37		RX-10 Belle	0			0	0	0
37		Rosenmur	8.07E-05			0	1.35E-04	2.53E-02
38		Rosenmur	3.77E-05			0	6.33E-05	1.18E-02
39		Isocontainer						
39		Virtual Tank	9.72E-04				5.77E-03	
40		Rosenmur	0			0	0	0
41		RX-10 Belle				0		
41		J Tank Belle	1.02E-04				1.71E-04	3.19E-02
42		J Tank Belle						
42		Virtual Tank	1.01E-04				1.50E-03	7.98E-03
43		Rosenmur	0				0	0
43		Supper Sack				0		
44		RX-10 Belle						
44		Rosenmur	2.97E-05			0	4.98E-05	9.29E-03
45		Rosenmur	0			0	0	0
46		Rosenmur	0				0	0
46		Drum				0		

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 Optima Belle, LLC December 1, 2017.

				Sulfur Dioxide		Water
2.0734						
2.1974			0		2.24E-06	3.15E-02
0			0			0
0			0			0
6.9119			0			0.10185
7.8564			0		3.79E-06	0.11272
0			0			0
0			0			0
3.1494			0		3.70E-05	4.54E-02
0			0			0
4.3176			0		2.70E-05	6.28E-02
0			0		0	0
			0		2.20E-07	0.20052
			0	0.1902	2.19E-07	6.50E-03
0.14098			0		0	2.08E-03
2.7003			0		9.43E-10	3.98E-02
0			0		0	0
0			0		0	0
19.6307			0		7.74E-08	0.28318
5.1251			0		6.34E-10	7.55E-02
0			0			0
9.1789			0		5.40E-07	0.13246
1.5131			0	0	8.05E-08	2.18E-02
0			0	0	0	0
2.4903		0	0		3.77E-09	3.58E-02
0		0	0		0	0
0			0			0
11.2227	0		0			0.16536
0			0			0
10.0812	0		0			0.14484
0.11704	0		0			1.72E-03
0	0		0			0
0.14801			0			2.10E-03
0.61592	0					
4.77E-02	0		0			7.02E-04
0	0		0			0
3.7195			0			6.36E-02
11.6982	0		0			0.19058
0.10688	0		0			2.27E-03
0			0			0
17.5935	0		0			0.25257
0	0		0			0
11.2719			0			0.16363
0	0		0			0
13.8077	0		0			0.19834
0	0		0			0
6.9018	0		0			9.91E-02
1.1745	0		0			1.69E-02
0			0			0
23.0185	0					7.07E-05
0	0		0			0
0			0			0
9.3602	0		0			0.13444
0			0			0
4.066	0					1.91E-05
0			0			0
2.8888	0					0
0			0			0
0.20305			0			2.96E-03
0			0			0
0			0			0
2.8888						0

Optima Belle, LLC
LAME (Dried)
PM Drop Emissions

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Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Description: Particulate emissions are generated through the drop of solid materials into process vessels

Basis: AP-42 Equation 13.2.4-3 is used to generate emissions from this operator. No control factor for the building enclosure and dust collector is being claimed at this time without guidance from the WVDEP.

Compound	Number of Batches	Pounds per Batch (lb)	Tons per Campaign (ton)	U (mph)	M (%)	Emissions (lb/ton)			Emissions (lb/hr)			Emissions (tpy)		
						PM	PM10	PM2.5	PM	PM10	PM2.5	PM	PM10	PM2.5
	40	2,646	52.92	7.0	0.1	0.2431	0.1150	0.0174	0.32	0.15	0.02	0.01	0.01	0.01
TOTAL EMISSIONS	40	3,545	70.90	7.0	0.1	0.2431	0.1150	0.0174	0.43	0.20	0.03	0.01	0.01	0.01
									0.75	0.38	0.05	0.02	0.02	0.02

(1) WVDEP allows for 7 mph to be claimed for wind speed

From AP-42

$$E = 1(0.0002) \left(\frac{U}{5} \right)^{1.5} \left(\frac{M}{2} \right)^{1.4} \text{ (pounds (lb)/ton)}$$

where:

- E = emission factor
- k = particle size multiplier (dimensionless)
- U = mean wind speed, meters per second (m/s) (miles per hour (mph))
- M = material moisture content (%)

From AP-42.

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
0.74	0.48	0.35	0.20	0.053*

* Multiplier for < 2.5 μm taken from Reference 14

By: PEW
Date: 12/4/2017

Checked By: ADM
Date: 12/4/2017

Total Emissions Estimate for a Campaign of STPB

Number of Batches in Process 1 No.
Number of Batches Per Year 30 No.

Calculated Emissions

Emissions	Total Emissions			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (30 batches)	pph (Max Rate)	tpy (30 batches)
PM	0.13	0.03	0.13	0.03
PM10	0.07	0.03	0.07	0.03
PM2.5	0.03	0.03	0.03	0.03
VOC	25.47	0.72	1.17	0.15

HAPS

Benzene	0.060	0.006	0.0043	0.001
Chlorobenzene	0	0	0	0
Hexane	7.03	0.074	0.43	0.039
Methanol	0.064	0.007	0.009	0.002
Toluene	1.77	0.083	0.362	0.037
Toluene*	0.031	0.0105	0.031	0.0105
Total	8.9484	0.1798	0.8398	0.0891

* Uncontrolled tank storage when process is not in operation.

Requested Permit Limits

Emissions	Total Emissions			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (30 batches)	pph (Max Rate)	tpy (30 batches)
PM	0.13	0.03	0.13	0.03
PM10	0.07	0.03	0.07	0.03
PM2.5	0.03	0.03	0.03	0.03
VOC	25.47	0.72	1.17	0.15

HAPS

Benzene	0.06	0.01	0.01	0.01
Chlorobenzene	0	0	0	0
Hexane	7.03	0.07	0.43	0.04
Methanol	0.06	0.01	0.01	0.01
Toluene	1.80	0.09	0.39	0.05
Total HAPS	8.95	0.19	0.85	0.11

By: PEW
Date: 12/4/2017

Checked By: ADM
Date: 12/4/2017

Previous Totals

Total Emissions Estimate for a Campaign of STPB

Number of Batches in Process 1 No.

Number of Batches Per Year 15 No.

Calculated Emissions

Total Emissions						
Emissions	Uncontrolled			Controlled		
	pph (Max Rate)	ppy	tpy	pph (Max Rate)	ppy	tpy (15 batches)
PM	0.13	60.00	0.03	0.13	60.00	0.03
PM10	0.07	60.00	0.03	0.07	60.00	0.03
PM2.5	0.03	60.00	0.03	0.03	60.00	0.03
VOC - Process (1)	24.20	6,974.56	3.49	2.34	98.58	0.049
VOC - Filter Changeout	0.51	7.59	0.0038	0.51	7.59	0.0038
Total VOC	24.71	6,982.15	3.49	2.84	106.17	0.053

HAPS (Process)

Benzene	0.023	5.69	0.0028	0.0048	0.45	0.00022
Chlorobenzene	0.0090	0.15	0.000074	0.00018	0.0030	0.0000015
Hexane	17.62	5,424.03	2.71	0.87	31.41	0.016
Methanol	0.043	6.65	0.0033	0.011	1.05	0.00053
Toluene	4.45	1,082.94	0.54	0.057	6.76	0.0034
Toluene*	0.031	20.90	0.0105	0.031	20.90	0.0105
Total	22.18	6,540.36	3.27	0.97	60.58	0.03

HAPS (Filter Changeouts)

Methanol	0.044	0.66	0.00033	0.044	0.66	0.00033
Toluene	0.040	0.60	0.00030	0.040	0.60	0.00030
Total	0.084	1.26	0.00063	0.084	1.26	0.00063

Total HAPS	22.27	6,541.63	3.27	1.06	61.84	0.031
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* Uncontrolled tank storage when process is not in operation.

By: PEW
Date: 12/4/2017

Checked By: ADM
Date: 12/4/2017

Previous Requested Permit Limits

Emissions	Total Emissions					
	Uncontrolled			Controlled		
	pph (Max Rate)	ppy	tpy	pph (Max Rate)	ppy	tpy (15 batches)
PM	0.13	60.00	0.03	0.13	60.00	0.03
PM10	0.07	60.00	0.03	0.07	60.00	0.03
PM2.5	0.03	60.00	0.03	0.03	60.00	0.03
VOC - Process (1)	24.20	6,974.56	3.49	2.34	98.58	0.05
VOC - Filter Changeout	0.51	7.59	0.01	0.51	7.59	0.02
Total VOC	24.71	6,982.15	3.50	2.85	106.17	0.08

HAPS (Process)

Benzene	0.02	5.69	0.01	0.01	0.45	0.01
Chlorobenzene	0.01	0.15	0.01	0.01	0.01	0.01
Hexane	17.62	5,424.03	2.71	0.87	31.41	0.02
Methanol	0.04	6.65	0.01	0.01	1.05	0.01
Toluene	4.49	1,103.85	0.55	0.09	27.66	0.01
Total	22.18	6,540.37	3.29	0.99	60.58	0.06

HAPS (Filter Changeouts)

Methanol	0.04	0.66	0.01	0.04	0.66	0.01
Toluene	0.04	0.60	0.01	0.04	0.60	0.01
Total	0.08	1.26	0.02	0.08	1.26	0.02

Total HAPS	22.26	6,541.63	3.31	1.07	61.84	0.08
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Optima Belle, LLC
STPB Campaign

Potesta & Associates, Inc.
Project Number 0101-14-0162-005

By: PEW
Date: 12/4/2017

Checked By: ADM
Date: 12/4/2017

Change in Requested Permit Limits				
Emissions	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (30 batches)	pph (Max Rate)	tpy (30 batches)
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
PM2.5	0.00	0.00	0.00	0.00
VOC	0.76	-2.78	-1.68	0.07

HAPS

Benzene	0.04	0.00	0.00	0.00
Chlorobenzene	-0.01	-0.01	-0.01	-0.01
Hexane	-10.59	-2.64	-0.44	0.02
Methanol	-0.02	-0.01	-0.04	-0.01
Toluene	-2.73	-0.47	0.26	0.03
Total	-13.31	-3.12	-0.22	0.03

Product: STPB (Sodium Tetraphenylborate)
 Process Name: Coupling, Quench, Isolation & Drying
 Production Quantity:
 Process Cycle Time:
 Date: 3/18/2015
 File: N:\Emission Master Files\Optima\STPB\Belle plant\STPB - Nov 2017 R_2.emm
 Comments:

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Compound	Activities Emitting	Emissions		Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
Air	24	21.72830131	21.72830131	0
Benzene	122	0.354831094	0.053121421	85.03331446
Hexane	19	4.93406592	2.627205702	46.7537373
Magnesium Chloride	30	0	0	
Magnesium Chloride Methoxi	18	0	0	
Methanol	138	0.453724185	0.101094155	77.71902892
MTPB	16	0	0	
Nitrogen	179	794.54177	794.54177	0
Phenyl Magnesium Chloride	108	0	0	
Sodium Chloride	34	0	0	
Sodium Hydroxide	30	0	0	
Sodium Hydroxide (50%)	165	0	0	
STPB	102	0	0	
Sulfuric Acid	1	0	0	
Tetrahydrofuran	138	35.77148294	4.008084749	88.79530727
Toluene	145	5.505102861	2.463483323	55.25091202
TRI METHYL BORATE	4	0.177808253	3.56617E-05	99.98
Water	172	0.773221541	10.51354545	-1259.706747
Total VOC		47.19711528	9.25302491	

Compound	Process Cycle	Compound Emission	Compound Emission	Max Uncontrolled	Max Rate (lb/hr)	Criteria	HAPS
	Average (lb/hr)						
Benzene	0.100533481		0.877950578		1.04824954		
Hexane	0.000245785		0.000339062	0.060224	0.004271985	VOC	HAP
	0.012155673		0.059709974	7.0266	0.433745494	VOC	HAP
	0		0		0		
Methanol	0.000467747		0.000594076	0.064152	0.009073587	VOC	HAP
	0		0		0		
	3.67622159		3.855320424		51.19134285		
	0		0		0		
	0		0		0		
	0		0		0		
	0		0		0		
	0		0		0		
Tetrahydrofuran	0.018544787		0.022203064	16.2772	0.330087936	VOC	
Toluene	0.011399155		0.012893093	1.7663	0.36160417	VOC	HAP
TRI METHYL BORATE	1.64538E-07		2.84493E-06	0.240084	1.20041E-05	VOC	
	0.048644545		0.049101757		0.734596748		
				25.46566604	1.180352342		

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours
 (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Activities Emitting	Emissions		Emissions Percent Removed
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	203	864.2404081	835.0366417	3.263416772
Acid	0	0	0	
Acid Gases	0	0	0	
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CATEGORY I	0	0	0	
ASBESTOS	0	0	0	
BIOLOGICAL	0	0	0	
Cr(+6)	0	0	0	
DIOXIN	0	0	0	
HAP-PARTICULATE	0	0	0	
METAL	0	0	0	
OTHER PARTICULATE	0	0	0	
RADIONUCLIDE	0	0	0	
CATEGORY II	0	0	0	
HAP-VOC	0	0	0	
OTHER VOC	0	0	0	
CATEGORY III	0	0	0	
ACID	0	0	0	
HAP-ACID	0	0	0	
CATEGORY IV	0	0	0	
CATEGORY V (CO)	0	0	0	
CATEGORY VI (NOx)	0	0	0	
CATEGORY VII (SO2)	0	0	0	
CATEGORY VIII	0	0	0	
CO	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Gas	0	0	0	
HAP	155	11.24782408	5.244804588	53.36960888
Benzene	122	0.354831094	0.053121421	85.03331446
Hexane	19	4.83406592	2.627205702	46.7537373
Methanol	138	0.453724185	0.101094155	77.71902892
Toluene	145	5.505102861	2.463483323	55.25091202
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
Radionuclide	0	0	0	
SO2	0	0	0	
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	159	47.19711526	9.25302481	80.36493545
Benzene	122	0.354831094	0.053121421	85.03331446
Hexane	19	4.83406592	2.627205702	46.7537373
Methanol	138	0.453724185	0.101094155	77.71902892
Tetrahydrofuran	138	35.77148294	4.008084749	88.79530727
Toluene	145	5.505102861	2.463483323	55.26081202
TRI METHYL BORATE	4	0.177806253	3.55617E-05	89.58
Unclassified	203	817.0432928	826.7839168	-1.192142838
	24	21.72830131	21.72830131	0
	30	0	0	
	16	0	0	
	16	0	0	
	179	794.54177	794.54177	0
	108	0	0	
	34	0	0	
	30	0	0	
	165	0	0	
	102	0	0	
	1	0	0	
	172	0.773221541	10.51354545	-1259.706747

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 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Process Cycle	Emission Hours	Emission:	Max Rate (lb/hr) Within 1 hour
	Average (lb/hr)		Average (lb/hr)	
All Emissions	3.868211917		3.732125938	51.84958795
Acid	0		0	0
Acid Gases	0		0	0
Asbestos	0		0	0
Bare	0		0	0
Biological	0		0	0
CATEGORY I	0		0	0
ASBESTOS	0		0	0
BIOLOGICAL	0		0	0
Cr(+6)	0		0	0
DIOXIN	0		0	0
HAP-PARTICULATE	0		0	0
METAL	0		0	0
OTHER PARTICULATE	0		0	0
RADIONUCLIDE	0		0	0
CATEGORY II	0		0	0
HAP-VOC	0		0	0
OTHER VOC	0		0	0
CATEGORY III	0		0	0
ACID	0		0	0
HAP-ACID	0		0	0
CATEGORY IV	0		0	0
CATEGORY V (CO)	0		0	0
CATEGORY VI (NOx)	0		0	0
CATEGORY VII (SO2)	0		0	0
CATEGORY VIII	0		0	0
CO	0		0	0
CR+6	0		0	0
Dioxin	0		0	0
ETG	0		0	0
EVOS	0		0	0
Gas	0		0	0
HAP	0.02428736		0.026736717	0.778587718
Hydrogen	0		0	0
LOC	0		0	0
Metal	0		0	0
NOx	0		0	0
Particulate	0		0	0
Pb	0		0	0
PM10	0		0	0
Radionuclide	0		0	0
SO2	0		0	0
TSP	0		0	0
TVOS	0		0	0
VCM	0		0	0
VOC	0.042812312		0.046888215	0.990244103
Unclassified	3.825398806		3.69081979	51.8259388

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours
 (2) Emission Average = Classification emission quantity / Classification emission time in hours

Vessel	Vent ID	Device # 1	Device # 2	Device # 3
Drum2				
Drums				
New GLS Receiver Belle		Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
New GLS Receiver Belle	Receiver			
New GLS Receiver Belle	Receiver	Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
New GLS Receiver Belle	Receiver	Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
New GLS Receiver Belle	RX-2	Condenser RX-2 Hast C	Incinerator Belle	SCB-01
Rosenmund 3M^2 Nutsche Filter/dryer Belle	RX-10	Condenser RX-10 Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-1 Belle		Condenser RX-5 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-1 Belle		Condenser RX-6 STPB	Incinerator Belle	Scrubber Incinerator Belle
RX-1 Belle	RX-1	Condenser RX-5 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-1 Belle	RX-1	Condenser RX-5 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-10 Belle	RX-10	Condenser RX-10 Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle		Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle		Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle	RX-2			
RX-2 Belle	RX-2	Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle	RX-3	Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle		Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle		Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle	RX-3			
RX-3 Belle	RX-3	Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle	RX-3	Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle	RX-3	Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle	RX-3	Condenser RX-3 Hast C (Raw Water)	Incinerator Belle	Scrubber Incinerator Belle
RX-5 Belle	RX-5			
RX-5 Belle	RX-5	Condenser RX-5 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-5 Belle	RX-5	Condenser RX-5 Hast C	Incinerator Belle	Scrubber Incinerator Belle
Totes				
Totes	RX-3			
Totes	totes			

Uncontrolled Emissions
 Process: Coupling, Quench, Isolation & Drying

REDACTED
 Information obtained confidentially by Optima Belle,
 LLC December 1, 2017.

Emissions reported in Pounds

Activity	Recipe Step Duration (hrs)	Vessel	Air		Benzene		Hexane		Magnesium Chloride	Magnesium Chloride Methoxide	Methanol		MTPB	Nitrogen	Phenyl Magnesium Chloride
			lbs	lb/hr	lbs	lb/hr	lbs	lb/hr							
1		RX-1 Belle												1.504	
2		RX-1 Belle												0.66773	
3		RX-1 Belle												0	
4		RX-5 Belle												5.59E-02	
5		RX-5 Belle												0	
6		RX-5 Belle												31.4438	
7		RX-5 Belle												0.53954	0
8		RX-5 Belle												0.19507	0
9		RX-5 Belle												15.1596	0
10		RX-5 Belle												3.8126	0
11		RX-1 Belle												0	
11		RX-5 Belle												8.2813	0
12		RX-5 Belle												0	0
13		RX-1 Belle												7.2128	
14		RX-5 Belle												0	0
15		RX-3 Belle							0			0	0	0	0
16		RX-3 Belle												3.736	
17		RX-3 Belle												0.36856	
18		RX-3 Belle												93.6348	
19		RX-5 Belle												0	
19		RX-3 Belle							0				0	0	0
20		RX-3 Belle							0					10.6648	0
21		RX-3 Belle							0					0.79029	0
22		RX-3 Belle			0	0			0					0	0
23		RX-3 Belle			0	0			0		0	0	0	0	0
24		RX-3 Belle							0		0	0	0	0	0
24		RX-2 Belle			1.07E-02	0.006373					0	0	0	0	0
25		RX-5 Belle							0		1.14E-02	0.005724	0	19.8356	0
26		RX-3 Belle							0		4.49E-03	0.004486		23.4087	
27		RX-3 Belle							0		8.25E-04	0.00165		6.7073	
28		RX-3 Belle							0		2.94E-04	0.000147		1.5605	
29		RX-3 Belle							0		0	0		0	
30		RX-3 Belle							0		0	0		0	
30		RX-2 Belle			1.35E-03	0.001353			0		0	0		0	
31		RX-3 Belle							0		1.63E-03	0.001634	0	3.4063	0
31		Totes												0	
32		RX-3 Belle							0		2.29E-03	0.002278		5.0125	
33		RX-3 Belle												29.2603	
34		RX-3 Belle												2.9389	
35		RX-3 Belle												2.7398	
36		RX-3 Belle												93.6348	
37		RX-2 Belle			0	0					0	0		0	0
37		RX-3 Belle			1.05E-02	0.002117					0	0	0	0	0
38		RX-2 Belle			0	0					1.14E-02	0.002274	0	22.8935	0
39		RX-2 Belle			1.74E-05	6.96E-05					0	0	0	0	0
40		RX-2 Belle							0		2.36E-05	9.56E-05	0	0.36508	0
41		RX-2 Belle												0	
41		RX-3 Belle			3.52E-05	7.05E-05					4.95E-05	9.7E-05	0	0.76404	0
42		RX-3 Belle			2.11E-03	0.021138					2.27E-03	0.022704	0	4.8817	0
43		RX-3 Belle			0	0					0	0	0	0	0
44		RX-3 Belle			0	0			0		0	0	0	0	0
45		RX-3 Belle			0	0			0		0	0	0	0	0
46		RX-3 Belle			0	0			0		0	0	0	0	0
46		RX-2 Belle			1.70E-02	0.008492					1.81E-02	0.009046		40.4817	0
47		RX-2 Belle			2.68E-03	0.011536					3.07E-03	0.012289		4.8908	0
48		RX-3 Belle							0		9.60E-04	0.00096		7.0976	
49		RX-3 Belle							0		3.24E-04	0.000162		1.5605	
50		RX-3 Belle							0		0	0		0	
51		RX-3 Belle							0		0	0		0	
52		RX-3 Belle							0		0	0		0	
52		RX-2 Belle			2.09E-03	0.002091					0	0		0	
53		RX-3 Belle									2.24E-03	0.002244		2.6292	0
53		Totes												0	
54		RX-3 Belle							0		1.72E-03	0.001725		3.4507	
55		RX-2 Belle			0	0								29.2603	
56		RX-2 Belle									0	0		0	0
56		RX-3 Belle			1.69E-02	0.033724					1.80E-02	0.036924		21.9311	0
57		RX-3 Belle			2.28E-02	0.000803					2.43E-02	0.000843		29.6858	0
58		RX-3 Belle			0	0					0	0		0	0
59		RX-3 Belle			0	0					0	0		0	0

Sodium Chloride	Sodium Hydroxide	Sodium Hydroxide (50%)	STPB	Sulfuric Acid	Tetrahydrofuran		Toluene		TRI METHYL BORATE		Water
					lbs	lb/hr	lbs	lb/hr	lbs	lb/hr	
							2.23E-02	0.074217			
							1.64E-03	0.00854	6.00E-02	0.240084	
							0	0	0	0	
							7.23E-03	0.072339			
							0	0			
							4.0683	16.2772			
							6.85E-02	0.27392	2.18E-04	0.000871	
							2.47E-02	0.098748	9.04E-05	0.000362	
							1.916	0.479	7.43E-03	0.001858	
							0.48146	0.320973	1.93E-03	0.00129	
							0.91373	0.091373	8.22E-03	0.000822	0.11779
							0	0	0	0	0
							0	0	0	0	
											9.67E-03
0											1.03E-03
0											0.24235
0											0
							0	0	0	0	
0							1.3109	0.26218	1.07E-02	0.002146	1.13E-04
0							4.42E-02	0.44189	1.34E-03	0.013378	9.71E-04
0							0	0	0	0	0
	0						0	0	0	0	0
	0						0	0	0	0	0
	0						0	0	0	0	0
	0						1.1631	0.58155	3.78E-02	0.018909	
	0										1.24E-02
	0							5.28E-02	0.105888		7.14E-04
	0							7.74E-03	0.003868		7.22E-04
	0							0	0		0
	0							0	0		0
	0							0	0		0
	0						0.16873	0.16873	2.29E-02	0.022881	
	0										6.28E-03
	0										3.88E-02
	0										7.20E-02
	0										0.24235
	0										0
	0						0	0	0	0	
	0						1.1688	0.23336	6.48E-02	0.012952	2.81E-02
	0						0	0	0	0	
	0						5.08E-02	0.203108	3.60E-05	0.000144	
	0						0	0			
	0						9.98E-02	0.199508	7.25E-05	0.000145	2.00E-05
	0						0.24533	2.4533	1.28E-02	0.12895	5.35E-03
	0						0	0	0	0	0
	0						0	0	0	0	0
	0						0	0	0	0	0
	0						1.0621	0.53105	6.12E-02	0.030579	
	0						0.18035	0.7214	1.04E-02	0.04154	
	0							5.62E-02	0.056177		7.17E-04
	0							7.87E-03	0.003934		7.03E-04
	0							0	0		0
	0							0	0		0
	0							0	0		0
	0						0.13288	0.13288	3.14E-02	0.031444	
	0										4.27E-03
	0						0	0	0	0	
	0						1.0544	2.1088	9.22E-02	0.184378	
	0						1.4272	0.037727	0.12479	0.003299	
	0						0	0	0	0	
	0						0	0	0	0	

Uncontrolled Emissions
Process: Coupling, Quench, Isolation & Drying

REDACTED
Information claimed confidential by Optima Belle, L.L.C. December 1, 2017.

Emissions reported in Pounds

60	Totes										
60	RX-3 Belle		0	0			8.00E-05	0.00076		0.1705	
61	RX-3 Belle		0	0			0	0		0	0
62	RX-3 Belle		0	0			0	0		0	0
62	Totes		2.02E-03	0.020165			0	0		0	0
63	RX-2 Belle						3.91E-03	0.036128		2.6181	0
64	RX-3 Belle									0	0
64	RX-2 Belle		1.51E-02	0.060224						0	0
65	Drum2						1.60E-02	0.064152		16.5819	0
65	New GLS Receiver Belle									0.42861	0
67	RX-2 Belle		6.08E-03	0.024315						4.7117	0
68	RX-2 Belle		2.1262	2.04E-02	0.010201		6.48E-03	0.025602		3.5172	0
69	RX-2 Belle		0	0	0		2.64E-03	0.012716			0
69	New GLS Receiver		0.8306	5.17E-03	0.005195			0		0	0
70	RX-2 Belle						8.36E-03	0.008358			0
71	RX-2 Belle		0.22326	1.46E-03	0.005651			0		0	0
72	RX-2 Belle		0	0	0		1.86E-03	0.007426			0
72	New GLS Receiver		0.61448	6.06E-03	0.005087			0			0
73	RX-2 Belle		0.22696	1.63E-03	0.006122		8.17E-03	0.00617			0
74	RX-2 Belle		0	0	0		1.82E-03	0.007999			0
74	New GLS Receiver		0.81595	6.15E-03	0.005147			0			0
75	RX-2 Belle						8.20E-03	0.008197			0
76	RX-2 Belle						2.00E-03	0.008007		0.22355	0
76	New GLS Receiver		0.81432	5.69E-03	0.005678			0		0	0
77	RX-2 Belle						8.79E-03	0.008798			0
78	New GLS Receiver Belle						2.09E-03	0.008343		0.22817	0
78	New GLS Receiver Belle						0	0		0	0
78	Totes		4.22E-03	0.016672						0	0
80	New GLS Receiver Belle						9.00E-03	0.036001		6.6153	0
81	RX-2 Belle									6.714	0
81	New GLS Receiver		0.83036	5.98E-03	0.005981			0		0	0
82	RX-2 Belle		0.23939	1.77E-03	0.007099		9.17E-03	0.008169			0
83	RX-2 Belle		0	0	0		2.13E-03	0.006522			0
83	New GLS Receiver		0.83225	6.02E-03	0.009021			0			0
84	RX-2 Belle						9.17E-03	0.009176			0
84	RX-2 Belle						2.06E-03	0.008247		0.23111	0
84	New GLS Receiver		0.83484	6.11E-03	0.006114			0		0	0
84	RX-2 Belle						9.22E-03	0.006224			0
85	RX-2 Belle						1.98E-03	0.007904		0.23072	0
85	New GLS Receiver		0.83768	6.21E-03	0.006208			0		0	0
86	RX-2 Belle						9.26E-03	0.008261			0
86	New GLS Receiver Belle						3.72E-03	0.007434		0.46514	0
86	New GLS Receiver Belle						0	0		0	0
86	Totes		3.66E-03	0.01474						0	0
87	New GLS Receiver Belle						6.12E-03	0.032462		4.9719	0
87	RX-2 Belle									6.714	0
87	New GLS Receiver		1.7265	1.62E-02	0.007602			0		0	0
88	RX-2 Belle						2.04E-02	0.01018			0
88	RX-2 Belle						3.21E-03	0.006416		0.46278	0
89	New GLS Receiver		1.6541	1.46E-02	0.007264			0		0	0
89	RX-2 Belle						1.93E-02	0.009553			0
89	New GLS Receiver Belle						2.63E-03	0.005253		0.46043	0
89	New GLS Receiver Belle						0	0		0	0
89	Totes		3.85E-03	0.015401						0	0
89	New GLS Receiver Belle						6.42E-03	0.03367		5.2976	0
89	RX-2 Belle									6.714	0
89	New GLS Receiver		1.695	1.51E-02	0.007671			0		0	0
100	RX-2 Belle						1.84E-02	0.009179			0
101	RX-2 Belle						2.04E-03	0.004083		0.45827	0
101	New GLS Receiver		1.7018	1.45E-02	0.007298			0		0	0
101	RX-2 Belle						1.72E-02	0.008592			0
101	New GLS Receiver Belle						1.51E-03	0.003025		0.45843	0
104	New GLS Receiver Belle						0	0		0	0

0	0	0								2.08E-04
			0	0	0	0	0			
			0	0	0	0	0			
			0	0	0	0	0			
0	0	0	0	0.12612	1.2612	1.10E-02	0.11027			3.23E-03
			0	0.94146	3.76584	8.23E-02	0.329256			
0				0.11779	0.058895	1.98E-02	0.009919			
			0	0.38012	1.52048	3.32E-02	0.13294			
			0	1.716	0.858	3.68E-02	0.018299			
			0	0	0	0	0			
			0	0.7764	0.7764	2.73E-03	0.002727			
			0	0	0	0	0			
			0	0.1246	0.4984	5.52E-03	0.022062			
			0	0	0	0	0			
			0	0.75638	0.75638	3.27E-03	0.003272			
			0	3.12637	0.50148	5.74E-03	0.022972			
			0	0	0	0	0			
			0	0.75194	0.75194	3.98E-03	0.00398			
			0	0.12614	0.50456	6.02E-03	0.024069			
			0	0	0	0	0			
			0	0.73723	0.73723	5.14E-03	0.005138			
			0	0.12685	0.5074	6.36E-03	0.025388			
			0	0	0	0	0			
0	0	0	0	0.3249	1.2996	1.67E-02	0.006664			6.95E-03
			0	0	0	0	0			
			0	0.73907	0.73907	6.61E-03	0.006612			
			0	0.125	0.5	6.91E-03	0.027625			
			0	0	0	0	0			
			0	0.73098	0.73098	7.84E-03	0.007843			
			0	0.11699	0.46796	7.98E-03	0.0319			
			0	0	0	0	0			
			0	0.7212	0.7212	9.34E-03	0.009335			
			0	0.1084	0.4336	9.13E-03	0.036522			
			0	0	0	0	0			
			0	0.7101	0.7101	1.11E-02	0.011054			
			0	0.19675	0.3935	2.15E-02	0.042982			
			0	0	0	0	0			
0	0	0	0	0.30214	1.20856	1.32E-02	0.05294			6.16E-03
			0	0	0	0	0			
			0	1.32	0.66	3.82E-02	0.019591			
			0	0.16031	0.32062	2.84E-02	0.052888			
			0	0	0	0	0			
			0	1.1682	0.5841	4.96E-02	0.02482			
			0	0.12469	0.24938	3.14E-02	0.062712			
			0	0	0	0	0			
0	0	0	0	0.28948	1.19792	1.79E-02	0.071412			6.55E-03
			0	0	0	0	0			
			0	1.0319	0.51595	7.22E-02	0.036095			
			0	9.29E-02	0.185718	3.58E-02	0.071804			
			0	0	0	0	0			
			0	0.95422	0.47711	8.36E-02	0.041782			
			0	6.65E-02	0.133054	3.95E-02	0.079044			
			0	0	0	0	0			

Uncontrolled Emissions

Process: Coupling, Quench, Isolation & Drying

REDACTED

Information claimed confidential by Optimum Belle, LLC. December 1, 2017.

Emissions reported in Pounds.

104	Totes		3.76E-03	0.015055				0		8.01E-03	0.032036	5.4481	0
105	New GLS Receiver Belle											6.714	0
106	RX-2 Belle		0	0								0	0
106	New GLS Receiver	1.764	1.38E-02	0.008889						0	0	0	0
107	RX-2 Belle		1.40E-03	0.002806						1.35E-02	0.036728	0	0
108	RX-2 Belle		0	0						1.08E-03	0.002183	0.45488	0
109	New GLS Receiver	1.7669	1.28E-02	0.008443						0	0	0	0
109	RX-2 Belle		1.09E-03	0.002177						1.22E-02	0.008123	0	0
110	New GLS Receiver Belle		0	0						7.59E-04	0.001507	0.45391	0
111	New GLS Receiver Belle									0	0	0	0
111	Totes		3.49E-03	0.01396				0		7.20E-03	0.028788	5.4866	0
112	New GLS Receiver Belle											6.714	0
113	RX-2 Belle		0	0								0	0
113	New GLS Receiver	0.99472	5.46E-03	0.005466						0	0	0	0
114	RX-2 Belle		8.35E-04	0.00167						4.20E-03	0.004186	0	0
115	RX-2 Belle		0	0						5.17E-04	0.001033	0.45315	0
115	New GLS Receiver	0.99543	5.05E-03	0.005054						0	0	0	0
116	New GLS Receiver Belle		0	0						3.78E-03	0.003779	0	0
117	New GLS Receiver Belle									0	0	0	0
117	Totes		3.14E-03	0.01257				0		6.30E-03	0.025217	5.4131	0
118	RX-2 Belle		0	0								0	0
119	RX-2 Belle		0	0						0	0	0	0
120	RX-2 Belle		0	0						0	0	0	0
120	Rosenmund 3M^2 Nutsche Fi		1.18E-03	0.00235								0	0
121	Rosenmund 3M^2 Nutsche Fi		0	0						4.43E-04	0.000887	6.4608	0
122	Rosenmund 3M^2 Nutsche Fi		0	0						0	0	0	0
122	RX-10 Belle		8.58E-04	0.000172						0	0	0	0
123	Rosenmund 3M^2 Nutsche Fi		1.22E-03	0.012208						3.24E-04	6.48E-05	4.7182	0
124	Rosenmund 3M^2 Nutsche Fi		3.77E-05	1.88E-05	0.14565	0.072825				4.41E-04	0.004412	8.5887	0
125	Rosenmund 3M^2 Nutsche Fi		0	0	0	0	0			1.67E-05	8.33E-06	1.5348	0
126	Rosenmund 3M^2 Nutsche Fi		0	0	0	0	0			0	0	0	0
127	RX-10 Belle		1.82E-04	0.000383	0.15897	0.31784				0	0	0	0
127	Rosenmund 3M^2 Nutsche Fi		4.81E-04	0.004805	0.70286	7.0286				7.98E-05	0.000158	2.2752	0
128	RX-10 Belle									1.62E-04	0.00182	9.3987	0
128	Totes		8.68E-03	0.004339	0.80068	4.40034		0		1.38E-02	0.005924	18.6673	0
129	Rosenmund 3M^2 Nutsche Fi		0	0	0	0				0	0	0	0
130	Rosenmund 3M^2 Nutsche Filter/dryer B											0	0
130	Drums											0	0
131	RX-2 Belle		0	0								0.67268	0
131	Rosenmund 3M^2 Nutsche Fi		1.19E-03	0.002386						0	0	0	0
132	Rosenmund 3M^2 Nutsche Fi		0	0						4.50E-04	0.0009	6.5585	0
133	Rosenmund 3M^2 Nutsche Fi		0	0						0	0	0	0
133	RX-10 Belle		8.71E-04	0.000174						0	0	0	0
134	Rosenmund 3M^2 Nutsche Fi		1.22E-03	0.012154						3.29E-04	6.57E-05	4.7897	0
135	Rosenmund 3M^2 Nutsche Fi		3.78E-05	1.89E-05	0.14559	0.072785				4.38E-04	0.004393	8.5529	0
136	Rosenmund 3M^2 Nutsche Fi		0	0	0	0				1.67E-05	8.37E-06	1.5347	0
137	Rosenmund 3M^2 Nutsche Fi		0	0	0	0				0	0	0	0
137	RX-10 Belle		1.94E-04	0.000388	0.15948	0.31892				0	0	0	0
138	Rosenmund 3M^2 Nutsche Fi		4.85E-04	0.004848	0.69782	6.9782				8.05E-05	0.000161	2.2895	0
139	RX-10 Belle									1.84E-04	0.001836	9.3829	0
139	Totes		7.33E-03	0.003665	0.78387	0.396835		0		1.19E-02	0.005852	16.9768	0
140	Rosenmund 3M^2 Nutsche Fi		0	0	0	0				0	0	0	0
141	Rosenmund 3M^2 Nutsche Filter/dryer B									0	0	0	0
141	Drums											0	0
142	RX-2 Belle											0.58136	0
142	Rosenmund 3M^2 Nutsche Fi		1.19E-03	0.002386								0	0
143	Rosenmund 3M^2 Nutsche Fi		0	0						4.50E-04	0.0009	6.5585	0
144	Rosenmund 3M^2 Nutsche Filter/dryer B									0	0	0	0
144	RX-10 Belle		1.09E-03	0.000218								0	0
145	Rosenmund 3M^2 Nutsche Filter/dryer B									4.11E-04	8.22E-05	5.9872	0
146	Rosenmund 3M^2 Nutsche Filter/dryer B				0.18054	0.08027						10.2203	0
147	Rosenmund 3M^2 Nutsche Filter/dryer B				0	0						1.5555	0
148	Rosenmund 3M^2 Nutsche Filter/dryer B											0	0
149	RX-10 Belle		1.14E-04	0.000228	0.18315	0.3663						0	0
149	Rosenmund 3M^2 Nutsche Filter/dryer B									4.92E-05	9.83E-06	2.1692	0
150	RX-10 Belle											10.5401	0
150	Totes		6.79E-03	0.003394	0.98579	0.492895		0				0	0
151	Rosenmund 3M^2 Nutsche Fi		0	0	0	0				1.31E-02	0.005554	18.2138	0
152	Rosenmund 3M^2 Nutsche Filter/dryer B									0	0	0	0
153	Drums											0	0
	Maximum Uncontrolled Emission Value			0.060224		7.0286					0.064152	0.58136	

0	0	0	0	0.27453	1.08812	2.39E-02	0.09542		6.72E-03
			0	0	0	0	0		
			0	0.66753	0.333766	0.12957	0.064785		
			0	4.64E-02	0.062732	4.24E-02	0.0848		
			0	0	0	0	0		
			0	0.60347	0.301735	0.13888	0.06944		
			0	3.17E-02	0.063388	4.45E-02	0.08903		
			0	0	0	0	0		
0	0	0	0	0.24146	0.96584	2.96E-02	0.118232		6.73E-03
			0	0	0	0	0		
			0	0.19234	0.19234	9.86E-02	0.09864		
			0	2.14E-02	0.042882	4.60E-02	0.062014		
			0	0	0	0	0		
			0	0.1727	0.1727	0.10154	0.10154		
			0	0	0	0	0		
0	0	0	0	0.20947	0.83788	3.42E-02	0.136808		6.65E-03
			0	0	0	0	0		
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.81E-02	0.036178	0.13181	0.26362		
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.32E-02	0.002842	9.63E-02	0.018253		
			0	1.69E-02	0.16879	0.17663	1.7663		
			0	9.32E-04	0.000468	2.42E-03	0.001208		
			0	0	0	0	0		
			0	0	0	0	0		
			0	3.86E-03	0.007714	1.47E-02	0.029326		
			0	7.47E-03	0.074728	5.28E-02	0.52836		
0	0	0	0	0.56545	0.282725	0.73337	0.366885		2.13E-02
			0	0	0	0	0		
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.84E-02	0.036726	0.13381	0.26762		
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.34E-02	0.002682	9.77E-02	0.019545		
			0	1.68E-02	0.16805	0.17587	1.7587		
			0	9.38E-04	0.000468	2.43E-03	0.001213		
			0	0	0	0	0		
			0	0	0	0	0		
			0	3.90E-03	0.007796	1.49E-02	0.029716		
			0	7.53E-03	0.075309	5.34E-02	0.53434		
0	0	0	0	0.47004	0.23502	0.73797	0.368986		2.13E-02
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.84E-02	0.036726	0.13381	0.26762		
			0	0	0	0	0		
			0	0	0	0	0		
			0	1.68E-02	0.003353	0.12215	0.02443		
			0	0	0	0	0		
			0	0	0	0	0		
			0	2.59E-03	0.005187	7.78E-03	0.015565		
0	0	0	0	0.42849	0.214245	0.76384	0.38192		2.29E-02
			0	0	0	0	0		
			0	0	0	0	0		
			0	16.2772		1.7663			0.240084

Controlled Emissions

Process: Coupling, Quench, Isolation & Drying

Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Air	Benzene	Hexane	Magnesium Chloride	Magnesium Chloride Methoxide	Methanol	MTPB	Nitrogen
1		RX-1 Belle								1.504
2		RX-1 Belle								0.68773
3		RX-1 Belle								0
4		RX-5 Belle								5.59E-02
6		RX-5 Belle								0
6		RX-5 Belle								31.4439
7		RX-5 Belle								0.53954
8		RX-5 Belle								0.19507
9		RX-5 Belle								15.1596
10		RX-5 Belle								3.8126
11		RX-1 Belle								0
11		RX-5 Belle								8.2813
12		RX-5 Belle								0
13		RX-1 Belle								7.2128
14		RX-5 Belle								0
15		RX-3 Belle						0	0	0
16		RX-3 Belle								3.736
17		RX-3 Belle								0.39856
18		RX-3 Belle								93.6348
19		RX-5 Belle						0	0	0
19		RX-3 Belle						0	0	10.6848
20		RX-3 Belle						0	0	0.78029
21		RX-3 Belle						0	0	0
22		RX-3 Belle			0	0	0	0	0	0
23		RX-3 Belle			0	0	0	0	0	0
24		RX-3 Belle				0		0	0	0
24		RX-2 Belle		2.15E-04			0	2.29E-04	0	19.6056
25		RX-3 Belle				0		8.97E-05		23.4087
26		RX-3 Belle				0		1.65E-05		6.7073
27		RX-3 Belle				0		5.87E-06		1.5608
28		RX-3 Belle				0		0		0
29		RX-3 Belle				0		0		0
30		RX-3 Belle				0		0		0
30		RX-2 Belle		2.71E-05			0	3.07E-05	0	3.4063
31		RX-3 Belle								0
31		Totes				0		2.28E-03		5.0125
32		RX-3 Belle								29.2603
33		RX-3 Belle								2.9389
34		RX-3 Belle								2.7398
35		RX-3 Belle								93.6348
36		RX-3 Belle								0
37		RX-2 Belle		0			0	0	0	0
37		RX-3 Belle		2.12E-04			0	2.27E-04	0	22.6935
38		RX-2 Belle		0			0	0	0	0
39		RX-2 Belle		3.48E-07			0	4.78E-07	0	0.39508
40		RX-2 Belle								0
41		RX-2 Belle								0
41		RX-3 Belle		7.05E-07			0	9.70E-07	0	0.78404
42		RX-3 Belle		4.23E-05			0	4.54E-05	0	4.6817
43		RX-3 Belle		0			0	0	0	0
44		RX-3 Belle		0			0	0	0	0
45		RX-3 Belle		0			0	0	0	0
46		RX-3 Belle		0			0	0	0	0
48		RX-2 Belle		3.40E-04				3.62E-04		40.4817
47		RX-2 Belle		5.77E-05				6.14E-05		4.8908
48		RX-3 Belle				0		1.92E-05		7.0976
49		RX-3 Belle				0		6.48E-06		1.5608
50		RX-3 Belle				0		0		0
51		RX-3 Belle				0		0		0
52		RX-3 Belle				0		0		0
52		RX-2 Belle		4.18E-05				4.49E-05		2.8292
53		RX-3 Belle								0
53		Totes				0		1.72E-03		3.4507
54		RX-3 Belle								29.2603
55		RX-2 Belle		0				0		0
56		RX-2 Belle								0
56		RX-3 Belle		3.37E-04				3.59E-04		21.9311
57		RX-3 Belle		4.56E-04				4.88E-04		29.6858
58		RX-3 Belle		0				0		0
59		RX-3 Belle		0				0		0
59		Totes				0		8.00E-05		0.1705
60		RX-3 Belle		0				0		0
61		RX-3 Belle		0				0		0
62		RX-3 Belle		0				0		0
62		Totes		2.02E-03		0		3.91E-03		2.6181
63		RX-2 Belle								0
64		RX-3 Belle								0
64		RX-2 Belle		3.01E-04				3.21E-04		19.5819
65		Drum2								0.42661
66		New GLS Receiver Belle								4.7117
67		RX-2 Belle		1.22E-04				1.30E-04		3.5172
68		RX-2 Belle	2.1292	4.06E-04				5.09E-04		

Phenyl Magnesium Chloride	Sodium Chloride	Sodium Hydroxide	Sodium Hydroxide (50%)	STPB	Sulfuric Acid	Tetrahydrofuran	Toluene	TRI METHYL BORATE	Water
			0				4.45E-04		2.16E-02
			0				3.27E-05	1.20E-05	9.87E-03
			0				0	0	0
			0			1.45E-04			8.03E-04
			0			0			
0			0			8.14E-02			0.45159
0			0			1.37E-03	4.35E-06		7.75E-03
0			0			4.94E-04	1.81E-06		2.80E-03
0			0			3.83E-02	1.49E-04		0.21772
0			0			9.63E-03	3.87E-05		5.48E-02
0			0			0			0
0			0			1.83E-02	1.64E-04	2.36E-05	0.11892
0			0			0	0	0	0
0			0			0	0		0.10348
0			0			0	0		0
	0		0						5.36E-02
	0		0						5.72E-03
	0		0						1.3434
0			0				0	0	0
0	0		0			2.82E-02	2.15E-04		0.15345
0	0		0			8.84E-04	2.69E-05		1.12E-02
0	0		0			0	0		0
0		0	0	0		0	0		0
0		0	0	0		0	0		0
0		0	0	0		0	0		0
0		0	0	0		2.33E-02	7.52E-04		0.2843
		0	0						0.33586
		0	0				1.06E-03		9.62E-02
		0	0				1.55E-04		2.24E-02
		0	0				0		0
		0	0				0		0
0			0	0		3.37E-03	4.58E-04		4.89E-02
		0	0						0
		0	0						6.28E-03
		0	0						0.41981
		0	0						4.22E-02
	0		0						7.20E-02
	0		0						1.3434
0			0	0		0	0		0
0	0		0	0		2.33E-02	1.30E-03		0.32573
0			0	0		0	0		0
0			0	0		1.02E-03	7.20E-07		5.67E-03
			0			0			0
0	0		0	0		2.00E-03	1.45E-06		1.13E-02
0	0		0	0		4.91E-03	2.58E-04		6.72E-02
0	0		0	0		0	0		0
0	0		0	0		0	0		0
0		0	0			0	0		0
0		0	0			2.12E-02	1.22E-03		0.58094
0			0	0		3.61E-03	2.08E-04		7.02E-02
		0	0				1.12E-03		0.10184
		0	0				1.57E-04		2.24E-02
		0	0				0		0
		0	0				0		0
0			0	0		2.68E-03	6.29E-04		3.77E-02
		0	0						4.27E-03
0			0	0		0	0		0.41981
0			0	0		2.11E-02	1.84E-03		0.31479
0			0	0		2.85E-02	2.50E-03		0.42609
0			0	0		0	0		0
0			0	0		0	0		0
0	0		0	0					2.08E-04
0			0	0		0	0		0
0			0	0		0	0		0
0	0		0	0		0.12612	1.10E-02		3.23E-03
			0			0			0
0			0	0		1.88E-02	1.65E-03		0.28107
	0		0			0.11779	1.98E-02		
			0						6.78E-02
0			0	0		7.80E-03	6.85E-04		5.05E-02
0			0	0		3.43E-02	7.32E-04		2.97E-02

69	RX-2 Belle	0	0			0	
69	New GLS	0.8308	1.03E-04			1.67E-04	
70	RX-2 Belle		0			0	0
71	RX-2 Belle	0.22326	2.93E-05			3.71E-05	
72	RX-2 Belle	0	0			0	
72	New GLS	0.81446	1.02E-04			1.63E-04	
73	RX-2 Belle	0.22696	3.06E-05			3.65E-05	
74	RX-2 Belle	0	0			0	
74	New GLS	0.81595	1.03E-04			1.64E-04	
75	RX-2 Belle		3.22E-05			4.00E-05	0.22355
76	RX-2 Belle		0			0	0
76	New GLS	0.81432	1.12E-04			1.76E-04	
77	RX-2 Belle		3.40E-05			4.17E-05	0.22617
78	New GLS Receiver Belle		0			0	0
79	New GLS Receiver Belle						0
79	Totes		4.22E-03	0		9.00E-03	5.6153
80	New GLS Receiver Belle						6.714
81	RX-2 Belle		0			0	0
81	New GLS	0.83038	1.20E-04			1.83E-04	
82	RX-2 Belle	0.23939	3.53E-05			4.26E-05	
83	RX-2 Belle	0	0			0	
83	New GLS	0.83225	1.20E-04			1.83E-04	
84	RX-2 Belle		3.48E-05			4.12E-05	0.23111
85	RX-2 Belle		0			0	0
86	New GLS	0.83484	1.22E-04			1.84E-04	
86	RX-2 Belle		3.40E-05			3.95E-05	0.23072
87	RX-2 Belle		0			0	0
87	New GLS	0.83788	1.24E-04			1.85E-04	
88	RX-2 Belle		6.56E-05			7.43E-05	0.46514
89	New GLS Receiver Belle		0			0	0
90	New GLS Receiver Belle						0
90	Totes		3.69E-03	0		8.12E-03	4.9718
91	New GLS Receiver Belle						6.714
92	RX-2 Belle		0			0	0
92	New GLS	1.7268	3.04E-04			4.07E-04	
93	RX-2 Belle		5.96E-05			6.42E-05	0.46278
94	RX-2 Belle		0			0	0
94	New GLS	1.6541	2.91E-04			3.86E-04	
96	RX-2 Belle		5.21E-05			5.25E-05	0.46043
96	New GLS Receiver Belle		0			0	0
97	New GLS Receiver Belle						0
97	Totes		3.65E-03	0		8.42E-03	5.2975
98	New GLS Receiver Belle						6.714
99	RX-2 Belle		0			0	0
99	New GLS	1.695	3.03E-04			3.67E-04	
100	RX-2 Belle		4.38E-05			4.08E-05	0.45827
101	RX-2 Belle		0			0	0
101	New GLS	1.7016	2.91E-04			3.44E-04	
102	RX-2 Belle		3.55E-05			3.03E-05	0.45643
103	New GLS Receiver Belle		0			0	0
104	New GLS Receiver Belle						0
104	Totes		3.76E-03	0		8.01E-03	5.4481
105	New GLS Receiver Belle						6.714
106	RX-2 Belle		0			0	0
106	New GLS	1.764	2.76E-04			2.69E-04	
107	RX-2 Belle		2.81E-05			2.16E-05	0.45488

0			0	0	0	0	0	0
0			0	0	1.55E-02	5.45E-05		1.16E-02
0			0	0	0	0		0
0			0	0	2.49E-03	1.10E-04		3.11E-03
0			0	0	0	0		0
0			0	0	1.51E-02	6.54E-05		1.14E-02
0			0	0	2.51E-03	1.15E-04		3.16E-03
0			0	0	0	0		0
0			0	0	1.50E-02	7.96E-05		6.92E-02
0			0	0	2.52E-03	1.20E-04		3.22E-03
0			0	0	0	0		0
0			0	0	1.47E-02	1.03E-04		1.14E-02
0			0	0	2.54E-03	1.27E-04		3.29E-03
0			0	0	0	0		0
0	0	0	0	0	0.3249	1.67E-02		6.95E-03
0			0	0	0	0		9.63E-02
0			0	0	0	0		0
0			0	0	1.48E-02	1.32E-04		1.16E-02
0			0	0	2.50E-03	1.38E-04		3.34E-03
0			0	0	0	0		0
0			0	0	1.48E-02	1.57E-04		1.16E-02
0			0	0	2.34E-03	1.60E-04		3.33E-03
0			0	0	0	0		0
0			0	0	1.44E-02	1.67E-04		1.17E-02
0			0	0	2.17E-03	1.83E-04		3.32E-03
0			0	0	0	0		0
0			0	0	1.42E-02	2.21E-04		1.17E-02
0			0	0	3.94E-03	4.30E-04		6.70E-03
0			0	0	0	0		0
0	0	0	0	0	0.30214	1.32E-02		6.16E-03
0			0	0	0	0		9.63E-02
0			0	0	0	0		0
0			0	0	2.64E-02	7.84E-04		2.41E-02
0			0	0	3.21E-03	5.29E-04		6.66E-03
0			0	0	0	0		0
0			0	0	2.34E-02	9.83E-04		2.31E-02
0			0	0	2.49E-03	6.27E-04		6.62E-03
0			0	0	0	0		0
0	0	0	0	0	0.29948	1.79E-02		6.55E-03
0			0	0	0	0		9.63E-02
0			0	0	0	0		0
0			0	0	2.06E-02	1.44E-03		2.36E-02
0			0	0	1.86E-03	7.16E-04		6.59E-03
0			0	0	0	0		0
0			0	0	1.91E-02	1.67E-03		2.37E-02
0			0	0	1.33E-03	7.90E-04		6.56E-03
0			0	0	0	0		0
0	0	0	0	0	0.27453	2.39E-02		6.72E-03
0			0	0	0	0		9.63E-02
0			0	0	0	0		0
0			0	0	1.34E-02	2.59E-03		2.46E-02
0			0	0	9.27E-04	8.48E-04		6.54E-03

108	RX-2 Belle		0			0		0
108	New GLS	1.7689	2.58E-04			2.45E-04		
109	RX-2 Belle		2.18E-05			1.51E-05		0.45391
110	New GLS Receiver Belle		0			0		0
111	New GLS Receiver Belle		0			0		0
111	Totes		3.49E-03	0		7.20E-03		5.4668
112	New GLS Receiver Belle		0			0		6.714
113	RX-2 Belle		0			0		0
113	New GLS	0.99472	1.09E-04			8.39E-05		
114	RX-2 Belle		1.87E-05			1.03E-05		0.45315
115	RX-2 Belle		0			0		0
116	New GLS	0.99543	1.01E-04			7.58E-05		
116	New GLS Receiver Belle		0			0		0
117	New GLS Receiver Belle		0			0		0
117	Totes		3.14E-03	0		6.30E-03		5.4131
118	RX-2 Belle		0			0		0
119	RX-2 Belle		0			0		0
120	RX-2 Belle		0			0		0
120	Rosenmund 3M^2 Nu		2.35E-05			8.67E-06		6.4606
121	Rosenmund 3M^2 Nu		0			0		0
122	Rosenmund 3M^2 Nu		0			0		0
122	RX-10 Belle		1.72E-05			6.48E-06		4.7182
123	Rosenmund 3M^2 Nu		2.44E-05			8.82E-06		8.5897
124	Rosenmund 3M^2 Nu		7.53E-07	2.91E-03		3.33E-07		1.5348
125	Rosenmund 3M^2 Nu		0	0		0		0
126	Rosenmund 3M^2 Nu		0	0		0		0
126	RX-10 Belle		3.83E-06	3.18E-03		1.59E-06		2.2752
127	Rosenmund 3M^2 Nu		9.61E-06	1.41E-02		3.64E-06		9.3997
128	RX-10 Belle		0			0		0
128	Totes		8.66E-03	0.80068	0	1.38E-02		16.8673
129	Rosenmund 3M^2 Nu		0	0		0		0
130	Rosenmund 3M^2 Nutsche Filter/dryer Belle							0
130	Drums							0.57268
131	RX-2 Belle		0			0		0
131	Rosenmund 3M^2 Nu		2.39E-05			9.00E-06		6.5585
132	Rosenmund 3M^2 Nu		0			0		0
133	Rosenmund 3M^2 Nu		0			0		0
133	RX-10 Belle		1.74E-05			6.57E-06		4.7897
134	Rosenmund 3M^2 Nu		2.43E-05			8.79E-06		8.5529
136	Rosenmund 3M^2 Nu		7.56E-07	2.91E-03		3.35E-07		1.5347
136	Rosenmund 3M^2 Nu		0	0		0		0
137	Rosenmund 3M^2 Nu		0	0		0		0
137	RX-10 Belle		3.88E-06	3.19E-03		1.61E-06		2.2895
138	Rosenmund 3M^2 Nu		9.70E-06	1.40E-02		3.67E-06		9.3829
139	RX-10 Belle		0			0		0
139	Totes		7.33E-03	0.79367	0	1.19E-02		16.9768
140	Rosenmund 3M^2 Nu		0	0		0		0
141	Rosenmund 3M^2 Nutsche Filter/dryer Belle							0
141	Drums							0.58136
142	RX-2 Belle		0			0		0
142	Rosenmund 3M^2 Nu		2.39E-05			9.00E-06		6.5585
143	Rosenmund 3M^2 Nu		0			0		0
144	Rosenmund 3M^2 Nutsche Filter/dryer Belle							0
144	RX-10 Belle		2.18E-05			8.22E-06		5.9672
146	Rosenmund 3M^2 Nutsche Filter/dryer Belle							10.2203
146	Rosenmund 3M^2 Nutsche Filter/dryer Belle		3.21E-03					1.5555
147	Rosenmund 3M^2 Nutsche Filter/dryer Belle		0					0
148	Rosenmund 3M^2 Nutsche Filter/dryer Belle							0
148	RX-10 Belle		2.28E-06	3.66E-03		9.83E-07		2.1682
149	Rosenmund 3M^2 Nutsche Filter/dryer Belle							10.8401
150	RX-10 Belle		0			0		0
150	Totes		6.79E-03	0.98579	0	1.31E-02		18.2138
151	Rosenmund 3M^2 Nu		0	0		0		0
152	Rosenmund 3M^2 Nutsche Filter/dryer Belle							0
152	Drums							0.58136

0			0	0	0	0	0	0
0			0	0	1.21E-02	2.78E-03		2.46E-02
			0	0	6.34E-04	8.90E-04		6.52E-03
					0	0		
0	0	0	0	0	0.24146	2.96E-02		6.73E-03
			0	0				9.63E-02
0			0	0	0	0		0
			0	0	3.65E-03	1.97E-03		1.38E-02
0			0	0	4.28E-04	9.20E-04		6.51E-03
0			0	0	0	0		0
			0	0	3.45E-03	2.03E-03		1.38E-02
					0	0		
0	0	0	0	0	0.20847	3.42E-02		6.65E-03
0			0	0	0	0		
0			0	0	0	0		
0			0	0	0	0		
0			0	0	3.62E-04	2.64E-03		9.27E-02
0			0	0	0	0		0
0			0	0	0	0		0
0			0	0	2.64E-04	1.93E-03		6.77E-02
0			0	0	3.38E-04	3.53E-03		0.12326
0			0	0	1.86E-05	4.83E-05		2.20E-02
0			0	0	0	0		0
0			0	0	0	0		0
0			0	0	7.71E-05	2.93E-04		3.27E-02
0			0	0	1.49E-04	1.06E-03		0.13483
			0	0				0
0	0	0	0	0	0.56545	0.73337		2.13E-02
			0	0	0	0		0
			0	0				0
0			0	0	0	0		0
0			0	0	3.67E-04	2.68E-03		9.41E-02
0			0	0	0	0		0
0			0	0	0	0		0
0			0	0	2.68E-04	1.95E-03		6.87E-02
0			0	0	3.36E-04	3.52E-03		0.12273
0			0	0	1.87E-05	4.85E-05		2.20E-02
0			0	0	0	0		0
0			0	0	0	0		0
0			0	0	7.80E-05	2.97E-04		3.29E-02
0			0	0	1.51E-04	1.07E-03		0.13489
			0	0				0
0	0	0	0	0	0.47004	0.73797		2.13E-02
			0	0	0	0		0
			0	0				0
0			0	0	3.67E-04	2.68E-03		9.41E-02
0			0	0	0	0		0
0			0	0	0	0		0
0			0	0	3.35E-04	2.44E-03		8.59E-02
			0	0				0.14864
			0	0				2.23E-02
			0	0				0
0			0	0	5.19E-05	1.56E-04		3.11E-02
			0	0				0.15268
			0	0				0
0	0	0	0	0	0.42849	0.76384		2.29E-02
			0	0	0	0		0
			0	0				0

Product: STPB
 Process Name: Toluene Tank
 Production Quantity:
 Process Cycle Time: 8783.9997 hr
 Date: 1/6/2016
 File: C:\Users\Public\Documents\Emission Master\STPB - Toluene Tank.emm
 Comments:

Process Operations - Toluene Tank

Compound	Activities Emitting	Emissions		Emissions
		Uncontrolled (lb)	Controlled (lb)	Percent Removal
Nitrogen	1	3903.95237	3903.95237	1.11022E-14
Toluene	1	273.2354201	0.27323542	99.9

Compound	Process Cycle	Compound Emission	Compound Emission	Max Rate (lb/hr)
	Average (lb/hr)	Hours	Average (lb/hr)	Within 1 hour
Nitrogen	0.444439036	8783.999722	0.444439036	0.444439036
Toluene	3.1106E-05	8783.999722	3.1106E-05	3.1106E-05

Storage Only - Toluene Tank

Compound	Pounds/Day	Days/Year	Pounds/Year	Emissions	
				Uncontrolled (lb/hr)	Uncontrolled (tpy)
Toluene (3)	0.746544889	28	20.9032569	0.031106037	0.010451628

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours.
- (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours.
- (3) When tank is storing toluene and the process is not in operation the tank will be uncontrolled since the incinerator will not be operating. Maximum time expected to have the tank uncontrolled while storing toluene is used with the uncontrolled emissions in pounds per hour to estimate yearly uncontrolled storage emissions in tons per year.

Description:

Particulate emissions are generated through the drop of solid materials into process vessels.

Basis:

AP-42 Equation 13.2.4-3 is used to generate emissions from this operation. No control factor for the building enclosure and dust collector is being claimed at this time without guidance from the WVDEP.

Compound	Number of Batches	Pounds per Batch (lb)	Tons per Campaign (ton)	U (mph) (1)	M (%)	Emissions (lb/ton)			Emissions (lb/hr)			Emissions (tpy)		
						PM	PM10	PM2.5	PM	PM10	PM2.5	PM	PM10	PM2.5
Sodium Chloride	30	1,600.00	24.50	7.0	0.25	0.0674	0.0319	0.0048	0.05	0.03	0.01	0.01	0.01	0.01
Magnesium	30	884.00	9.96	7.0	0.25	0.0674	0.0319	0.0048	0.02	0.01	0.01	0.01	0.01	0.01
Sodium Tetraphenyl Borate	30	1,816.79	27.25	7.0	0.25	0.0674	0.0319	0.0048	0.06	0.03	0.01	0.01	0.01	0.01
Total Emissions									0.13	0.07	0.03	0.03	0.03	0.03

(1) WVDEP allows for 7 mph to be claimed for wind speed.

From AP-42:

$$E = k(0.0002) \frac{\left(\frac{U}{2}\right)^{1.4}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound (lb)/ton)}$$

where:

- E = emission factor
- k = particle size multiplier (dimensionless)
- U = mean wind speed, meters per second (m/s) (miles per hour (mph))
- M = material moisture content (%)

From AP-42:

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 µm	< 15 µm	< 10 µm	< 5 µm	< 2.5 µm
0.74	0.48	0.35	0.20	0.053*

* Multiplier for < 2.5 µm taken from Reference 14.

Optima Belle, LLC
TMBX

Potesta & Associates, Inc.
Project Number 0101-14-0162-016

By: PEW
Date: 12/7/2017

Checked By: ADM
Date: 12/7/2017

Total Emissions Estimate for TMBX

Number of Batches in Process

1 No.

Number of Batches Per Year

100 No.

Total Emissions

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (100 batches)	pph (Max Rate)	tpy (100 batches)
PM	0.80	0.05	0.80	0.05
PM10	0.38	0.02	0.38	0.02
PM2.5	0.06	0.01	0.06	0.01
VOC	6.98	0.74	5.37	0.57

Requested Permit Limits

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (100 batches)	pph (Max Rate)	tpy (100 batches)
PM	0.80	0.05	0.80	0.05
PM10	0.38	0.02	0.38	0.02
PM2.5	0.06	0.01	0.06	0.01
VOC	6.98	0.74	5.37	0.57

REDACTED
 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Product: **TMBX**
 Process Name: **Trimethoxyboroxine (TMBX) at Belle**
 Production Quantity: **[REDACTED]**
 Process Cycle Time: **[REDACTED]**
 Date: **10/10/2017**
 File: **N:\Emission Master Files\Belle\TMBX\TMBX Belle Rx-3 R_2.emm**
 Comments:

Compound	Activities Emitting	Emissions		Emissions Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
Boron Oxide	7	0	0	
[REDACTED]	10	43.62429048	43.62429048	0
[REDACTED]	7	0	0	
TRI METHYL BORATE	4	3.361239245	0.000672248	99.98
Trimethoxyboroxine	5	11.42998975	11.38940918	0.355035894
Water	7	0	0.406716003	
Total VOC		14.79122899	11.39008143	

Compound	Process Cycle	Compound Emission	Compound Emission	Max Uncontrolled	Max Rate (lb/hr)
	Average (lb/hr)	Hours	Average (lb/hr)	lb/hr	Within 1 hour
Boron Oxide	0	[REDACTED]	0		0
[REDACTED]	2.296015289	[REDACTED]	2.296082425		11.32079451
[REDACTED]	0	[REDACTED]	0		0
TRI METHYL BORATE	3.53815E-05	[REDACTED]	6.11134E-05	1.6093	0.000321857
Trimethoxyboroxine	0.599442589	[REDACTED]	1.423725583	5.3746	5.374610364
Water	0.021406105	[REDACTED]	0.022595334		0.162425706

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours.
 (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours

REDACTED
 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Activities Emitting	Emissions		Emissions Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	10	58.41551948	55.42108792	5.126089073
Acid	0	0	0	
Acid Gases	0	0	0	
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CATEGORY I	0	0	0	
ASBESTOS	0	0	0	
BIOLOGICAL	0	0	0	
Cr(+6)	0	0	0	
DIOXIN	0	0	0	
HAP-PARTICULATE	0	0	0	
METAL	0	0	0	
OTHER PARTICULATE	0	0	0	
RADIONUCLIDE	0	0	0	
CATEGORY II	0	0	0	
HAP-VOC	0	0	0	
OTHER VOC	0	0	0	
CATEGORY III	0	0	0	
ACID	0	0	0	
HAP-ACID	0	0	0	
CATEGORY IV	0	0	0	
CATEGORY V (CO)	0	0	0	
CATEGORY VI (NOx)	0	0	0	
CATEGORY VII (SO2)	0	0	0	
CATEGORY VIII	0	0	0	
CO	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Gas	0	0	0	
HAP	0	0	0	
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
Radionuclide	0	0	0	
SO2	0	0	0	
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	0	0	0	
TRI METHYL BORATE	9	14.79122899	11.39008143	22.99435405
Trimethoxyboroxine	4	3.361239245	0.000672248	99.98
Unclassified	5	11.42998975	11.39940918	0.355035894
Baron Oxide	10	43.62429048	44.03100649	-0.932315457
	7	0	0	
	10	43.62429048	43.62429048	0
	7	0	0	
Water	7	0	0.406716003	

REDACTED
 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Classification	Process Cycle	Emission Hours	Emission	Max Rate (lb/hr)
	Average (lb/hr)		Average (lb/hr)	Within 1 hour
All Emissions	2.916899364		2.916984656	12.58178901
Acid	0		0	0
Acid Gases	0		0	0
Asbestos	0		0	0
Base	0		0	0
Biological	0		0	0
CATEGORY I	0		0	0
ASBESTOS	0		0	0
BIOLOGICAL	0		0	0
Cr(+6)	0		0	0
DIOXIN	0		0	0
HAP-PARTICULATE	0		0	0
METAL	0		0	0
OTHER PARTICULATE	0		0	0
RADIONUCLIDE	0		0	0
CATEGORY II	0		0	0
HAP-VOC	0		0	0
OTHER VOC	0		0	0
CATEGORY III	0		0	0
ACID	0		0	0
HAP-ACID	0		0	0
CATEGORY IV	0		0	0
CATEGORY V (CO)	0		0	0
CATEGORY VI (NOx)	0		0	0
CATEGORY VII (SO2)	0		0	0
CATEGORY VIII	0		0	0
CO	0		0	0
CR+6	0		0	0
Dioxin	0		0	0
ETG	0		0	0
EVOS	0		0	0
Gas	0		0	0
HAP	0		0	0
Hydrogen	0		0	0
LOC	0		0	0
Metal	0		0	0
NOx	0		0	0
Particulate	0		0	0
Pb	0		0	0
PM10	0		0	0
Radionuclide	0		0	0
SO2	0		0	0
TSP	0		0	0
TVOS	0		0	0
VCM	0		0	0
VOC	0.59947797		0.599486734	5.374610364
Unclassified	2.317421394		2.317489157	11.48322021

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours
- (2) Emission Average = Classification emission quantity / Classification emission time in hours

Vessel	Vent ID	Device # 1	Device # 2	Device # 3
Drum2				
Drums				
RX-3 Belle		Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle		Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle

REDACTED
 Information claimed confidential by
 Optima Belle, LLC December 1, 2017

Uncontrolled Emissions

Process: Trimethoxyboroxine (TMBX) at B: Emissions reported in Pounds

Activity	Recipe Step Duration (hrs)	Vessel	Boron Oxide	TRI METHYL BORATE		Trimethoxyboroxine		Water
				lbs	lb/hr	lbs	lb/hr	
1		RX-3 Belle		11.3208				
2		RX-3 Belle	0	4.248	1.6093	1.6093		
3		RX-3 Belle	0	8.0754	0.60401	0.302005		
4		RX-3 Belle	0	0	1.1478	0.286975		
5		RX-3 Belle	0	4.7021	0	0		
6		RX-3 Belle	0	0			4.14E-02	0.0207045
7		RX-3 Belle	0	0			0	0
8		Drums		14.4144			10.7492	5.3746
9		Drums		0			0	0
9		Drum2	0	0.86262			0.63936	0.63936
Maximum Uncontrolled Emission Value					1.6093		5.3746	

Controlled Emissions
Process: Trimethoxyboroxine (TMBX) at Belle

REDACTED
Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Emissions reported in Pounds

Activity	Recipe Step	Vessel	Boron Oxide			TRI METHYL BORATE	Trimethoxyboroxine	Water
1		RX-3 Belle						
2		RX-3 Belle		11.3208		3.22E-04		0.18249
3		RX-3 Belle	0	4.249		1.21E-04		6.10E-02
4		RX-3 Belle	0	8.0764		2.30E-04		0.11586
5		RX-3 Belle	0	0		0		0
6		RX-3 Belle	0	4.7021			8.28E-04	6.75E-02
7		RX-3 Belle	0	0			0	0
7		Drums		14.4144				0
8		Drums		0			10.7492	0
8		Drum2	0	0.86292			0	0.63836

REDACTED
 Information claimed confidential by
 Optima Belle, LLC December 1, 2017.

Description: Particulate emissions are generated through the drop of solid materials into process vessels

Basis: AP-42 Equation 13.2.4-3 is used to generate emissions from this operation. No control factor for the building enclosure and dust collector is being claimed at this time without guidance from the WVDEP.

Compound	Number of Batches	Pounds per Batch (lb)	Tons per Campaign (ton)	U (mph) (1)	M (%)	Emissions (lb/ton)			Emissions (lb/hr)			Emissions (tpy)		
						PM	PM10	PM2.5	PM	PM10	PM2.5	PM	PM10	PM2.5
Total Emissions	100	8,814	330.70	7.0	0.1	0.2431	0.1150	0.0174	0.80	0.38	0.06	0.06	0.02	0.01
									0.80	0.38	0.06	0.06	0.02	0.01

(1) WVDEP allows for 7 mph to be claimed for wind speed

From AP-42

$$E = 2(0.0002) \left(\frac{U}{3} \right)^{1.6} \left(\frac{M}{2} \right)^{1.6} \text{ (pound (lb)/ton)}$$

where

E = emission factor
 k = particle size multiplier (dimensionless)
 U = mean wind speed, miles per second (m/s) (miles per hour (mph))
 M = natural moisture content (%)

From AP-42

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows

Aerodynamic Particle Size Multiplier (k) For Equation 1				
< 30 µm	< 15 µm	< 10 µm	< 5 µm	< 2.5 µm
0.78	0.48	0.35	0.20	0.053*

* Multiplier for < 2.5 µm taken from Reference [4]

Optima Belle, LLC
Nylon Washing

Potesta & Associates, Inc.
Project Number 0101-14-0162-016

By: PEW
Date: 12/1/2017

Checked By: ADM
Date: 12/1/2017

Total Emissions Estimate

Number of Batches in Process
Number of Batches Per Year

1 No.
200 No.

Total Emissions

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (200 batches)	pph (Max Rate)	tpy (200 batches)
VOC	2.20	0.22	0.59	0.18

HAPS

Methanol	2.20	0.22	0.59	0.18
Total Process HAPS	2.20	0.22	0.59	0.18

Requested Permit Limits

Pollutant	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (200 batches)	pph (Max Rate)	tpy (200 batches)
VOC	2.20	0.22	0.59	0.18

HAPS

Methanol	2.20	0.22	0.59	0.18
Total HAPS	2.20	0.22	0.59	0.18

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Product: Nylon Pellets
 Process Name: Nylon Pellet Purification and Drying for Sealed Air/EMS-Grivory Belle
 Production Quantity:
 Process Cycle Time: 128.1 hr
 Date: 9/21/2017
 File: N:\Emission Master Files\Sealed Air EMS Grivory\Belle Sealed Air\Nylon Pellet PP Purification Belle R_3.emm
 Comments: Material balance for the hastelloy 3 sq. meter filter dryer

Compound	Activities Emitting	Emissions		Emissions
		Uncontrolled (lb)	Controlled (lb)	Percent Removal
Methanol	23	2.247347783	1.817321759	19.13482318
	31	25.79283127	25.79283127	0
Nylon	14	0	0	
	25	0	0	
Water	25	0	0.22513631	

Compound	Process Cycle	Compound Emission		Max Uncontrolled lb/hr	Max Rate (lb/hr) Within 1 hour
	Average (lb/hr)	Hours	Average (lb/hr)		
Methanol	0.014186743		0.014884049	2.1963	0.588092544
	0.20134919		0.201353556		6.322925178
Nylon	0		0		0
	0		0		0
Water	0.001757504		0.001774151		0.090773953

- (1) Process Cycle Average = Compound emission quantity / Total process cycle time in hours.
- (2) Compound Emission Average = Compound emission quantity / Compound emission time in hours.

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Classification	Activities Emitting	Emissions		Emissions Percent Removal
		Uncontrolled (lb)	Controlled (lb)	
All Emissions	31	28.04017905	27.83528934	0.73070045
Acid	0	0	0	
Acid Gases	0	0	0	
Asbestos	0	0	0	
Base	0	0	0	
Biological	0	0	0	
CATEGORY I	0	0	0	
ASBESTOS	0	0	0	
BIOLOGICAL	0	0	0	
Cr(+6)	0	0	0	
DIOXIN	0	0	0	
HAP-PARTICULATE	0	0	0	
METAL	0	0	0	
OTHER PARTICULATE	0	0	0	
RADIONUCLIDE	0	0	0	
CATEGORY II	0	0	0	
HAP-VOC	0	0	0	
OTHER VOC	0	0	0	
CATEGORY III	0	0	0	
ACID	0	0	0	
HAP-ACID	0	0	0	
CATEGORY IV	0	0	0	
CATEGORY V (CO)	0	0	0	
CATEGORY VI (NOx)	0	0	0	
CATEGORY VII (SO2)	0	0	0	
CATEGORY VIII	0	0	0	
CO	0	0	0	
CR+6	0	0	0	
Dioxin	0	0	0	
ETG	0	0	0	
EVOS	0	0	0	
Gas	0	0	0	
HAP	23	2.247347783	1.817321759	19.13482318
Methanol	23	2.247347783	1.817321759	19.13482318
Hydrogen	0	0	0	
LOC	0	0	0	
Metal	0	0	0	
NOx	0	0	0	
Particulate	0	0	0	
Pb	0	0	0	
PM10	0	0	0	
Radionuclide	0	0	0	
SO2	0	0	0	
TSP	0	0	0	
TVOS	0	0	0	
VCM	0	0	0	
VOC	23	2.247347783	1.817321759	19.13482318
Methanol	23	2.247347783	1.817321759	19.13482318
Unclassified	31	25.79283127	26.01796758	-0.872863889
	31	25.79283127	25.79283127	0
Nylon	14	0	0	
	25	0	0	
Water	25	0	0.22513631	

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Classification	Process Cycle	Emission Hours	Emission	Max Rate (lb/hr)
	Average (lb/hr)		Average (lb/hr)	Within 1 hour
All Emissions	0.217293437		0.217298149	6.418174491
Acid	0		0	0
Acid Gases	0		0	0
Asbestos	0		0	0
Base	0		0	0
Biological	0		0	0
CATEGORY I	0		0	0
ASBESTOS	0		0	0
BIOLOGICAL	0		0	0
Cr(+6)	0		0	0
DIOXIN	0		0	0
HAP-PARTICULATE	0		0	0
METAL	0		0	0
OTHER PARTICULATE	0		0	0
RADIONUCLIDE	0		0	0
CATEGORY II	0		0	0
HAP-VOC	0		0	0
OTHER VOC	0		0	0
CATEGORY III	0		0	0
ACID	0		0	0
HAP-ACID	0		0	0
CATEGORY IV	0		0	0
CATEGORY V (CO)	0		0	0
CATEGORY VI (NOx)	0		0	0
CATEGORY VII (SO2)	0		0	0
CATEGORY VIII	0		0	0
CO	0		0	0
CR+6	0		0	0
Dioxin	0		0	0
ETG	0		0	0
EVOS	0		0	0
Gas	0		0	0
HAP	0.014186743		0.014884049	0.588092544
Hydrogen	0		0	0
LOC	0		0	0
Metal	0		0	0
NOx	0		0	0
Particulate	0		0	0
Pb	0		0	0
PM10	0		0	0
Radionuclide	0		0	0
SO2	0		0	0
TSP	0		0	0
TVOS	0		0	0
VCM	0		0	0
VOC	0.014186743		0.014884049	0.588092544
Unclassified	0.203106695		0.203111099	6.413699132

- (1) Process Cycle Average = Classification emission quantity / Total process cycle time in hours
- (2) Emission Average = Classification emission quantity / Classification emission time in hours.

Vessel	Vent ID	Device # 1	Device # 2	Device # 3
Drum	drums			
Drums #3				
FWT Belle				
Rosenmund 3M^2 Nutsche Filter/dryer Belle	RX-10	Condenser RX-10 Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-10 Belle		Condenser RX-10 Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-10 Belle	RX-2	Condenser RX-10 Belle	Incinerator Belle	Scrubber Incinerator Belle
RX-2 Belle	RX-2	Condenser RX-2 Hast C	Incinerator Belle	Scrubber Incinerator Belle
RX-3 Belle		Condenser RX-3 Hast C	Incinerator Belle	Scrubber Incinerator Belle
Totes	totes			

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Uncontrolled Emissions

Process: Nylon Pellet Purification and Drying for Sealed Air/EMS-Grivory Belle

Emissions reported in Pounds

Activity	Recipe Step Duration (hrs)	Vessel	Methanol		Nylon	Water
			lbs	lb/hr		
1		Rosenmund 3M^2 Nutsche Filter/dryer Belle			2.1488	0
2		Rosenmund 3M^2 Nutsche Filter/dryer Belle			0.70612	0
3		Rosenmund 3M^2 Nutsche Filter/dryer Belle	1.42E-02	0.00711	0.4303	0
4		Rosenmund 3M^2 Nutsche Filter/dryer Belle	1.00E-03	0.00033	3.03E-02	0
5		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
6		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
7		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
8		RX-10 Belle	6.36E-03	0.00079	0.19237	
8		RX-10 Belle			0	
8		RX-2 Belle	6.36E-03	0.00318	0.19237	
9		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0.16818	1.6619	5.029	0
10		Rosenmund 3M^2 Nutsche Filter/dryer Belle	3.75E-03	0.00375	0.11336	0
11		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
12		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
12		RX-10 Belle	5.18E-03	0.00129	0.15663	
13		RX-10 Belle			0	
13		RX-2 Belle	5.18E-03	0.00518	0.15663	
14		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0.21963	2.1963	6.1976	0
15		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
16		Rosenmund 3M^2 Nutsche Filter/dryer Belle	0	0	0	0
16		Drums #3			4.9951	0
17		RX-2 Belle	0	0	0	
17		RX-3 Belle	1.10E-02	0.00055	0.33155	
18		RX-3 Belle	0	0	0	
18		RX-3 Belle			0	
19		Drum	1.3069	0.65345	4.3506	
20		FWT Belle	0	0	0	
21		FWT Belle			0	
21		Totes	0.22342	0.22342	0.74376	
22		RX-2 Belle			0	
22		Drum	0.27825	0.5565	1.93E-02	
Maximum Uncontrolled Emission Value				2.1963		

REDACTED

Information claimed confidential by
Optima Belle, LLC December 1, 2017.

Controlled Emissions

Process: Nylon Pellet Purification and Drying for Se Emissions reported in Pounds.

Activity	Recipe Step	Vessel	Methanol		Nylon		Water
1		Rosenmund 3M^2 Nutsche		2.1488	0	0	3.08E-02
2		Rosenmund 3M^2 Nutsche		0.70512	0	0	1.01E-02
3		Rosenmund	2.84E-04	0.4303	0	0	6.18E-03
4		Rosenmund	2.00E-05	3.03E-02	0	0	4.35E-04
5		Rosenmund	0	0	0	0	0
6		Rosenmund	0	0	0	0	0
7		Rosenmund	0	0	0	0	0
7		RX-10 Belle	1.27E-04	0.19237		0	2.76E-03
8		RX-10 Belle		0		0	0
8		RX-2 Belle	1.27E-04	0.19237		0	2.76E-03
9		Rosenmund	3.32E-03	5.029	0	0	7.22E-02
10		Rosenmund	7.49E-05	0.11336	0	0	1.63E-03
11		Rosenmund	0	0	0	0	0
12		Rosenmund	0	0	0	0	0
12		RX-10 Belle	1.04E-04	0.15663		0	2.25E-03
13		RX-10 Belle		0		0	0
13		RX-2 Belle	1.04E-04	0.15663		0	2.25E-03
14		Rosenmund	4.39E-03	6.1976	0	0	8.90E-02
15		Rosenmund	0	0	0	0	0
16		Rosenmund	0	0		0	0
16		Drums #3		4.9951	0		
17		RX-2 Belle	0	0		0	0
17		RX-3 Belle	2.19E-04	0.33155		0	4.76E-03
18		RX-3 Belle	0	0		0	0
19		RX-3 Belle		0		0	0
19		Drum	1.3069	4.3506			
20		FWT Belle	0	0			
21		FWT Belle		0			
21		Totes	0.22342	0.74376			
22		RX-2 Belle		0		0	0
22		Drum	0.27825	1.93E-02			

The following is the total increases in emissions from each scenario being modified or added by this application. LAME and STPB are being modified. TMBX and Nylon Washing are being added. The decreases in emissions are not included in the total for the increases. This total increase number is for public notice purposes only.

Pollutant	LAME Change in Emissions			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (40 batches)	pph (Max Rate)	tpy (40 batches)
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
PM2.5	0.00	0.00	0.00	0.00
SO2	0.00	19.02	0.00	0.00
VOC	-0.18	0.30	-1.12	-0.01

HAPS (Process)				
Acetonitrile	-0.15	0.00	-0.01	0.00
Hydrogen Chloride	0.00	10.84	0.00	0.00
Methanol	-0.03	0.56	-1.11	0.01
Methyl Tert-Butyl Ether	0.00	-0.26	-0.01	-0.01
Total HAPS	-0.18	11.14	-1.13	0.00

Emissions	STPB Change in Requested Permit Limits			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (30 batches)	pph (Max Rate)	tpy (30 batches)
PM	0.00	0.00	0.00	0.00
PM10	0.00	0.00	0.00	0.00
PM2.5	0.00	0.00	0.00	0.00
VOC	0.76	-2.78	-1.68	0.07

HAPS				
Benzene	0.04	0.00	0.00	0.00
Chlorobenzene	-0.01	-0.01	-0.01	-0.01
Hexane	-10.59	-2.64	-0.44	0.02
Methanol	-0.02	-0.01	-0.04	-0.01
Toluene	-2.73	-0.47	0.26	0.03
Total	-13.31	-3.12	-0.22	0.03

Pollutant	TMBX Requested Permit Limits			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (100 batches)	pph (Max Rate)	tpy (100 batches)
PM	0.80	0.05	0.80	0.05
PM10	0.38	0.02	0.38	0.02
PM2.5	0.06	0.01	0.06	0.01
VOC	6.98	0.74	5.37	0.57

Pollutant	Nylon Washing Requested Permit Limits			
	Uncontrolled		Controlled	
	pph (Max Rate)	tpy (200 batches)	pph (Max Rate)	tpy (200 batches)
VOC	2.20	0.22	0.59	0.19

HAPS				
Methanol	2.20	0.22	0.59	0.18
Total HAPS	2.20	0.22	0.59	0.18

Pollutant	Total Change in Emissions			
	Uncontrolled		Controlled	
	pph	tpy	pph	tpy
PM	0.80	0.05	0.80	0.05
PM10	0.38	0.02	0.38	0.02
PM2.5	0.06	0.01	0.06	0.01
SO2	0	19.02	0	0
VOC	9.94	1.27	5.96	0.83
HAPS				
Acetonitrile	0	0	0	0
Hexane	0	0	0	0.02
Hydrogen Chloride	0	10.84	0	0
Methanol	2.20	0.79	0.59	0.19
Methyl Tert-Butyl Ether	0	0	0	0
Toluene	0	0	0.26	0.03
Total HAPS	2.20	11.63	0.85	0.24

ATTACHMENT O
MONITORING/RECORDKEEPING/REPORTING/TESTING
PLANS

ATTACHMENT O

MONITORING/RECORDKEEPING/ REPORTING/TESTING PLANS

Optima Belle, LLC plans to follow the monitoring, recordkeeping, reporting, and testing required by the issued permit.

ATTACHMENT P

PUBLIC NOTICE

AIR QUALITY PERMIT NOTICE

Notice of Application

Notice is given that Optima Belle, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Regulation 13 Class II Administrative Update to Regulation 13 Permit R13-0882P to install equipment and additional processes at the facility on W. DuPont Avenue near Belle, Kanawha County, West Virginia. The latitude and longitude coordinates are: 38.239659 and -81.551886.

The applicant estimates the potential to discharge the following Regulated Air Pollutants from the facility will be: PM of 0.05 tons per year (tpy); PM10 of 0.02 tpy; PM2.5 of 0.01 tpy; VOC of 0.83 tpy; Hexane of 0.02 tpy; Methanol of 0.19 tpy; Toluene of 0.03 tpy; and total HAPS of 0.24 tpy.

Startup of operation is planned to begin on or about the 15th day of March 2018. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, Extension 1250, during normal business hours.

Dated this the (PLEASE INSERT DAY) day of December 2017.

By: Optima Chemical Group, LLC
K. Gene Williams
President
200 Willacoochee Highway
Douglas, Georgia 31535

ATTACHMENT Q
BUSINESS CONFIDENTIAL CLAIMS

Precautionary Notice Claims of Confidentiality

The person submitting this information may assert that some or all of the information submitted is entitled to confidential treatment as provided by West Virginia Legislative Rule 45CSR31, entitled Confidential Information. Information covered by such a claim will be disclosed by the Division of Air Quality (DAQ) only to the extent, and by means of the procedures, set forth in 45CSR31. Please contact the West Virginia Secretary of State's Office at 304/558-6000 to obtain a copy of 45CSR31 in order to ensure that all required procedures are followed.

Information concerning the types and amounts of air pollutants discharged as that term is defined in WVCSR §45-31-2.4, shall not be claimed as confidential.

Any claim of confidentiality shall be made in accordance with the requirements of 45CSR31 and must accompany the information at the time it is submitted to the DAQ. **If no claim of confidentiality is made at the time of submission or is not made in accordance with the requirements of 45CSR31, the DAQ may make the information available to the public without further notice.**

Included below are procedures to be followed in submitting information claimed as confidential. This information is intended to assist a person with claiming confidential information and is not meant to relieve a person of his/her obligation to review the provisions of 45CSR31 and to comply with such rule. The procedures are as follows:

1. Indicate clearly the items of information claimed confidential by marking each page with the term Claimed Confidential, with the date of such claim of confidentiality. With the exception of documents of a size greater than 8½" x 14", information claimed confidential must be submitted on colored paper.
2. Include a cover document which justifies the claim of confidentiality in accordance with the specific criteria under WVCSR §45-31-4.1. A sample cover document is attached for your information and use. The cover document will be available for public disclosure and must include the following information:
 - (a) The identity of the person making the submission of information claimed confidential;
 - (b) The reason for the submission of information;
 - (c) The name, an address in the State of West Virginia and telephone number of the designee who shall be contacted in accordance with 45CSR31;
 - (d) Identification of each segment of information within each page that is submitted as confidential and the justification for each segment claimed confidential, including the criteria under WVCSR 45-31-4.1;

- (e) The period of time for which confidential treatment is desired (e.g., until a certain date, until the occurrence of a specified event or permanently); and,
 - (f) Signature of a responsible official or an authorized representative of such person.
3. At the same time as the information claimed confidential is submitted to the DAQ on colored paper, a complete set of the information, including the cover document previously required under paragraph 2, must be submitted on white paper with the information claimed to be confidential blacked or whited out and the words Redacted Copy Claim of Confidentiality marked clearly on each such page, so that the information is suitable for public disclosure. In the case of drawings and blueprints, mark each page with the words Redacted Copy Claim of Confidentiality, include the title or legend of the drawing, and black or white out the information claimed confidential. The redacted page may be 8½" x 11" in size.
4. In the case of a permit application or supplemental information to an application, DAQ requires an applicant to submit three (3) copies of the application. Of those three (3) copies, one (1) must be a complete set of the application containing the information claimed confidential on colored paper and two (2) must be redacted copies. The DAQ reserves the right, however, to request additional copies of the information containing the confidential material.

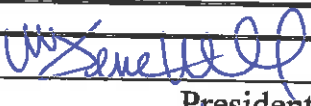
Attachment

Attachment Q Business Confidential Claim

Company Name	Optima Belle, LLC	Responsible Official	
Company Address	900 W. DuPont Avenue Belle, WV 25015	Confidential Information Designee in State of WV	Name K. Gene Williams
			Title President
			Address 200 Willacoochee Highway Douglas, GA 31535
Person/Title Submitting Confidential Information	K. Gene Williams President		Phone (912) 384-5101
			Fax (912) 384-6330

Reason for Submittal Of Confidential Information : R13 Class II Administrative Update

Identification of Confidential Information	Rationale for Confidential Claim 45CSR31-4.1a-e	Confidential Treatment Time Period
<ul style="list-style-type: none"> -Equipment design and capacity information -Process descriptions -Process flow diagrams 	<p>a. Information initially claimed confidential by E.I. Dupont De Nemours and Company, Inc. and The Chemours Company FC, LLC. Information continues to be confidential under Optima Belle, LLC. The claim has not expired by its term, or been waived or withdrawn. The confidential information should continue to be maintained as such for an indefinite time period.</p> <p>See attached for b-e</p>	<p>Permanent</p>

Responsible Official Signature:	
Responsible Official Title:	President
Date Signed:	12/8/17

NOTE: Must be signed and dated in **BLUE INK**.

Rationale for Confidentiality Claim (Cont.)

b. Information claimed confidential is not available to the general public. Within the company, Optima Belle, LLC (Optima) distributes technical information on a need-to-know basis and has used its business confidentiality policy to prevent inadvertent dissemination of information. This policy includes:

- * Marking of business confidential documents,
- * Limited distribution of documents,
- * Shredding of confidential documents before disposal.

Employees are aware of the competitive nature of their business and are trained in guarding confidential information.

c. Information revealing the process technology in this submittal is not reasonably obtainable by persons other than Optima employees who need to know. To maintain the confidentiality of such information, Optima employees involved with confidential information sign a confidentiality agreement.

d. There is no statute that has been reviewed that requires disclosure of information claimed to be confidential.

e. Optima claims business confidentiality protection for the information submitted since disclosure would allow competent engineers within a competitor's company to determine the manner or process by which Optima produces this product and would provide competitors information without paying for technology or conducting research and development necessary to obtain the technology.

ATTACHMENT S

TITLE V PERMIT REVISION INFORMATION

Attachment S
Title V Permit Revision Information

1. New Applicable Requirements Summary

Mark all applicable requirements associated with the changes involved with this permit revision:

<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS (Subpart(s) _____)	<input type="checkbox"/> Section 112(d) MACT standards (Subpart(s) _____)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) ⁽¹⁾
<input type="checkbox"/> NO _x Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO _x Budget Trading Program EGUs (45CSR26)

⁽¹⁾ If this box is checked, please include **Compliance Assurance Monitoring (CAM) Form(s)** for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why **Compliance Assurance Monitoring** is not applicable:

2. Non Applicability Determinations

List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.

Permit Shield Requested (not applicable to Minor Modifications)

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? Yes No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-0882P	08/01/2017	CO-R21-97-31

5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-0882 (previous versions)	Various	None
	/ /	

6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
PM	+0.05
PM10	+0.02
PM2.5	+0.01
VOC	+0.83
HAPs	+0.24

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)

Note: This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.

(Signed):


(Please use blue ink)

Date:

12 / 08 / 17
(Please use blue ink)

Named (typed):

K. Gene Williams

Title:

President

Note: Please check if the following included (if applicable):

Compliance Assurance Monitoring Form(s)

Suggested Title V Draft Permit Language

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.