

September 21, 2016

EXPRESS MAIL

*FedEx No. 8104 0897 4012*

Ms. Beverly McKeone  
Permitting Manager  
Division of Air Quality  
West Virginia Department of Environmental Protection  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Subject: Class II Administrative Update  
Elementis Specialties, Inc.  
Marshall County, West Virginia  
Permit No. R13-3065B; Facility ID No. 051-00159  
IES Project No. EV160994.01

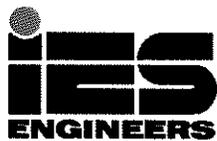
Dear Ms. McKeone:

On behalf of Elementis Specialties, Inc. (Elementis), IES Engineers (IES) is pleased to submit the enclosed application for a Class II Administrative Update to New Source Review (NSR) Permit No. R13-3065B, issued by the Department on February 1, 2016. The purpose of this application is for the addition of seven new process and finished product storage tanks at its facility in New Martinsville, West Virginia.

The new tanks are part of an expansion project that will take place over the next year. The initial activity will be the installation of a new dispersant separation tank (T-570), designed to allow polymers to separate from the toluene used during production. Elementis plans to install this tank in mid-October 2016. In August 2017, Elementis will be installing two new recycle toluene tanks (T-580, T-581) and four finished product storage tanks (T-590, T-591, T-592, and T-593). The upper phase of toluene from tank T-570 will be transferred to the two new recycle tanks for phase separation and then recycled to the existing reactor R-201.

The new tanks are as follows:

<b>Emission Unit ID</b>	<b>Emission Point ID</b>	<b>Description</b>	<b>Capacity (liters)</b>
T-570	T-570E	Dispersant Separation Tank	24,000
T-580	T-580E	Recycle Toluene Tank	23,000
T-581	T-581E	Recycle Toluene Tank	23,000
T-590	T-590E	Finished product storage tank	39,000
T-591	T-591E	Finished product storage tank	39,000
T-592	T-592E	Finished product storage tank	39,000
T-593	T-593E	Finished product storage tank	39,000



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The separation and recycle tanks will be used in the production of dispersants. Since the finished product storage tanks will contain product that is fully polymerized, there will be virtually no VOC or HAP emissions from these tanks.

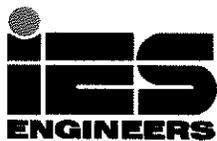
This permit application includes the following:

New Source Review Permit Application Form	
Attachment A	Certificate of Registration
Attachment B	Map
Attachment C	Schedule of Installation and Start-up
Attachment D	Regulatory Applicability
Attachment E	Plot Plan
Attachment F	Detailed Process Flow Diagram
Attachment G	Process Description
Attachment H	Safety Data Sheets
Attachment I	Emission Units Table
Attachment J	Emission Points Data Summary Sheet
Attachment K	Fugitive Emissions Data Summary Sheet
Attachment L	Emission Units Data Sheet
Attachment M	Air Pollution Control Device Sheets
Attachment N	Emission Calculations
Attachment O	Monitoring, Recording, and Testing Plans
Attachment P	Public Notice / Affidavit of Publication
Attachment Q	Business Confidential Claims

Under the Clean Air Act regulations, this site is classified as a minor source and is not subject to the federal Part 60 New Source Performance Standards (NSPS), the NESHAP Part 63 GACT/MACT regulations, or the West Virginia §45-27-2.10 regulation for toxic air pollutants.

As shown in Attachment N, the VOC and HAP emission increases associated with the addition of the new tanks will be less than the thresholds that would trigger a permit modification: 6 lb/hr and 10 tpy of VOC; 2 lb/hr and 5 tpy of HAPs. Therefore, this project can be permitted through a Class II Administrative Update.

Included with this application is a check in the amount of \$300.00, payable to the "West Virginia Department of Environmental Protection – Division of Air Quality" for the Department's processing of this application.



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CONFIDENTIAL INFORMATION

Elementis is claiming that certain information being provided with this application is **CONFIDENTIAL** pursuant to 45CSR31. Based on a review of the Precautionary Notice – Claims of Confidentiality guidance, Elementis is designating the information identified in Attachment Q as confidential information. The information contained in Attachment Q includes production-related data. It is business-sensitive material that, if made public, would reveal trade secrets and confer an unfair economic advantage on Elementis' competitors. Accordingly, Elementis has redacted the information in the designated attachments and is requesting that the information be protected from disclosure to the public.

One hard copy and two electronic copies of the “public” version of the application with the confidential information redacted are being submitted herewith. Under separate cover, we are submitting a sealed envelope marked “CONFIDENTIAL” that contains one copy of the confidential information printed on colored paper.

We request the Department to approve the Class II Administrative Update Application promptly so that the installation of the dispersant separation tank can be initiated. We will be happy to answer any questions the Department may have concerning this application. Please feel free to contact me or Mr. Todd Patterson at (609) 443-2332.

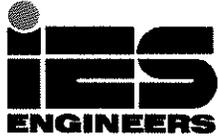
Very truly yours,

A handwritten signature in black ink that reads 'Robert W. Schlosser' followed by a circled 'RP' monogram.

Robert W. Schlosser, P.E.  
Principal Project Manager

Enclosures

cc: T. Patterson, Elementis  
F. Cesare, Elementis  
S. Anderson, Elementis  
R. Nair, IES  
A. Soni, IES



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1720 Walton Road Blue Bell, PA 19422 610-828-3078 Fax 610-828-7842

**APPLICATION FOR A CLASS II ADMINISTRATIVE UPDATE TO  
NEW SOURCE REVIEW PERMIT NO. R13-3065B**

**SUBMITTED BY:**

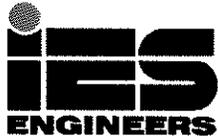
**ELEMENTIS SPECIALTIES, INC.  
MARSHALL COUNTY, WEST VIRGINIA**

**SUBMITTED TO:**

**DIVISION OF AIR QUALITY  
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
CHARLESTON, WEST VIRGINIA**

**SEPTEMBER 2016**

**IES PROJECT NO. EV160994.01**



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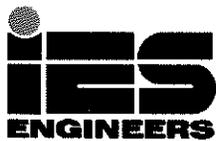
## TABLE OF CONTENTS

Project Background 1

New Source Review Permit Application Form

### ATTACHMENTS

Attachment A	Certificate of Registration
Attachment B	Map
Attachment C	Schedule of Installation and Start-up
Attachment D	Regulatory Applicability
Attachment E	Plot Plan
Attachment F	Detailed Process Flow Diagram
Attachment G	Process Description
Attachment H	Safety Data Sheets
Attachment I	Emission Units Table
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Attachment K	Fugitive Emissions Data Summary Sheet
Attachment L	Emission Units Data Sheet
Attachment M	Air Pollution Control Device Sheets
Attachment N	Emission Calculations
Attachment O	Monitoring, Recording, and Testing Plans
Attachment P	Public Notice / Affidavit of Publication
Attachment Q	Business Confidential Claims



## PROJECT BACKGROUND

Elementis Specialties, Inc. (Elementis) conducts a batch-type, multi-product specialty chemical manufacturing operation at its facility located in New Martinsville, Marshall County, West Virginia. The operation is covered under a valid air permit, No. R13-3065B, issued by the West Virginia Department of Environmental Protection (the Department), dated February 1, 2016. Elementis operates the facility under SIC Code 2869 and NAICS Code 325199.

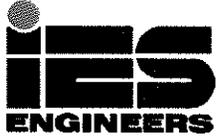
This operation is located in an existing facility previously occupied by Bayer Material Science (Bayer) in the New Martinsville Industrial Park on State Route 2 North. Elementis leases this site from Bayer, which is responsible for providing all of the utilities to Elementis under a landlord-tenant agreement. The air quality permits currently held by Bayer will not be transferred to Elementis.

Elementis installed Phase I new process equipment at this facility in 2012 to produce a family of rheological products under Permit Applicability No. PD12-068, dated August 8, 2012. Elementis installed the Phase II process equipment, pursuant to Permit No. R13-3065, which was issued by the Department on May 5, 2014. The Phase II equipment produces HASE (a proprietary Hydrophobically-modified Alkali Swellable Emulsion) and Dispersant products. Elementis submitted a Class II Administrative Update in August 19, 2014, to add several additional equipment items that it obtained from Bayer to its operations, collectively referred to as West Side Equipment, also referred to as Phase III equipment. The Department issued R13-3065A on October 14, 2014, to incorporate the Phase III equipment into the air permit.

Elementis submitted a Class II Administrative Update in November 2015 to add new equipment items/emission units (Phase IV equipment) to the permit. The Class II Administrative Update of November 2015 also included a request for approval to change a chemical substance stored in tank T-242 from acrylic acid to vinyl acetate, and to allow operational flexibility to change product recipes as long as emissions are maintained within the existing permit limits. The Department issued R13-3065B on February 1, 2016, to incorporate the Phase IV equipment into the air permit, and approved the requested changes to the chemical inventory and product recipes.

In the enclosed application, Elementis is requesting a Class II Administrative Update to add seven new process and finished product storage tanks to the permit in order to expand its Dispersant operations. The addition of these tanks will be conducted in two stages over the next year. In mid-October 2016, Elementis will install the new dispersant separation tank (T-570), which will be used for settling and phase separation after the ammonium hydroxide neutralization in existing tank T-241. Commissioning of Tank T-570 is targeted for December 2016. In August 2017, Elementis will install two new recycle toluene tanks (T-580 and T-581) and four finished product storage tanks (T-590, T-591, T-592, and T-593).

Since the emission increases from this project will be less than 6 lb/hr and 10 tpy of VOC and 2 lb/hr and 5 tpy of HAPs, a permit modification is not required. Therefore, the project can be permitted through a Class II Administrative Update.



**NEW SOURCE REVIEW PERMIT APPLICATION FORM**



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**

601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0475  
[www.dep.wv.gov/dag](http://www.dep.wv.gov/dag)

**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):

Elementis Specialties, Inc.

2. Federal Employer ID No. (FEIN):

05-0495836

3. Name of facility (if different from above):

New Martinsville Facility

4. The applicant is the:

- OWNER     OPERATOR     BOTH

5A. Applicant's mailing address:

17595 Energy Road  
Proctor, WV 26055

5B. Facility's present physical address:

17595 Energy Road  
Proctor, WV 26055

6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia?     YES     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: N/A

8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site?     YES     NO

⇒ If YES, please explain: Elementis Specialties, Inc. (Elementis) operates a specialty chemical manufacturing facility in Marshall County, WV, few miles north of New Martinsville. The operation is located in an existing facility previously occupied by Bayer Material Science (Bayer) in the New Martinsville Industrial Park on State Route 2 North. Elementis is leasing this site from Bayer.

⇒ 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.): Specialty chemical manufacturing operations facility

10. North American Industry Classification System (NAICS) code for the facility:

325199

11A. DAQ Plant ID No. (for existing facilities only):

051-00159

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):

R13-3065B

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

<p>12A.</p> <p>⇒ For <b>Modifications, Administrative Updates or Temporary permits</b> at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</p> <p>⇒ For <b>Construction or Relocation permits</b>, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a <b>MAP as Attachment B</b>.</p> <p>I-77 North. Exit 179. Right on to Route 2 North for 33 miles. Left onto Elizabeth Street. Right onto Route 2 North (Wells Street) for 6.6 miles.</p>		
12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
17595 Energy Road, Proctor, WV, 26055	New Martinsville	Marshall
12.E. UTM Northing (KM): 4397.33880	12F. UTM Easting (KM): 514.59346	12G. UTM Zone: 17
<p>13. Briefly describe the proposed change(s) at the facility: Elementis Specialties, Inc. (Elementis) operates a specialty chemical manufacturing facility in Marshall County, WV. Elementis produces a family of HASE and Dispersant products, and emits minor quantities of VOCs and HAPs. The proposed application is a Class II Administrative update to add new process equipment to the existing inventory.</p>		
14A. Provide the date of anticipated installation or change: 10 / 16 / 2016	14B. Date of anticipated Start-Up if a permit is granted:	
⇒ If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen: / /	12 / 01 / 2016	
<p>14C. Provide a <b>Schedule</b> of the planned <b>Installation of/Change to and Start-Up</b> of each of the units proposed in this permit application as <b>Attachment C</b> (if more than one unit is involved).</p>		
<p>15. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application:</p> <p>Hours Per Day 24      Days Per Week 7      Weeks Per Year 52</p>		
<p>16. Is demolition or physical renovation at an existing facility involved?    <input type="checkbox"/> YES    <input checked="" type="checkbox"/> NO</p>		
<p>17. <b>Risk Management Plans.</b> If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see <a href="http://www.epa.gov/ceppo">www.epa.gov/ceppo</a>), submit your <b>Risk Management Plan (RMP)</b> to U. S. EPA Region III.</p>		
<p>18. <b>Regulatory Discussion.</b> List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). 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 (<i>if known</i>). Provide this information as <b>Attachment D</b>.</p>		

### **Section II. Additional attachments and supporting documents.**

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).
20. Include a <b>Table of Contents</b> as the first page of your application package.
21. Provide a <b>Plot Plan</b> , 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 <b>Attachment E</b> (Refer to <b>Plot Plan Guidance</b> ).
⇒ Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).
22. Provide a <b>Detailed Process Flow Diagram(s)</b> showing each proposed or modified emissions unit, emission point and control device as <b>Attachment F</b> .
23. Provide a <b>Process Description</b> as <b>Attachment G</b> .
⇒ Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).
<b>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</b>

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 checked="" 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 checked="" type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	
<input type="checkbox"/> General Emission Unit, specify		

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 Elementis is not proposing to install any air pollution control devices at the facility. An odor scrubber has been installed at the facility, but is not used for emission control and therefore is not an Air Pollution Control Device.

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.*

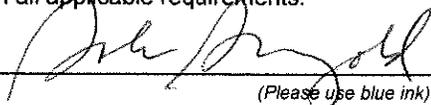
35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

**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: 9/19/2016  
(Please use blue ink) (Please use blue ink)

35B. Printed name of signee: Robert Mangold 35C. Title: Vice President  
Global Supply Chain & Manufacturing

35D. E-mail: Robert.Mangold@elementis.com 36E. Phone: (609) 443-2591 36F. FAX: (609) 443-2091

36A. Printed name of contact person (if different from above): Todd Patterson 36B. Title:  
Global Director, EHS & Process Safety

36C. E-mail: Todd.Patterson@elementis.com 36D. Phone: (609)443-2332 36E. FAX: (609)443-2482

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate               | <input checked="" 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 checked="" 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 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**  
**CERTIFICATE OF REGISTRATION**

**DIRECT PAY PERMIT**

PERMIT NUMBER 94-2-004525 EFFECTIVE May 12, 2006

05-049-5836-001

ELEMENTS SPECIALTIES INC  
1003 MACCORKLE AVE SW  
CHARLESTON WV 25303-1323

THIS DIRECT PAY PERMIT IS TO BE USED FOR PURCHASES MADE FROM THE VENDORS AS SPECIFIED IN THE APPLICATION TO THE DEPARTMENT OF TAX AND REVENUE. USE OF THIS PERMIT BY ANYONE OTHER THAN THE NAMED TAXPAYER IS PROHIBITED. THIS NUMBER SHOULD BE RECORDED BY THE VENDOR ON ALL APPLICABLE INVOICES. FOR ADDITIONAL INFORMATION SEE BACK OF PERMIT.

THIS IS YOUR PERMANENT NUMBER AND IS IN EFFECT UNTIL YOU SURRENDER YOUR PERMIT OR IT IS OTHERWISE CANCELLED.

This permit may not be used to purchase gasoline or special fuels.

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

ISSUED TO:  
**ELEMENTIS SPECIALTIES INC  
469 OLD TRENTON RD  
EAST WINDSOR, NJ 08512-5601**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 1006-6971**

This certificate is issued on: **06/28/2012**

*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.**

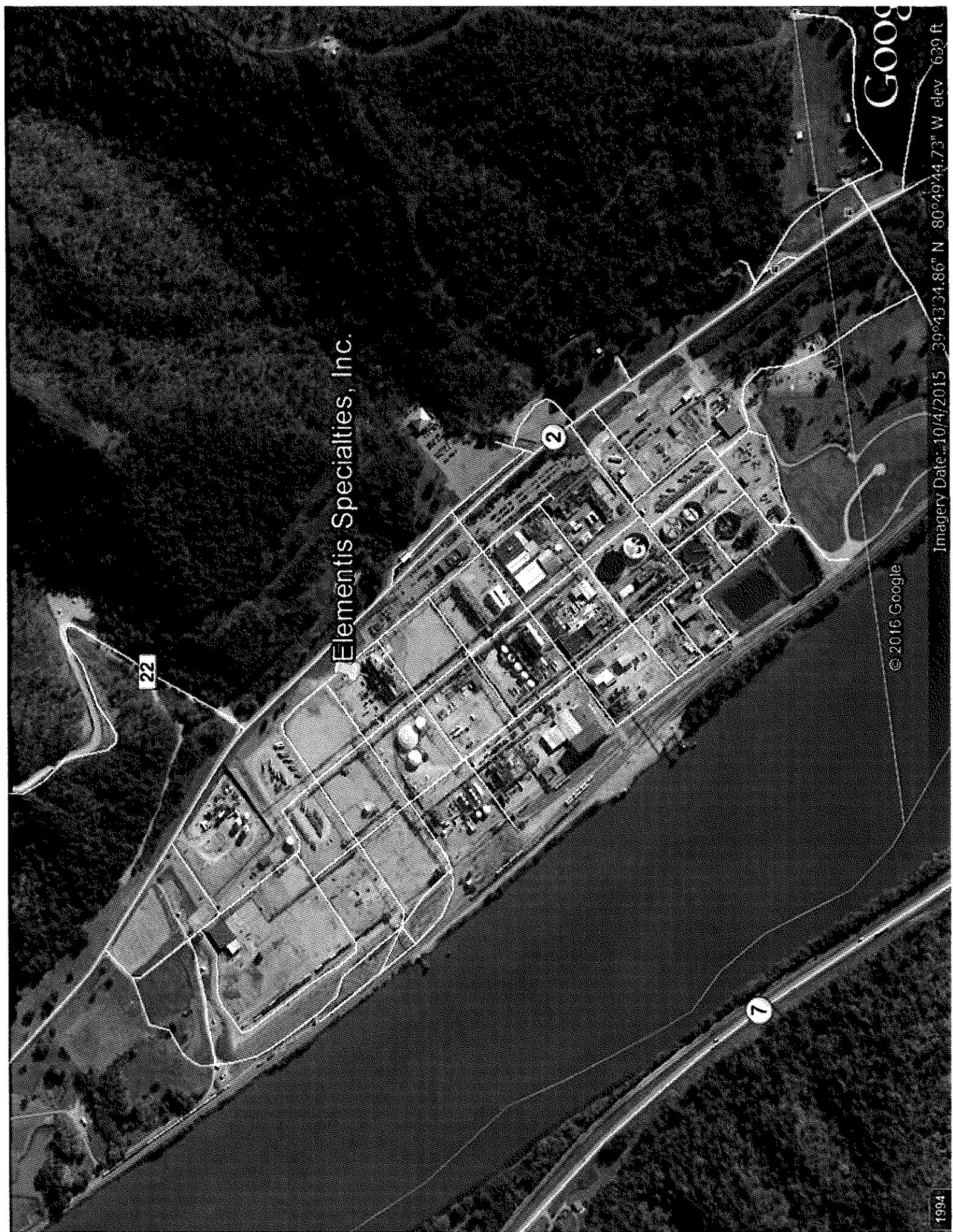
**Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.**

**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**

**MAP**



Elementis Specialties, Inc.

Google

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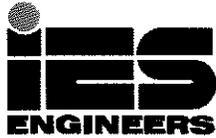
© 2016 Google

Imagery Date: 10/4/2015 39°43'34.86" N 80°49'44.73" W elev 639 ft

1994

**ATTACHMENT C**

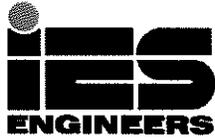
**SCHEDULE OF INSTALLATION AND START-UP**



ATTACHMENT C  
SCHEDULE OF INSTALLATION AND START-UP

Elementis would like to commence installation of the separation tank by October 16, 2016, (immediately upon issuance of the updated permit), with commissioning by December 1, 2016. Installation of the recycle and finished product storage tanks will be completed between January and July 2017, followed by commissioning and start-up in August 2017.

**ATTACHMENT D**  
**REGULATORY APPLICABILITY**



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## ATTACHMENT D REGULATORY APPLICABILITY

Attachment D of the April 5, 2013, permit application presented a detailed evaluation of the applicability of federal and West Virginia air quality regulations.

### FEDERAL REGULATIONS

- 1) New Source Performance Standards (NSPS)
- 2) National Emission Standards for Hazardous Air Pollutants (NESHAP)
- 3) Maximum Achievable Control Technology (MACT) and Generally Available Control Technology (GACT) for Source Categories
- 4) Prevention of Significant Deterioration (PSD)/Nonattainment New Source Review (NNSR)

### New Source Performance Standards

The following NSPS regulations were evaluated in the original permit application and shown not to apply to the Elementis facility. They have been re-evaluated with respect to their applicability to the current expansion project and their non-applicability has been reconfirmed.

Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

Subpart K-b - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

Subpart DDD - Standards of Performance for VOC Emissions from the Polymer Manufacturing Industry

Subpart RRR - Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006



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Subpart NNN - Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

Subpart RRR - Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

The addition of the new tanks will not trigger any of these NSPS regulations.

National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 61

The Part 61 NESHAP regulations apply to the following compounds: asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride. The regulations list emission limits, operating parameters, and other requirements that must be followed for specifically listed source types that emit regulated HAPs. NESHAP regulations do not apply to this project because the proposed changes will not emit any of these air contaminants.

Maximum Achievable Control Technology (MACT) and Generally Available Control Technology (GACT) Standards

The following MACT regulations were evaluated in the original permit application and shown not to apply to the Elementis facility. They have been re-evaluated with respect to their applicability to the current expansion project and their non-applicability has been confirmed.

Subpart DDDDDD – National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production Area Sources

40 CFR 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers: Area Sources

Subpart VVVVVV – National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources

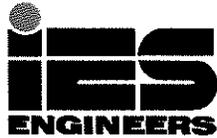
Subpart BBBBBBBB – National Emission Standards for Hazardous Air Pollutants for Area Sources: Chemical Preparations Industry

Subpart CCCCCC – National Emission Standards for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing

Subpart H - National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks

Subpart TT - National Emission Standards for Equipment Leaks-Control Level 1

Subpart UU - National Emission Standards for Equipment Leaks-Control Level 2



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The proposed changes will produce chemicals already included in previous permit applications. However, the new tanks will not trigger any new MACT requirements.

#### Prevention of Significant Deterioration of Air Quality (PSD)

The purpose of the PSD rules is to maintain air quality in areas that are meeting the National Ambient Air Quality Standards. Marshall County is an attainment area for all criteria pollutants – VOC, NO<sub>2</sub>, CO, SO<sub>2</sub>, and PM<sub>10</sub>. The Chemical Process Plant category, which includes Elementis' operations, is one of the 28 listed source categories for which the major source threshold is 100 ton/yr. Since the potential emissions of PSD-regulated pollutants is well below this threshold and since the addition of the new tanks will not increase the facility's potential emissions above this threshold, the PSD rules will not apply.

#### Nonattainment New Source Review (NNSR)

The NNSR regulations apply in nonattainment areas, i.e., areas that are not meeting the National Ambient Air Quality Standards (NAAQS) for one or more air contaminants. The purpose of the NNSR regulations is to allow for industrial and economic growth in nonattainment areas while progressing toward the attainment of NAAQS. Marshall County is an attainment area for all criteria pollutants. Therefore, the NNSR rules will not apply.

#### Mandatory Greenhouse Gas Reporting Rule

On October 30, 2009, EPA promulgated the final greenhouse gas (GHG) reporting rule (40 CFR Part 98). Facilities meeting both of the following conditions are required to submit annual reports of CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> emissions to EPA:

- The rated heat input to all stationary fuel combustion equipment (including boilers and thermal oxidizers, but not emergency equipment), exceeds 30 MMBTU/hour; and
- The actual GHG emissions exceed 25,000 metric tons per year, as CO<sub>2</sub> equivalent.

Neither the equipment installed under existing Phases I, II, III, and IV nor do the proposed new tanks include any combustion sources. Therefore, this rule will not apply.

#### Greenhouse Gas Emission Tailoring Rule

On June 3, 2010, EPA promulgated its final rule addressing criteria for applying GHG requirements to major air quality permit programs such as the PSD and Title V Operating Permit programs. West Virginia has incorporated requirements for permitting sources of greenhouse gas emissions into 45CSR14. The Greenhouse Gas permitting requirements/Tailoring Rule do not apply to this application because the facility is not a major source and the new tanks will not result in the requisite increase in greenhouse gas emissions.



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## WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION REGULATIONS

The applicability of the West Virginia regulations is discussed below:

Series 002, Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers – The proposed new equipment does not include any fuel combustion in indirect heat exchangers.

Series 004, To Prevent and Control the Discharge of Air Pollutants into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors – Because of the low VOC emission rates, the closed nature of the process equipment, and the incorporation of an odor scrubber, objectionable odors beyond the property line are not expected.

Series 007, To Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations – This regulation addresses the emission of smoke, particulate matter, visible emissions, and fugitive particulate emissions. Since the new tanks equipment will not emit liquid raw materials in aerosol form, no particulate emissions are expected.

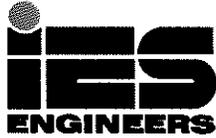
Series 010, To Prevent and Control Air Pollutions from the Emission of Sulfur Oxides – The proposed new equipment will not combust any fuels, so no sulfur oxide emissions are expected.

Series 011, Prevention of Air Pollution Emergency Episodes – Even after the addition of the new tanks and considering the proposed changes in this application, the facility will emit well below 100 tons per year of all pollutants. Therefore, no pre-planned reduction strategy is required.

Series 013, Permits for Construction, Modification, Relocation Updates, Temporary Permits, General Permits, and Procedures for Evaluation – Pursuant to §45-13-2.17, Elementis obtained a New Source Review permit for the Phase I, Phase II, Phase III, and Phase IV projects at the New Martinsville facility. This application is for a Class II Administrative Update to the existing permit pursuant to §45-13-4.2.(b.1) because the addition of the new tanks will not result in more than a threshold increase in the emissions of any existing regulated air pollutant or any new regulated air pollutant.

Series 016, Standards of Performance for New Stationary Sources – WV DEP adopts and incorporates by reference the federal New Source Performance Standards (NSPS) promulgated by the U.S. EPA. As discussed above, the facility is not subject to any NSPS rules.

Series 017, To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter – The new tanks will not involve any materials handling, preparation, storage, or other operations that may generate fugitive emissions of particulate matter subject to the regulations.



Series 021, Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds – This regulation imposes Reasonably Available Control Technology (RACT) requirements to certain source categories in Putnam, Kanawha, Cabell, Wayne, and Wood Counties. The Elementis facility is located in Marshall County, so it is not subject to this regulation.

Series 022, Air Quality Management Fee Program – We will pay the required and applicable fees associated with this application.

Series 027, To Prevent and Control the Emissions of Toxic Air Pollutants – This regulation requires the implementation of Best Available Technology (BAT) for sources emitting one or more listed toxic air pollutants. The new tanks equipment will not be processing or emitting any of the Toxic Air Pollutants listed in §45-27-2.10.

Series 028, Air Pollutant Emission Banking and Trading – Elementis is not applying to participate in the emissions credit trading program.

Series 029, Rule Requiring the Submission of Emission Statements for Volatile Organic Compound Emissions and Oxides of Nitrogen Emissions – The Elementis facility is not required to submit emission statements because it is located in Marshall County (not one of the counties listed in §45-29-1.1) and because VOC emissions will be less than 25 tons per year.

Series 030, Requirements for Operating Permits – Elementis will not be required to obtain an operating permit because (i) it is not a major source, (ii) is not subject to Section 111 or 112 of the Clean Air Act, and (iii) is not an affected facility subject to Title IV of the Clean Air Act (Acid Deposition Control).

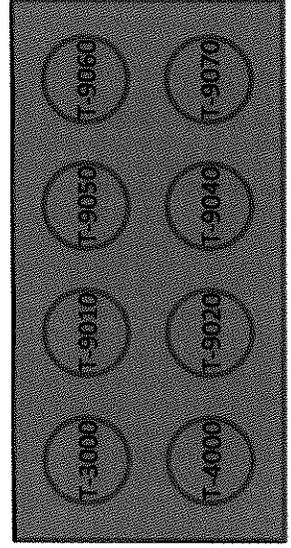
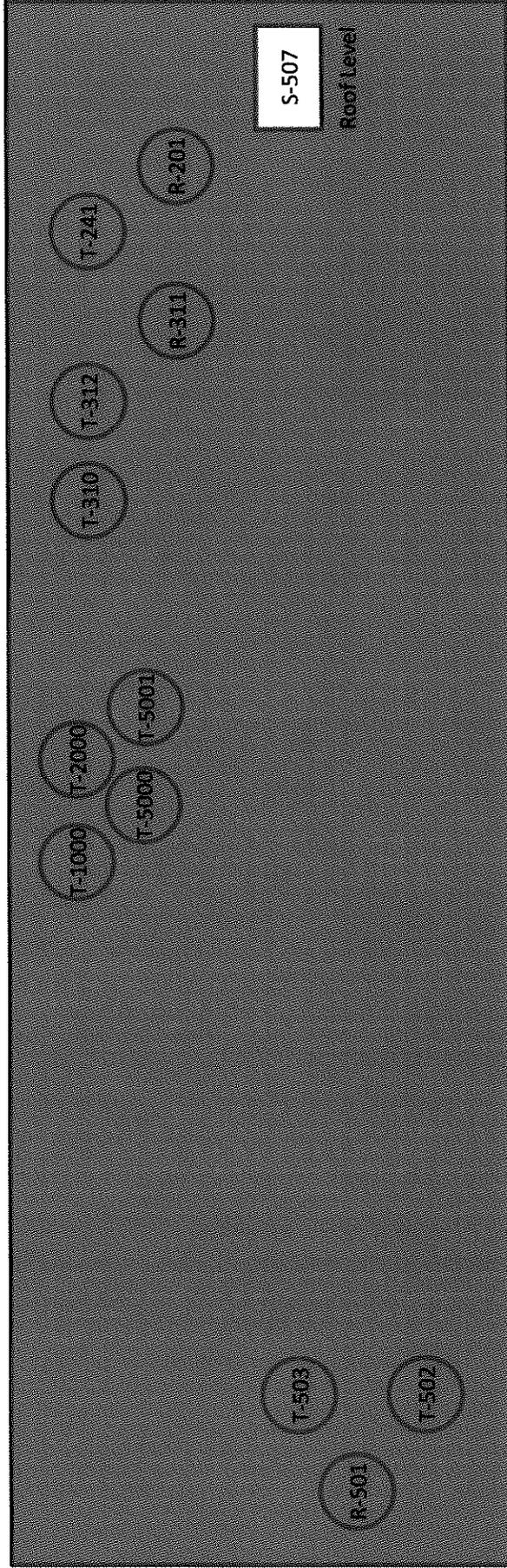
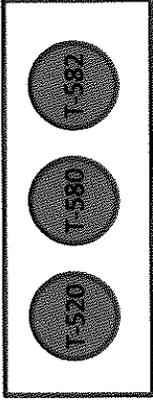
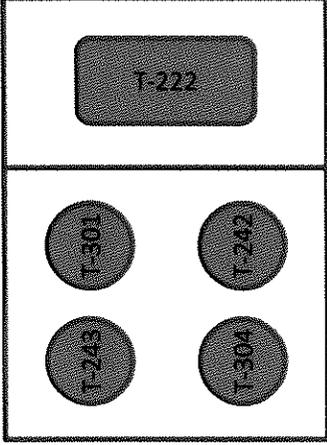
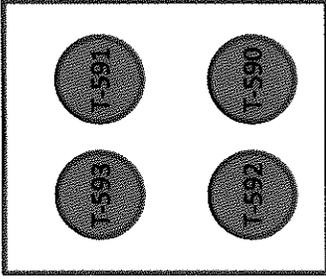
Series 031, Confidential Information -- We are submitting information in this application subject to the confidentiality provisions of §45-31.

Series 034, Emission Standards for Hazardous Air Pollutants – WV DEP adopts and incorporates by reference the National Emission Standards for Hazardous Air Pollutants (NESHAP) promulgated by the EPA. As discussed above, the facility is not subject to any NESHAP rules.

**ATTACHMENT E**

**PLOT PLAN**

# Elementis Specialties New Martinsville WV Tanks



**ATTACHMENT F**  
**DETAILED PROCESS FLOW DIAGRAM**



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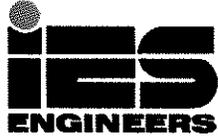
## ATTACHMENT F

### DETAILED PROCESS FLOW DIAGRAM

REDACTED COPY – CLAIM OF CONFIDENTIALITY

The process flow diagrams are proprietary information that has been deleted from the publicly available version of this application but provided to the Department in a separate CONFIDENTIAL submittal.

**ATTACHMENT G**  
**PROCESS DESCRIPTION**



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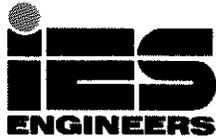
## ATTACHMENT G

### PROCESS DESCRIPTION

REDACTED COPY – CLAIM OF CONFIDENTIALITY

**The process description contains proprietary process information that has been deleted from the publicly available version of this application but provided to the Department in a separate CONFIDENTIAL submittal.**

**ATTACHMENT H**  
**SAFETY DATA SHEETS**



ATTACHMENT H  
SAFETY DATA SHEETS

Please see the April 2013 application, which is incorporated by reference, for Material Safety Data Sheets.

The Safety Data Sheets for the following chemicals, which were not included in previous application, are attached:

- Ammonium Hydroxide
- Nuospense<sup>®</sup> FX 600
- Molten Maleic Anhydride
- Naxcat<sup>®</sup> pTSA-97
- Nuospense<sup>®</sup> FX 631
- Nuospense<sup>®</sup> FX 665
- Trigonox 21S

MSDS Number: A5916 \* \* \* \* \* Effective Date: 08/23/04 \* \* \* \* \* Supercedes: 07/06/04

**MSDS** **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 800-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# AMMONIUM HYDROXIDE (10 - 35% NH3)

## 1. Product Identification

**Synonyms:** Ammonium hydroxide solutions; ammonia aqueous; ammonia solutions

**CAS No.:** 1336-21-6

**Molecular Weight:** 35.05

**Chemical Formula:** NH<sub>4</sub>OH in H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 4807, 5204, 5224, 5350, 5358, 5604, 5817, 5820, 5851, 5852, 5891, 5893, 5993, 7847, 9718, 9719, 9721, 9730, 9731, 9733, 9741, 9742

Mallinckrodt: 0124, 0127, 1177, 3248, 3256, 5318, 6665, H010, H893, H894, V592, V649, V893, XL002, XM-187, XM-189

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Hydroxide	1336-21-6	21 - 72%	Yes
Water	7732-18-5	28 - 79%	No
Contains between 10 and 35% ammonia.			

### 3. Hazards Identification

#### Emergency Overview

---

**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.**

**SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)**

---

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;  
PROPER GLOVES

Storage Color Code: White Stripe (Store Separately)

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#### Potential Health Effects

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##### Inhalation:

Vapors and mists cause irritation to the respiratory tract. Higher concentrations can cause burns, pulmonary edema and death. Brief exposure to 5000 ppm can be fatal.

##### Ingestion:

Toxic! May cause corrosion to the esophagus and stomach with perforation and peritonitis. Symptoms may include pain in the mouth, chest, and abdomen, with coughing, vomiting and collapse. Ingestion of as little as 3-4 mL may be fatal.

##### Skin Contact:

Causes irritation and burns to the skin.

##### Eye Contact:

Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

##### Chronic Exposure:

Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing eye disorders or impaired respiratory function may be more susceptible to the effects of this material.

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### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

#### Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

**Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately. Immediate action is critical to minimize possibility of blindness.

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## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature: 651C (1204F)

Flammable limits in air % by volume:

lfl: 16; uel: 25

**Explosion:**

Flammable vapors may accumulate in confined spaces.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRACIT®-2 or BuCAIM® caustic neutralizers are recommended for spills of this product.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Store below 25C. Protect from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

50 ppm (NH<sub>3</sub>)

-ACGIH Threshold Limit Value (TLV):

25 ppm (NH<sub>3</sub>) (TWA) 35 ppm (STEL)

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an ammonia/methylamine cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials. Polyvinyl alcohol is not recommended.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Physical and Chemical Properties

### **Appearance:**

Clear, colorless solution.

### **Odor:**

Ammonia odor.

### **Solubility:**

Infinitely soluble.

### **Specific Gravity:**

0.9 (28% NH<sub>4</sub>OH)

### **pH:**

13.8 (29% solution).

**% Volatiles by volume @ 21C (70F):**

No information found.

**Boiling Point:**

ca. 36C (ca. 97F)

**Melting Point:**

-72C (-98F)

**Vapor Density (Air=1):**

0.60 NH3

**Vapor Pressure (mm Hg):**

115 @ 20C for 10% solution; 580 @ 20C for 28% solution.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, acrolein, dimethyl sulfate, halogens, silver nitrate, propylene oxide, nitromethane, silver oxide, silver permanganate, oleum, beta-propiolactone. Most common metals.

**Conditions to Avoid:**

Heat, sunlight, incompatibles, sources of ignition.

## 11. Toxicological Information

For ammonium hydroxide:

oral rat LD50: 350 mg/kg; eye, rabbit, standard Draize, 250 ug; severe, investigated as a mutagen.

For ammonia:

inhalation rat LC50: 2000 ppm/4-hr; investigated as a tumorigen, mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Hydroxide (1336-21-6)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

### Environmental Fate:

This material is not expected to significantly bioaccumulate.

### Environmental Toxicity:

24 Hr LC50 rainbow trout: 0.008 mg/L;

96 Hr LC50 fathead minnow: 8.2 mg/L;

48 Hr LC50 bluegill: 0.024 mg/L;

48 Hr EC50 water flea: 0.66 mg/L

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)

**Hazard Class:** 8

**UN/NA:** UN2672

**Packing Group:** III

**Information reported for product/size:** 385LB

### International (Water, I.M.O.)

**Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)

**Hazard Class:** 8

**UN/NA:** UN2672

**Packing Group:** III

**Information reported for product/size:** 385LB

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia

Ammonium Hydroxide (1336-21-6)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Ammonium Hydroxide (1336-21-6)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Ammonium Hydroxide (1336-21-6)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Ammonium Hydroxide (1336-21-6)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Mixture / Liquid)

**Australian Hazchem Code: 2P**

**Poison Schedule: S6**

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not

breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. IMMEDIATE ACTION IS ESSENTIAL FOR EYE EXPOSURES. In all cases call a physician immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 9, 12.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

Revision date: 30-Apr-2012

Supersedes: 01-Jul-2009

MSDS Number: 12010

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

**Product name:** NUOSPERSE® FX 600

**Product Use Description:** Dispersing agent

<b>Company/Undertaking Identification:</b>	Elementis Specialties, Inc.	Elementis UK Ltd.
	469 Old Trenton Road	c/o Elementis GmbH
	East Windsor, NJ 08512	Stolberger Str. 370
	USA	50933 Cologne, Germany
	Tel: (609) 443-2000	Tel. +49 (0) 221 2923 2000

**Emergency telephone number:** For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at: 1-800-424-9300 or 1-703-527-3887

For ALL other inquiries about this product, call Elementis Specialties at: 1-609-443-2000 (USA) or +(49)-221-2923-2000 (EU)

Product\_Stewardship@elementis.com

**2. HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

<b>Appearance:</b>	Viscous, Liquid
<b>Color:</b>	Clear to Slightly Hazy, Yellow
<b>Odor:</b>	Nearly odorless

**WARNING**

May be harmful if swallowed  
 May cause slight eye irritation  
 May cause irritation of respiratory tract

**Potential health effects:**

<b>Eye contact:</b>	May cause slight eye irritation. Signs and symptoms include burning, tearing, redness and swelling.
<b>Skin contact:</b>	Non-irritating to the skin.
<b>Inhalation:</b>	May cause irritation of respiratory tract.

<b>Ingestion:</b>	May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
<b>Routes of exposure:</b>	Inhalation, Skin, Ingestion
<b>Target Organs:</b>	None

See Sections 11 & 12 for additional toxicological and ecological information

**Environmental hazard:** See Section 12, below

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

While this material is not classified as hazardous under OSHA regulations, this MSDS contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and available for employees and other users of this product.

### 4. FIRST AID MEASURES

<b>Inhalation:</b>	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen.
<b>Skin contact:</b>	Wash off immediately with soap and plenty of water. If a person feels unwell or symptoms of skin irritation appear, consult a physician.
<b>Eye contact:</b>	Rinse immediately with plenty of water, also under the eyelids. If eye irritation persists, consult a specialist.
<b>Ingestion:</b>	If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

### 5. FIRE-FIGHTING MEASURES

<b>Flash Point:</b>	Not applicable
<b>Autoignition temperature:</b>	Not selfigniting
<b>Unusual Fire and Explosion Hazards:</b>	Emits toxic fumes under fire conditions.
<b>Reactivity Hazard:</b>	None known
<b>Suitable extinguishing media:</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
<b>Hazardous combustion products:</b>	Carbon monoxide, Carbon dioxide (CO <sub>2</sub> ).
<b>Decomposition temperature:</b>	> 212 °F / > 100 °C
<b>Special Fire Fighting Procedure:</b>	Wear self contained breathing apparatus for fire fighting if necessary

## 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions:** Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment.
- Environmental precautions:** Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.
- Clean-up methods:** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

## 7. HANDLING AND STORAGE

- Handling:** Avoid contact with skin, eyes and clothing. Avoid breathing mists, dusts, or vapors. Wash hands thoroughly after handling.
- Storage:** DO NOT FREEZE. Keep container tightly closed. Store at room temperature in the original container.
- Additional Storage:** Not required under normal use

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Engineering measures:** Use adequate local exhaust ventilation if airborne dusts, mists, or vapors will be generated. Use NIOSH/MSHA approved respirator whenever exposure limits exceeded.

### Personal Protective Equipment

- Eye protection:** Safety glasses, Tightly fitting safety goggles
- Skin and body protection:** Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Respiratory protection:** In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
- Hand protection:** Protective gloves, Neoprene gloves
- Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice..

### Exposure controls

- TLV/PEL:** Not established

## 9. PHYSICAL AND CHEMICAL PROPERTIES

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Viscous, Liquid
Color:	Clear to Slightly Hazy, Yellow
Odor:	Nearly odorless
Physical state:	Liquid
pH:	8.5 - 9.5 @ 20 °C (ASTM D1172)
Vapor pressure:	17 mm Hg @ 68 °F 23.0 hPa @ 20 °C
Vapor density:	< 1.0
Boiling point/range:	> 212 °F / > 100 °C
Freezing point:	0 °C
Melting point/range:	~36 °F / ~2 °C (DGF-C-IV-3A)
Solubility:	Water Soluble
Density:	1.045 g/cm <sup>3</sup> (ISO 2811-2)
Flash Point:	Not applicable
Decomposition temperature:	> 212 °F / > 100 °C
Ignition temperature:	752 °F / 400 °C
Viscosity:	< 1600 mPas
<u>Solvent content:</u>	
Water content:	75 %
Partition coefficient (n-octanol/water):	< -2 log POW (OECD 107)

## 10. STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions..
Conditions to avoid:	Heat, flames and sparks
Materials to avoid:	Oxidizing agents
Hazardous decomposition products:	No decomposition if stored normally
Possibility of Hazardous Reactions:	None known

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

**Product Information:** See below  
**LD50/Oral/Rat:** > 2000 mg/kg (rat)

### Local effects

**Skin irritation:** Non-irritating to the skin.  
**Eye irritation:** Contact with eyes may cause irritation.  
**Inhalation:** May cause irritation of respiratory tract.  
**Ingestion:** May be harmful if swallowed, avoid ingestion. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.  
**Sensitization:** No sensitizing effects known.  
**Chronic toxicity:** No data is available on the product itself

### Specific effects

**Carcinogenic effects:** No classification data on the carcinogenic properties of this material is available from the IARC, NTP or OSHA  
**Mutagenic effects:** Not mutagenic in Ames Test.  
**Target Organs:** None

## 12. ECOLOGICAL INFORMATION

### Aquatic toxicity:

**Product Information:** No data available  
**Persistence and degradability:** No data available

### Environmental Fate and Pathways:

**Mobility:** No data available  
**Biodegradability:** No data available  
**Bioaccumulative potential:** No data available  
**Physical / Chemical:** No data available

**BOD/COD:**

COD-value: No data available

BOD5-value: No data available

**13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products:** Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of in accordance with Local and National regulations.

**RCRA Hazardous Waste:**

RCRA: Not listed

**14. TRANSPORT INFORMATION**

**U.S. Department of Transportation Ground (49 CFR):**

Proper shipping name: Not regulated

**International Air Transportation (ICAO/IATA):**

Proper shipping name: Not regulated

**International Maritime Organization (IMO/IMDG):**

Proper shipping name: Not regulated

**Surface Shipments in Europe (ADR/RID):**

Proper shipping name: Not regulated

**15. REGULATORY INFORMATION**

**Heavy metals:**

Heavy metals content (ppm): Not applicable

**International Inventories**

TSCA/ (USA)	Listed	EINECS/ (EU)	Listed
DSL/ (CANADA)	Listed	NDSL/ (CANADA)	Not applicable
ENCS/ (JAPAN)	Listed	IECSC/ (CHINA)	Listed
PICCS/ (PHILLIPINES)	Listed	KECL (KOREA)	Listed
AICS/ (AUSTRALIA)	Listed	HSNO/ New Zealand:	Listed
NECSI/ (TAIWAN)	Listed		

**U.S. Regulations****TSCA Section 12(b) Export Notification**

This product does not contain chemicals that are required to be notified under the TSCA 12(b) Export Notification.

**SARA Title III:**

<b>Section 302 EHS:</b>	None	<b>Section 311/312:</b>	Acute Health Hazard
<b>Section 313:</b>	Not listed		

**California Prop. 65:**  
Not listed

**Canada**

**WHMIS hazard class:** Non-controlled

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. OTHER INFORMATION****HMIS:**

Health:	1
Flammability:	0
Reactivity:	0

**This Material Safety Data Sheet** 1 - 15  
**contains changes from the**  
**previous version in Sections:**

**Previous Revision Date:** 01-Jul-2009

**Key/Legend:**

N/A: Not applicable

N/D: Not determined

ppm: Parts per million

X: Listed

**Prepared by:**

Product Stewardship

The data set forth in these sheets are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. ELEMENTIS SPECIALTIES makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereon. ELEMENTIS SPECIALTIES warrants only that its products conform with their published specifications, and no other express warranty is made with regards thereof. We do not guarantee favorable results, and we assume no liability in connection with the use of the products. They are intended for use by persons having technical skill and knowledge, at their own discretion and risk.

MALEIC ANHYDRIDE MOLTEN  
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**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

Ashland	Regulatory Information Number	1-800-325-3751
P.O. Box 2219	Telephone	614-790-3333
Columbus, OH 43216	Emergency telephone number	1-800-ASHLAND (1-800-274-5263)

Product name                      MALEIC ANHYDRIDE MOLTEN

Product code                      30014

Product Use Description        No data

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

Appearance: liquid, clear

DANGER! VAPOR MAY CAUSE TEMPORARY BLURRING OF VISION. MAY BE HARMFUL. MAY CAUSE SEVERE BURNS OF RESPIRATORY AND DIGESTIVE TRACTS. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. CAUSES SEVERE EYE BURNS. CONTACT WITH HOT PRODUCT WILL CAUSE THERMAL BURNS.

**Potential Health Effects**

**Exposure routes**

Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

**Eye contact**

Molten material causes thermal burns. Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness. Additional symptoms of eye exposure may include: halo vision (blurred vision around bright objects) painful sensitivity of eyes to light double vision

**Skin contact**

Molten material causes thermal burns. Can cause permanent skin damage. Symptoms may include redness, burning, and swelling of skin, burns, and other skin damage. May cause allergic skin reaction.

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**Ingestion**

Molten material causes thermal burns. Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.

**Inhalation**

It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.). May cause allergic respiratory reaction.

**Aggravated Medical Condition**

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material:, Upper respiratory tract, Skin, lung (for example, asthma-like conditions), Kidney

**Symptoms**

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:, stomach or intestinal upset (nausea, vomiting, diarrhea), Nose bleeding, Cough, sneezing, Headache, loss of appetite, Weakness, allergic reaction (causes narrowing of the air passages of the lungs, sweating, flushing, hives, rapid heart rate, and lowered blood pressure), lung edema (fluid buildup in the lung tissue)

**Target Organs**

Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals:, mild, reversible liver effects, respiratory tract damage (nose, throat, and airways), kidney damage, lung damage, Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans:, chronic bronchitis, asthma, respiratory tract damage (nose, throat, and airways)

**Carcinogenicity**

Based on the available information, this material cannot be classified with regard to carcinogenicity. This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

**Reproductive hazard**

Based on the available information, risk to the fetus from maternal exposure to this material cannot be assessed.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Hazardous Components</b>	<b>CAS-No.</b>	<b>Concentration</b>
MALEIC ANHYDRIDE	108-31-6	<=100%

### 4. FIRST AID MEASURES

#### **Eyes**

If eye contact with molten material occurs, hold eyelids apart and flush eyes gently with cool water. Seek immediate medical attention.

#### **Skin**

If skin contact with molten material occurs, flush exposed area with cool water. Do not forcibly remove material adhering to the skin. Seek immediate medical attention.

#### **Ingestion**

Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

#### **Inhalation**

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

#### **Notes to physician**

**Hazards:** No information available.

**Treatment:** No information available.

### 5. FIRE-FIGHTING MEASURES

#### **Suitable extinguishing media**

Water spray, Carbon dioxide (CO<sub>2</sub>), Dry chemical, Alcohol-resistant foam

#### **Hazardous combustion products**

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carbon dioxide and carbon monoxide

**Precautions for fire-fighting**

Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

**NFPA Flammable and Combustible Liquids Classification**

Combustible Liquid Class IIIB

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**

For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

**Environmental precautions**

Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

**Methods for cleaning up**

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

**Other information**

Comply with all applicable federal, state, and local regulations.

**7. HANDLING AND STORAGE**

**Handling**

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. Emergency eyewash fountains and safety showers should be available in the immediate vicinity of potential exposure. Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Special

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precautions may be necessary to dissipate static electricity for non-conductive containers. Use proper bonding and grounding during product transfer as described in National Fire Protection Association document NFPA 77.

**Storage**

Store in a cool, dry, ventilated area. Keep containers closed when not in use.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Exposure Guidelines**

MALEIC ANHYDRIDE		108-31-6
ACGIH	time weighted average	0.1 ppm
NIOSH	Recommended exposure limit (REL):	0.25 ppm
NIOSH	Recommended exposure limit (REL):	1 mg/m3
OSHA Z1	Permissible exposure limit	0.25 ppm
OSHA Z1	Permissible exposure limit	1 mg/m3
ACGIH NIC	time weighted average	0.01 mg/m3

Inhalable fraction and vapor

**General advice**

These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

**Exposure controls**

Mechanical ventilation systems used to ventilate corrosive storage or process areas must be designed with components that are corrosion resistant.

**Eye protection**

Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety representative. Wear chemical splash goggles and face shield when there is potential for exposure of the eyes or face to liquid, vapor or mist. Maintain eye wash station in immediate work area.

**Skin and body protection**

Wear appropriate chemical impervious clothing and boots whenever there is potential for skin contact with product. Launder clothing before reuse. Maintain safety shower at all locations where skin contact

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could occur. Contact your local safety equipment supplier to assist the facility in determining proper selection of personal protective equipment for the applications/operations present at your facility. Wear heat-resistant clothing, gloves and boots when working with heated material. Discard gloves that show tears, pinholes, or signs of wear.

**Respiratory protection**

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical state</b>	liquid
<b>Form</b>	liquid
<b>Colour</b>	clear
<b>Odour</b>	irritating
<b>Boiling point/boiling range</b>	396 °F / 202 °C @ 101.32 kPa
<b>Melting point/range</b>	127.0 °F / 52.8 °C
<b>Sublimation point</b>	no data available
<b>pH</b>	no data available
<b>Flash point</b>	214.99 °F / 101.66 °C
<b>Ignition temperature</b>	no data available
<b>Evaporation rate</b>	no data available
<b>Lower explosion limit/Upper explosion limit</b>	1.4 %(V) / 7.1 %(V)
<b>Particle size</b>	no data available
<b>Vapour pressure</b>	0.033 kPa @ 77 °F / 25 °C
<b>Relative vapour density</b>	3.380 AIR=1
<b>Density</b>	1.298 g/cm <sup>3</sup> @ 158.0 °F / 70.0 °C
<b>Bulk density</b>	750 kg/m <sup>3</sup>
<b>Water solubility</b>	soluble
<b>Solubility(ies)</b>	no data available
<b>Partition coefficient: n-octanol/water</b>	2.61
<b>log Pow</b>	no data available
<b>Autoignition temperature</b>	no data available
<b>Viscosity, dynamic</b>	no data available
<b>Viscosity, kinematic</b>	no data available

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<b>Solids in Solution</b>	no data available
<b>Decomposition temperature</b>	no data available
<b>Burning number</b>	no data available
<b>Dust explosion constant</b>	no data available
<b>Minimum ignition energy</b>	no data available

## 10. STABILITY AND REACTIVITY

### Stability

Stable.

### Conditions to avoid

Keep away from heat, flame, sparks and other ignition sources., Exposure to moisture.

### Incompatible products

Amines, Metals, strong alkalis, Strong oxidizing agents, water

### Hazardous decomposition products

carbon dioxide and carbon monoxide

### Hazardous reactions

Product will not undergo hazardous polymerization., Avoid contact with water. Contact with water will generate extreme heat and the formation of acid which will be corrosive to metals.

### Thermal decomposition

No data

## 11. TOXICOLOGICAL INFORMATION

**Acute oral toxicity** : LD 50 Rat : 400 mg/kg

### Acute inhalation toxicity

MALEIC ANHYDRIDE : no data available

**Acute dermal toxicity** : LD 50 Rabbit:  
2,620 mg/kg

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## 12. ECOLOGICAL INFORMATION

### Elimination information (persistence and degradability)

Biodegradability : Result: Readily biodegradable.

### Bioaccumulation

MALEIC ANHYDRIDE : no data available

### Ecotoxicity effects

#### Toxicity to fish

MALEIC ANHYDRIDE : 96 h LC 50 Western mosquitofish (*Gambusia affinis*):  
230.00 mg/l Method: Static; Mortality

#### Toxicity to daphnia and other aquatic invertebrates.

MALEIC ANHYDRIDE : no data available

#### Toxicity to algae

MALEIC ANHYDRIDE : no data available

#### Toxicity to bacteria

MALEIC ANHYDRIDE : no data available

#### Biochemical Oxygen Demand (BOD)

MALEIC ANHYDRIDE : no data available

#### Chemical Oxygen Demand (COD)

MALEIC ANHYDRIDE : no data available

#### Additional ecological information

MALEIC ANHYDRIDE : no data available

## 13. DISPOSAL CONSIDERATIONS

### Waste disposal methods

Dispose of in accordance with all applicable local, state and federal regulations. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution's Environmental Services Group at 800-637-7922.

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**14. TRANSPORT INFORMATION**

**REGULATION**

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
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**U.S. DOT - ROAD**

UN 2215	Maleic anhydride, molten	8		III	
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**U.S. DOT - RAIL**

UN 2215	Maleic anhydride, molten	8		III	
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**U.S. DOT - INLAND WATERWAYS**

UN 2215	Maleic anhydride, molten	8		III	
---------	--------------------------	---	--	-----	--

**TRANSPORT CANADA - ROAD**

UN 2215	MALEIC ANHYDRIDE, MOLTEN	8		III	
---------	--------------------------	---	--	-----	--

**TRANSPORT CANADA - RAIL**

UN 2215	MALEIC ANHYDRIDE, MOLTEN	8		III	
---------	--------------------------	---	--	-----	--

**TRANSPORT CANADA - INLAND WATERWAYS**

UN 2215	MALEIC ANHYDRIDE, MOLTEN	8		III	
---------	--------------------------	---	--	-----	--

**INTERNATIONAL MARITIME DANGEROUS GOODS**

UN 2215	MALEIC ANHYDRIDE, MOLTEN	8		III	
---------	--------------------------	---	--	-----	--

**INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO**

UN 2215	Maleic anhydride, molten	8			
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**INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER**

UN 2215	Maleic anhydride, molten	8			
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**MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES**

**ASHLAND**  
**SAFETY DATA SHEET**

Page: 10  
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Print Date: 1/26/2011  
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Version: 1.6

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UN	2215	ANHIDRIDO MALEICO FUNDIDO	8	III
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\*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

**15. REGULATORY INFORMATION**

**California Prop. 65**

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

**SARA Hazard Classification**  
Acute Health Hazard  
Chronic Health Hazard

**SARA 313 Component(s)**  
MALEIC ANHYDRIDE

100.00 %

**New Jersey RTK Label Information**  
MALEIC ANHYDRIDE

108-31-6

**Pennsylvania RTK Label Information**  
MALEIC ANHYDRIDE

108-31-6

**Notification status**

Australia. Industrial Chemical (Notification and Assessment)

y (positive listing)

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Act

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	y (positive listing)
China. Inventory of Existing Chemical Substances	y (positive listing)
Japan. Kashin-Hou Law List	y (positive listing)
US. Toxic Substances Control Act	y (positive listing)
Korea. Toxic Chemical Control Law (TCCL) List	y (positive listing)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	y (positive listing)
Japan. Industrial Safety & Health Law (ISHL) List	y (positive listing)
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	y (positive listing)
Japan. Kashin-Hou Law List	y (positive listing)
Japan. Kashin-Hou Law List	y (positive listing)

**Reportable quantity - Product**

US. EPA CERCLA Hazardous Substances (40 CFR 302) 5000 lbs

**Reportable quantity-Components**

MALEIC ANHYDRIDE 108-31-6 5000 lbs

	HMIS	NFPA
Health	3*	3
Flammability	1	1
Physical hazards	1	
Instability		1
Specific Hazard	--	--

**16. OTHER INFORMATION**

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

**SAFETY DATA SHEET**

OSHA HCS (29 CFR 1910.1200)

**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**Product identifier**

Chemical Name	p-Toluenesulfonic acid monohydrate
Trade name	Naxcat® pTSA-97
CAS No.	6192-52-5

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

Identified use(s)	Catalyst
Uses advised against	None

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

Company Identification	Nease Co. LLC 10740 Paddys Run Road Harrison, OH 45030
Telephone	(513) 738-1255
Telephone (Product Information)	(888) 762-7373
Fax	(513) 587-2828
E-Mail (competent person)	techservice@neaseco.com

**Emergency telephone number**

Emergency Phone No.	(513) 738-1255 CHEMTREC 24 hr. (800) 424-9300
---------------------	--

**SECTION 2: HAZARDS IDENTIFICATION**

**Classification of the substance or mixture**

OSHA HCS (29 CFR 1910.1200)	Skin Corr. 1C; Eye Dam. 1; Met. Corr. 1
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**Label elements**

Hazard Symbol



**DANGER**

Signal word(s)

Hazard statement(s)

Causes severe skin burns and eye damage.  
May be corrosive to metals.

Precautionary statement(s)

Do not breathe dust/fume/gas/mist/vapours/spray.  
Wear protective gloves/protective clothing/eye protection/face protection.  
IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If irritation (redness, rash, blistering) develops, get medical attention.  
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.

**Other hazards**

Not classified as PBT or vPvB.

**Additional Information**

Contains residual toluene. Studies in animals have shown that repeated exposures produce adverse reproductive effects. However, given the corrosive / irritating nature of this product and the relatively low

concentration of toluene present, this product is not considered to pose a reproductive risk to humans.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

Hazardous ingredient(s)	%W/W	CAS No.	Hazard statement(s)
p-Toluenesulfonic acid monohydrate	>97%	6192-52-5	Causes severe skin burns and eye damage. Causes serious eye damage.
Sulfuric acid	<2%	7664-93-9	Causes severe skin burns and eye damage.

**Additional Information** - Substances in the product which may present a health or environmental hazard, or which have been assigned occupational exposure limits, are detailed below.

- Toluene (CAS No. 108-88-3) <1%

**SECTION 4: FIRST AID MEASURES**



**Description of first aid measures**

Inhalation	Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is laboured, administer oxygen. If symptoms occur obtain medical attention.
Skin Contact	Wash affected skin with plenty of water. Remove contaminated clothing immediately. If irritation (redness, rash, blistering) develops, get medical attention.
Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
Ingestion	If ingested, rinse mouth. Do not induce vomiting. Seek medical treatment.

**Most important symptoms and effects, both acute and delayed** None

**Indication of any immediate medical attention and special treatment needed** None

**SECTION 5: FIRE-FIGHTING MEASURES**

**Extinguishing media**

-Suitable Extinguishing Media Extinguish with waterspray, dry chemical, sand or carbon dioxide.  
-Unsuitable Extinguishing Media None anticipated.

**Special hazards arising from the substance or mixture** None anticipated.

**Advice for fire-fighters** Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures** Put on protective equipment before entering danger area.

**Environmental precautions** Do not allow to enter drains, sewers or watercourses.

**Methods and material for containment and cleaning up** Contain spillages with sand, earth or any suitable adsorbent material. Transfer to a container for disposal or recovery. Wash the spillage area with water. If possible prevent water running into sewers.

Reference to other sections None  
Additional Information None

**SECTION 7: HANDLING AND STORAGE**

**Precautions for safe handling** Do not get in eyes, on skin, or on clothing.

**Conditions for safe storage, including any incompatibilities**

-Storage Temperature Store at room temperature.

-Incompatible materials Attacks many materials and clothing. Keep away from oxidising agents. Keep container tightly closed and dry.

**Specific end use(s)** Catalyst

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**

**Occupational exposure limits**

SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)		STEL (ppm)		Note:
		PEL (OSHA)	TLV (ACGIH)	PEL (OSHA)	TLV (ACGIH)	
Sulfuric acid	7664-93-9	1 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup> <sup>(1)</sup>	----	----	<sup>(1)</sup> Thoracic fraction
Toluene	108-88-3	200	20	300 ceiling	----	500 10min. peak

**Recommended monitoring method** NIOSH 5043; NIOSH 7903

**Exposure controls**

**Appropriate engineering controls** Local exhaust required.

**Personal protection equipment**

Eye/face protection



The following to be used as necessary: Goggles giving complete protection to eyes.

Skin protection (Hand protection/ Other)



The following to be used as necessary: Gloves (Neoprene or Natural rubber). Chemical protection suit. Wear safety or chemical resistant shoes or boots. Check with protective equipment manufacturer's data.

Respiratory protection



No personal respiratory protective equipment normally required.

Thermal hazards

Use gloves with insulation for thermal protection, when needed.

**Environmental Exposure Controls**

Do not allow to enter drains, sewers or watercourses.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

Appearance	Crystalline Needles
Colour	White
Odour	Slight hydrocarbon-like
Odour Threshold (ppm)	Not available.
pH (Value)	<2 (10% solution)
Melting Point (°C) / Freezing Point (°C)	103 - 105

Boiling point/boiling range (°C):	Not available.
Flash Point (°C)	Not applicable
Evaporation rate	<1 (butyl acetate =1)
Flammability (solid, gas)	Non-flammable.
Explosive limit ranges	Not applicable
Vapour Pressure (Pascal)	Low
Vapour Density (Air=1)	>1
Density (g/ml)	Not available.
Solubility (Water)	Soluble
Solubility (Other)	Not available.
Partition Coefficient (n-Octanol/water)	-0.62 (est. log P)
Auto Ignition Temperature (°C)	Not available.
Decomposition Temperature (°C)	Not available.
Kinematic Viscosity (cSt) @ 40°C	Not applicable.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
<b>Other information</b>	Not available.

## SECTION 10: STABILITY AND REACTIVITY

<b>Reactivity</b>	Stable under normal conditions.
<b>Chemical stability</b>	Stable.
<b>Possibility of hazardous reactions</b>	None anticipated.
<b>Conditions to avoid</b>	Incompatible materials.
<b>Incompatible materials</b>	Reacts with strong alkalis. Avoid contact with bleach or other hypochlorites. Generates heat of solution when dissolved in water and alcohols. May cause exothermic polymerisation of furan resin.
<b>Hazardous Decomposition Product(s)</b>	Carbon monoxide, Carbon dioxide, Sulphur oxides, Acrid smoke

## SECTION 11: TOXICOLOGICAL INFORMATION

**Exposure routes:** Inhalation, Skin Contact, Eye Contact

**Substances in preparations / mixtures**

Toluene-4-sulfonic acid (CAS No. 104-15-4)

<b>Acute toxicity</b> (By analogy with similar materials)	Oral: LD50 ≥ 1104 mg/kg-bw (rat) Dermal: LD50 >2 g/kg-bw (rabbit) Inhalation: LC50 > 100 mg= saturated (Vapor), 8 hour (rat)
<b>Irritation/Corrosivity</b>	Corrosive (Skin and Eyes)
<b>Sensitization</b>	It is not a skin sensitizer.
<b>Repeated dose toxicity</b>	NOAEL: > 500 mg/kg bw/day (28 days/week, oral, rat)
<b>Carcinogenicity</b>	NOAEL (rat): ≥ 240 mg/kg (Fischer 344)

NTP	IARC	ACGIH	OSHA	NIOSH
No.	No.	No.	No.	No.

<b>Mutagenicity</b>	There is no evidence of mutagenic potential.
<b>Toxicity for reproduction</b>	No effects to the reproductive system. Residual toluene in this formulation is not expected to present a reproductive risk given the corrosive / irritating nature of this product.

Sulfuric acid (CAS No. 7664-93-9)

**Acute toxicity**

Oral: LD50 = 2140 mg/kg-bw (rat)  
 Dermal: No data  
 Inhalation: LC50 = 0.37-0.42 mg/l (rat)

**Irritation/Corrosivity**

Corrosive (Skin and Eyes)  
 Skin sensitisation has been reported in humans.

**Sensitization**

**Repeated dose toxicity**

No data.

**Carcinogenicity**

NOAEL (rat): ≥ 240 mg/kg (Fischer 344)

NTP	IARC	ACGIH	OSHA	NIOSH
Listed	Group 1	Group 2A	No.	No.

**Mutagenicity**

There is no evidence of mutagenic potential.

**Toxicity for reproduction**

NOAEL: 20 mg/m<sup>3</sup> (rabbit) (New Zealand White)  
 NOEL: 20 mg/m<sup>3</sup> (rabbit) (New Zealand White)

## SECTION 12: ECOLOGICAL INFORMATION

Toluene-4-sulfonic acid (CAS No. 104-15-4)

Short term

LC50 (96 hour): >500 mg/L (*Leuciscus idus melanotus*)  
 EC50 (48 hour): >103 mg/l (*Daphnia magna*, mobility) - (By analogy with similar materials)  
 EC50 (72 hour): 70 mg/l (*Pseudokirchnerella subcapitata*) - (By analogy with similar materials)

Long Term

Scientifically unjustified

Persistence and degradability  
 Bioaccumulative potential  
 Mobility in soil  
 Results of PBT and vPvB assessment

Readily biodegradable.  
 The product has low potential for bioaccumulation.  
 The substance has high mobility in soil.  
 Not classified as PBT or vPvB.

Sulfuric acid (CAS No. 7664-93-9)

Short term

LC50 (96 hour): 42.0 mg/l (96 hour) (*Gambusia affinis*)  
 EC50 ( 24 hour): 29.0 mg/l (*Daphnia magna*)  
 EC50 (48 hour): 29 mg/l (*Pandalus montagui*)

Long Term

Scientifically unjustified

Persistence and degradability  
 Bioaccumulative potential  
 Mobility in soil  
 Results of PBT and vPvB assessment  
 Other adverse effects

Not readily biodegradable.  
 The substance has no potential for bioaccumulation.  
 The substance has high mobility in soil.  
 Not classified as PBT or vPvB.  
 None known.

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste treatment methods**

Disposal should be in accordance with local, state or national legislation.  
 Consult an accredited waste disposal contractor or the local authority for advice.

**Additional Information**

None known.

## SECTION 14: TRANSPORT INFORMATION

	Land transport (U.S. DOT)	Sea transport (IMDG)	Air transport (ICAO/IATA)
UN number	2585	2585	2585
Proper Shipping Name	ARYLSULFONIC ACIDS, SOLID with not more than 5% free sulfuric acid	ARYLSULPHONIC ACIDS, SOLID with not more than 5% free sulphuric acid	ARYLSULPHONIC ACIDS, SOLID with not more than 5% free sulphuric acid
Transport hazard class(es)	8	8	8
Packing group	III	III	III
Hazard label(s)	Corrosive	Corrosive	Corrosive
Environmental hazards	No	No	No
Special precautions for user	None known.	None known.	None known.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not established.

## SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture:

TSCA (Toxic Substance Control Act) - Inventory Status: All components listed or polymer exempt.

Canada Domestic Substance List (DSL) - Listed

Designated Hazardous Substances and Reportable Quantities (40 CFR 302.4):

Chemical Name	CAS No.	Typical %wt.	RQ (Pounds)
None	---	---	---

SARA 311/312 - Hazard Categories:

Fire   
  Sudden Release   
  Reactivity   
  Immediate (acute)   
  Chronic (delayed)

SARA 313 - Toxic Chemicals (40 CFR 372):

Chemical Name	CAS No.	Typical %wt.
Toluene	108-88-3	< 1%

SARA 302 - Extremely Hazardous Substances(40 CFR 355):

Chemical Name	CAS No.	Typical %wt.
Sulfuric acid	7664-93-9	< 2%

## SECTION 16: OTHER INFORMATION

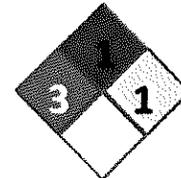
The following sections contain revisions or new statements: 1-16.

Date of preparation: August 13, 2014

Additional Information:

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	1

HMIS (Hazardous Material Information System)



NFPA (National Fire Protection Association)

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SPECIALTIES

# SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 2012

Revision date: 13-Feb-2015

Supersedes: New MSDS

SDS Number: 12847

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product Identifier

Product name: NUOSPERSE® FX 631

### Other means of Identification

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

Product Use Description: Dispersing agent

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

Company/Undertaking Identification Elementis Specialties, Inc.  
469 Old Trenton Road  
East Windsor, NJ 08512  
USA  
Tel: +1 (609) 443-2000

Elementis UK Ltd.  
c/o Elementis GmbH  
Stolberger Str. 370  
50933 Cologne, Germany  
Tel. +49 (0) 221 2923 2000

### Emergency Telephone Number

For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at: 1-800-424-9300 or 1-703-527-3887

For ALL other inquiries about this product, call Elementis Specialties at: 1-609-443-2000 (USA) or +(49)-221-2923-2000 (EU)  
Product\_Stewardship@elementis.com

## 2. HAZARDS IDENTIFICATION

### Classification

### OSHA Regulatory Status

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

### Label Elements

### EMERGENCY OVERVIEW

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

Appearance: Liquid                      Physical state: Liquid                      Odor: Slight

### Hazards not otherwise classified (HNOC)

Not applicable

**Other Information**

None known

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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

**4. FIRST AID MEASURES****FIRST AID MEASURES**

<b>General Advice</b>	Get medical attention immediately if symptoms occur. Show this safety data sheet to the doctor in attendance.
<b>Inhalation:</b>	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen.
<b>Skin contact:</b>	Wash off immediately with soap and plenty of water. If a person feels unwell or symptoms of skin irritation appear, consult a physician.
<b>Eye contact:</b>	Rinse immediately carefully and thoroughly with eye-bath or water. If eye irritation persists, consult a specialist.
<b>Ingestion</b>	If swallowed, seek medical advice immediately and show this SDS or label. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
<b>Protection of first-aiders:</b>	Avoid contact with skin and eyes.

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

**Most Important Symptoms/Effects:** None.

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

**Notes to physician** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES****Suitable extinguishing media**

Carbon dioxide (CO<sub>2</sub>)  
Dry powder  
Dry sand  
Alcohol-resistant foam

**Extinguishing media which must not be used for safety reasons**

None

**Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases**

None in particular

**Unusual Fire and Explosion Hazards:**

Emits toxic fumes under fire conditions

**Hazardous combustion products**

Carbon monoxide  
Carbon dioxide (CO<sub>2</sub>)

**Explosion data**

**Explosive properties:**  
Not explosive

**Reactivity Hazard:**  
None known

**Special protective equipment for fire-fighters**  
Wear self contained breathing apparatus for fire fighting if necessary.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Keep people away from and upwind of spill/leak. Use personal protective equipment.

**Other Information:** See Section 12 for additional information.

**Environmental precautions**

**Environmental precautions:** Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

**Methods and material for containment and cleaning up**

**Clean-up methods:** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

**7. HANDLING AND STORAGE****Precautions for Safe Handling**

**Handling:** Avoid contact with skin, eyes and clothing. Avoid breathing mists, dusts, or vapors. Wash hands thoroughly after handling.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Do not freeze. Keep container tightly closed. Store at room temperature in the original container.

**Additional Storage:** Not required under normal use

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Control parameters**

**Exposure Guidelines** This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Appropriate engineering controls**

**Engineering Measures** Use adequate local exhaust ventilation if airborne dusts, mists, or vapors will be generated

**Individual protection measures, such as personal protective equipment**

<b>Eye protection</b>	Safety glasses.
<b>Skin and body protection</b>	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place
<b>Respiratory protection:</b>	In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.
<b>Hand protection</b>	Protective gloves Neoprene gloves
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practice

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical state:</b>	Liquid
<b>Appearance:</b>	Liquid
<b>Odor:</b>	Slight
<b>Color:</b>	Colourless to Slight yellow; Clear to slightly hazy
<b>Odor Threshold</b>	No data available

<u>Property</u>	<u>Values</u>	<u>Remarks / • Method</u>
pH	9.5-10.6	
<b>Melting point/range:</b>	No data available	
<b>Freezing point:</b>	No data available	
<b>Boiling Point/Range</b>	100 (°C)	
<b>Flash Point</b>	No data available	
<b>Evaporation rate</b>	No data available	
<b>Explosion limits:</b>	No data available	
<b>Vapor pressure</b>	No data available	
<b>Vapor density</b>	No data available	
<b>Density:</b>	1.08 g/cm <sup>3</sup>	
<b>Water solubility</b>	Completely miscible	
<b>Solubility in other solvents</b>	No data available	
<b>Partition coefficient: n-octanol/water</b>	No data available	
<b>Autoignition temperature</b>	No data available	
<b>Decomposition temperature</b>	No data available	
<b>Viscosity:</b>	No data available	
<b>Explosive properties:</b>	Not explosive	
<b>Oxidizing Properties</b>	No information available	

### Other Information

<b>Bulk Density</b>	No data available
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## 10. STABILITY AND REACTIVITY

### Reactivity

No dangerous reaction known under conditions of normal use

### Chemical Stability

Stable under recommended storage conditions.

### Possibility of Hazardous Reactions

None known

### Conditions to Avoid

Heat, flames and sparks

**Incompatible Materials:**

Oxidizing agents

**Hazardous Decomposition Products**

None reasonably foreseeable

**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

<b>Inhalation:</b>	No data available.
<b>Eye contact:</b>	No data available.
<b>Skin contact:</b>	No data available.
<b>Ingestion</b>	No data available.

**Product Information** No data is available on the product itself

**Component Information** No data available

**Information on Toxicological Effects****Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Corrosivity</b>	No information available.
<b>Sensitization</b>	No information available
<b>Mutagenic effects</b>	No information available.
<b>Carcinogenic effects:</b>	There are no known carcinogenic chemicals in this product
<b>Reproductive Toxicity:</b>	No information available
<b>Developmental Toxicity</b>	No information available.

**Chronic Toxicity**

<b>Chronic toxicity:</b>	No data is available on the product itself
<b>Target Organ Effects:</b>	None known.
<b>Other Adverse Effects:</b>	No information available.

**12. ECOLOGICAL INFORMATION**

**Product Information** There is no data available for this product

**Ecotoxicity**

The environmental impact of this product has not been fully investigated.

**Persistence and degradability:**

No data available

**Bioaccumulative potential:**

No data available

**Mobility:**

No information available

**General Note:**

Do not allow product to reach ground water, water course or sewage system.

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

**Waste from residues /unused products** Do not contaminate ponds, waterways or ditches with chemical or used container Dispose of in accordance with Local and National regulations

**Contaminated packaging** Empty containers should be taken for local recycling, recovery or waste disposal

**RCRA Hazardous Waste:**

**RCRA:** Not listed

**14. TRANSPORT INFORMATION**

**U.S. Department of Transportation Ground (49 CFR):** Not regulated

**International Air Transportation (ICAO/IATA):** Not regulated

**International Maritime Organization (IMO/IMDG):** Not regulated

**Surface Shipments in Europe (ADR/RiD):** Not regulated

**15. REGULATORY INFORMATION****International Inventories**

<b>USA (TSCA):</b>	In Compliance
<b>EU (EINECS):</b>	In Compliance
<b>REACH</b>	In Compliance
<b>CANADA (DSL)</b>	Not In Compliance
<b>CANADA (NDSL):</b>	Not In Compliance
<b>JAPAN (ENCS):</b>	Not In Compliance
<b>PHILIPPINES (PICCS):</b>	Not In Compliance
<b>KOREA (KECL):</b>	Not In Compliance
<b>China (IECSC)</b>	Not In Compliance
<b>AUSTRALIA (AICS):</b>	Not In Compliance
<b>NEW ZEALAND (NZIoC):</b>	Not In Compliance
<b>TAIWAN (NECSI):</b>	Not In Compliance

**Legend:**

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances  
**REACH** - Registration, Evaluation, Authorisation and Restriction of Chemicals  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**ENCS** - Japan Existing and New Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances  
**NZIoC** - New Zealand Inventory of Chemicals  
**NECSI** - Taiwan Inventory of Chemicals

**Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

None

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**TSCA Section 12(b) Export Notification**

This product does not contain chemicals that are required to be notified under the TSCA 12(b) Export Notification.

**State Regulations (RTK)****California Proposition 65**

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

**Canada**

**WHMIS hazard class:** Non-controlled

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. OTHER INFORMATION****HMIS:**

**Health:** 1  
**Flammability:** 0  
**Physical Hazard:** 0

**Previous Revision Date:** Not applicable

**Key/Legend:** N/A: Not applicable  
 N/D: Not determined  
 ppm: Parts per million  
 X: Listed

**Prepared by** Product Stewardship

The information provided in this Safety Data Sheet is correct to the best of ELEMENTIS' knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific product designated and may not be valid for such product when used in combination with any other material or in any process, unless specified in this SDS. ELEMENTIS specifically disclaims any liability for any loss, injury or damage which may result from use or misuse of this product.

All chemicals should be handled only by competent personnel, within a controlled environment. It is the buyer's/user's responsibility to ensure that his activities comply with all applicable federal, state, provincial and local laws, and to determine the conditions necessary for the safe use of this product. ELEMENTIS urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product.

End of Safety Data Sheet

Revision date: 03-Dec-2013

Supersedes: New MSDS

MSDS Number: 19631

### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product name:** NUOSPERSE® FX 665

**Synonyms:**

**Product Use Description:** Dispersing agent

**Company/Undertaking Identification:**

Elementis Specialties, Inc.  
469 Old Trenton Road  
East Windsor, NJ 08512  
USA  
Tel: +1 (609) 443-2000

Elementis UK Ltd.  
c/o Elementis GmbH  
Stolberger Str. 370  
50933 Cologne, Germany  
Tel. +49 (0) 221 2923 2000

**Emergency telephone number:** For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at: 1-800-424-9300 or 1-703-527-3887

For ALL other inquiries about this product, call Elementis Specialties at: 1-609-443-2000 (USA) or +(49)-221-2923-2000 (EU)

Product\_Stewardship@elementis.com

## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**Appearance:** Liquid  
**Color:** Clear to Slightly Hazy  
**Odor:** Ammonia-like

### CAUTION

May cause eye irritation.  
 May cause skin irritation and/or dermatitis  
 May cause irritation of respiratory tract  
 May be harmful if swallowed

### Potential health effects:

**Eye contact:** May cause eye irritation. Signs and symptoms include burning, tearing, redness and swelling.

**Skin contact:** May cause skin irritation and/or dermatitis.

**Inhalation:** May cause irritation of respiratory tract.

**Ingestion:** May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Routes of exposure:** Skin, Inhalation, Ingestion

**Target Organs:** None

**Environmental hazard:** See Section 12, below

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

While this material is not classified as hazardous under OSHA regulations, this MSDS contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and available for employees and other users of this product.

## 4. FIRST AID MEASURES

**Inhalation:** IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen.

**Skin contact:** Wash off immediately with soap and plenty of water. If a person feels unwell or symptoms of skin irritation appear, consult a physician.

**Eye contact:** Rinse immediately with plenty of water, also under the eyelids. If eye irritation persists, consult a specialist.

**Ingestion:** If swallowed, seek medical advice immediately and show this SDS or label. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

**5. FIRE-FIGHTING MEASURES**

<b>Flash Point:</b>	> 212 °F / > 100 °C
<b>Flash Point Method:</b>	Closed Cup (CC)
<b>Autoignition temperature:</b>	Not self-igniting
<b>Unusual Fire and Explosion Hazards:</b>	Emits toxic fumes under fire conditions.
<b>Reactivity Hazard:</b>	None known
<b>Suitable extinguishing media:</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
<b>Hazardous combustion products:</b>	Carbon monoxide, Carbon dioxide (CO <sub>2</sub> ), Nitrogen oxides (NO <sub>x</sub> ).
<b>Decomposition temperature:</b>	80 (°C)
<b>Special Fire Fighting Procedure:</b>	Wear self contained breathing apparatus for fire fighting if necessary.

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal precautions:</b>	Use personal protective equipment.
<b>Environmental precautions:</b>	Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.
<b>Clean-up methods:</b>	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal. Prevent product from entering drains. Clean contaminated surface thoroughly. Local authorities should be advised if significant spillages cannot be contained.

**7. HANDLING AND STORAGE**

<b>Handling:</b>	Avoid contact with skin, eyes and clothing. Avoid breathing mists, dusts, or vapors. Wash hands thoroughly after handling.
<b>Storage:</b>	DO NOT FREEZE. Keep container tightly closed. Store at room temperature in the original container.
<b>Additional Storage:</b>	Unsuitable materials Carbon steel Suitable material: Stainless steel Plastic drum

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering measures:** Use adequate local exhaust ventilation if airborne dusts, mists, or vapors will be generated.

### Personal Protective Equipment

**Eye protection:** Safety glasses.

**Skin and body protection:** Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

**Respiratory protection:** Breathing apparatus needed only when aerosol or mist is formed.

**Hand protection:** Protective gloves, Neoprene gloves, Impervious butyl rubber gloves, Nitrile rubber

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice.

### Exposure controls

**TLV/PEL:** Not established

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance:** Liquid

**Color:** Clear to Slightly Hazy

**Odor:** Ammonia-like

**Physical state:** Liquid

**pH:** 8 - 9.5 @ 20°C

**Molecular weight:** No data available

**Boiling point/range:** 100 (°C)

**Freezing point:** 0 °C

**Melting point/range:** 0 °C

**Solubility:** Water: Completely soluble

**Solubility in other solvents:** Alcohol: Practically not soluble

**Density:** 1.05 g/cm<sup>3</sup> @ 25°C (ISO 2811-2)

**Flash Point:** > 212 °F / > 100 °C

**Decomposition temperature:** 80 (°C)

**Viscosity:** 100 - 1500 mPas @ 25 °C (Brookfield)

**Solvent content:**

**Water content:** ~ 75 %

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under recommended storage conditions.

**Conditions to avoid:** Heat, flames and sparks

**Materials to avoid:** Oxidizing agents

**Hazardous decomposition products:** None reasonably foreseeable

**Possibility of Hazardous Reactions:** None known

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Product Information:** No data is available on the product itself

**Local effects**

**Skin contact:** May cause skin irritation and/or dermatitis.

**Eye contact:** Contact with eyes may cause irritation.

**Inhalation:** May cause irritation of respiratory tract.

**Ingestion:** May be harmful if swallowed, avoid ingestion. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Sensitization:** No sensitizing effects known.

**Chronic toxicity:** No data is available on the product itself

**Specific effects**

**Target Organs:** None

## 12. ECOLOGICAL INFORMATION

**Product Information**

**Ecotoxicity Effects**                      The environmental impact of this product has not been fully investigated.

**Aquatic toxicity:**

**Persistence and degradability:**                      No data available

**Environmental Fate and Pathways:**

**Physical / Chemical:**                      No data available

**Mobility:**                      No data available.

**Biodegradability:**                      No data available

**Bioaccumulative potential:**                      No data available.

**BOD/COD:**

**COD-value:**                      No data available

**BOD5-value:**                      No data available

### **13. DISPOSAL CONSIDERATIONS**

**Waste from residues / unused products:**                      Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of in accordance with Local and National regulations.

**RCRA Hazardous Waste:**

**RCRA:**                      Not listed

### **14. TRANSPORT INFORMATION**

**U.S. Department of Transportation Ground (49 CFR):**

**Proper shipping name:**                      Not regulated

**International Air Transportation (ICAO/IATA):**

**Proper shipping name:**                      Not regulated

**International Maritime Organization (IMO/IMDG):**

**Proper shipping name:**                      Not regulated

**Surface Shipments in Europe (ADR/RID):**

**Proper shipping name:**                      Not regulated

### **15. REGULATORY INFORMATION**

**International Inventories**

<b>USA (TSCA):</b>	PMN in Progress
<b>EU (EINECS):</b>	Polymer exemption
<b>CANADA (DSL):</b>	Not Listed
<b>CANADA (NDSL):</b>	Not Listed
<b>JAPAN (ENCS):</b>	Not Listed
<b>China (IECSC)</b>	Listed
<b>PHILIPPINES (PICCS):</b>	Listed
<b>KOREA (KECL):</b>	Not Listed
<b>AUSTRALIA (AICS):</b>	Not Listed
<b>NEW ZEALAND (HSNO):</b>	Not Listed
<b>TAIWAN (NECSI):</b>	Not Listed

### U.S. Regulations

#### TSCA Section 12(b) Export Notification

This product does not contain chemicals that are required to be notified under the TSCA 12(b) Export Notification.

#### SARA Title III:

<b>Section 302 EHS:</b>	None
<b>Section 311/312:</b>	None
<b>Section 313:</b>	Not listed

#### California Prop. 65:

This Product contains the following substance (s) known to the state of California to cause cancer and/or developmental effects.

Toluene <0.01%

#### Canada

**WHMIS hazard class:** Non-controlled

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## **16. OTHER INFORMATION**

#### HMIS:

Health:	1
Flammability:	1
Physical Hazard:	0

**Previous Revision Date:** Not applicable

**Key/Legend:** N/A: Not applicable  
N/D: Not determined  
ppm: Parts per million  
X: Listed

**Prepared by:** Product Stewardship

The information provided in this Safety Data Sheet is correct to the best of ELEMENTIS' knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific product designated and may not be valid for such product when used in combination with any other material or in any process, unless specified in this SDS. ELEMENTIS specifically disclaims any liability for any loss, injury or damage which may result from use or misuse of this product.

All chemicals should be handled only by competent personnel, within a controlled environment. It is the buyer's/user's responsibility to ensure that his activities comply with all applicable federal, state, provincial and local laws, and to determine the conditions necessary for the safe use of this product. ELEMENTIS urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product.

**TRIGONOX 21S**

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

<b>Product Identifier</b> tert-Butyl peroxy-2-ethylhexanoate	
<b>Supplier</b> Akzo Nobel Polymer Chemicals LLC 525 West Van Buren Street Chicago, IL 60607-3823  www.akzonobel.com/polymer	
<b>Emergency telephone</b> +1-914-693-6946 Chicago, IL USA	<b>transportation emergency</b> CHEMTREC - USA: 1-800-424-9300 CANUTEC - CANADA: 1-613-996-6666
<b>Relevant identified uses of the substance or mixture</b> polymerization initiator	
<b>Date of last issue / Revision number</b> 2013/02/07 / 3.00	
<b>Chemical family</b> peroxides	

2. HAZARDS IDENTIFICATION

<b>Emergency overview</b> <b>DANGER!</b> REFRIGERATED ORGANIC PEROXIDE - MAINTAIN COOLING HEAT OR CONTAMINATION MAY CAUSE VIOLENT DECOMPOSITION COMBUSTIBLE LIQUID AND VAPOR RISK OF EXPLOSION: SHOCK AND FRICTION SENSITIVE MAY CAUSE ALLERGIC SKIN REACTION VERY TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.	
<b>Appearance</b> colorless clear liquid with faint odor.	
<b>Health effects</b> Skin contact, eye contact and inhalation are the primary routes of exposure to this product. May cause sensitization by skin contact.	
<b>Carcinogenicity</b>	
<b>Description</b>	<b>Applicable</b>
IARC	no
NTP	no
OSHA	no
ACGIH	no

3. COMPOSITION/INFORMATION ON INGREDIENTS

<b>Information on hazardous ingredients</b>			
<b>Chemical description</b> tert-Butyl peroxy-2-ethylhexanoate			
<b>Composition / information on ingredients</b>			
<b>Number</b>	<b>% w/w</b>	<b>CAS-number</b>	<b>Chemical name</b>
1	> 97	003006-82-4	tert-Butyl peroxy-2-ethylhexanoate

<b>Other information</b> This material is classified as hazardous under OSHA regulations.
--

4. FIRST AID MEASURES

**TRIGONOX 21S**

<b>Most important symptoms and effects</b> May cause sensitization by skin contact.	
<b>Description of first aid measures</b>	
<b>General</b>	In all cases of doubt, or when symptoms persist, seek medical attention.
<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. Oxygen may additionally be given, by trained personnel, if it is available. Get medical attention if symptoms occur.
<b>Skin</b>	Immediately wash skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
<b>Eye</b>	Immediately flush eyes with plenty of water. If easy to do, contact lenses should be removed during the flushing, by trained personnel. Occasionally hold the eyelids apart during the flushing to ensure rinsing the entire surface of the eye and lids with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Call a physician or a poison control center immediately. Induce vomiting only if directed by medical personnel. The patient should lie on their left side while vomiting to reduce the risk of aspiration. Never give anything by mouth to an unconscious or convulsing person.
<b>Indication of any immediate medical attention and special treatment needed</b> Persons with pre-existing skin, eye, or respiratory disease may be at increased risk from the irritant or allergic properties of this material.  Attending physician should treat exposed patients symptomatically.	

**5. FIRE-FIGHTING MEASURES**

<b>Extinguishing media</b>	waterspray, foam, sand, dry chemical powder, CO2.
<b>Unsuitable extinguishing media</b>	halons.
<b>Hazardous decomposition / combustion products</b>	CO2, Carbon monoxide. tert-Butanol, Heptane, 3-tert-Butoxyheptane.
<b>Protective equipment</b>	Firefighters must wear fire resistant protective equipment. Wear approved respirator and protective gloves.
<b>Other information</b>	Evacuate all non-essential personnel. Extinguish a small fire with powder or carbon dioxide then apply water to prevent re-ignition. Cool closed containers with water. Water used to extinguish a fire should not be allowed to enter the drainage system or water courses. After a fire, ventilate thoroughly the area and soak with water, clean the walls and metallic surfaces.
<b>Fire and explosion hazard</b>	CAUTION: reignition may occur. Decomposition under effect of heating (See also Section Hazardous decomposition products). If involved in a fire, it will support combustion. Vapors may form explosive mixtures with air. In case of fire and/or explosion do not breathe fumes.

<b>NFPA ratings</b>	
<b>Hazard classes</b>	<b>Rating</b>
Health	2
Flammability	2
Reactivity	3
Other information	

**6. ACCIDENTAL RELEASE MEASURES**

## TRIGONOX 21S

<b>Personal precautions</b> Do not breathe fumes/vapor. Avoid contact with skin. For personal protection see Section 8.
<b>Environmental precautions</b> Do not allow to enter drains or water courses.
<b>Methods and material for containment and cleaning up</b> Stop leakage if possible. Eliminate all sources of ignition, and do not generate flames or sparks. Transfer remaining product from leaking container to a clean and suitable container. Cover the remainder with inert absorbent (e.g. vermiculite) for disposal. Keep contents moist. The waste should NOT be confined. Flush surroundings with large amounts of water and soap.
<b>Other information</b> CAUTION: reignition may occur. Vapors are heavier than air and may spread along floors. Vapors may travel to a source of ignition and flash back. Evacuate personnel to safe area.

### 7. HANDLING AND STORAGE

<b>Precautions for safe handling</b> Never weigh out in the storage room. When using do not eat, drink or smoke. Do not pipet by mouth. Do not breathe fumes/vapor. Handle in well ventilated areas. Eliminate all sources of ignition, and do not generate flames or sparks. Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps). Keep product and emptied container away from heat and sources of ignition. Confinement must be avoided. Avoid shock and friction. Avoid contact with skin. Avoid Incompatible materials (See Section 10).
<b>Fire and explosion prevention</b> Use explosion protected equipment. Keep away from sources of ignition - No smoking. Use non-sparking tools in areas where explosive vapor/air mixtures may occur. Do not cut or weld on or near this container even when empty.
<b>Conditions for safe storage</b> Store in accordance with local/national regulations. Keep away from food, drink and animal feedingstuffs. Store in a dry well ventilated place away from sources of heat and direct sunlight. Store separate from other chemicals. Keep only in the original container. Keep container upright to prevent leakage.
<b>Storage</b>
Avoid temperatures below -30 °C. If product freezes or separates, contact Akzo Nobel.
For maximum quality store below: 10 °C.
For safety, store below 20 °C.
<b>Other information</b> It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded. Wash hands thoroughly after handling or contact. Keep work clothes separate and do not take them home.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Control parameters</b> Ensure good ventilation and local exhaustion of the working area. Explosion proof ventilation recommended.
<b>Personal protection</b>
<b>Respiratory</b> The usual precautionary measures for handling chemicals should be observed.
<b>Hand</b> Wear suitable protective gloves of neoprene or synthetic rubber.
<b>Eye</b> Wear eye/face protection. A face shield is preferred over goggles.
<b>Skin and body</b> Wear suitable protective clothing.
<b>Other information</b> Emergency-shower and facilities for rinsing eyes must be accessible. Launder clothes before reuse.

In this country no exposure limit has been established

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**TRIGONOX 21S**

<b>Appearance</b> clear liquid
<b>Color</b> colorless
<b>Odor</b> faint
<b>Boiling point/range</b> not applicable (Decomposes)
<b>Melting point/freezing point</b> Solidifies at or below -30°C / -22°F
<b>Flash point</b> Above the SADT value
<b>Flammability</b> Decomposition products may be flammable.
<b>Explosive properties</b> no
<b>Oxidizing properties</b> not applicable
<b>Vapor pressure</b> 0.12 kPa (65°C / 149°F)
<b>Density</b> 900 kg/m <sup>3</sup> (20°C / 68°F) Specific gravity = 0.900 (20°C / 68°F)
<b>Bulk density</b> not applicable
<b>Solubility in water</b> immiscible (20°C / 68°F)
<b>Solubility in other solvents</b> Miscible with aliphatic solvents.
<b>pH value</b> neutral
<b>Partition coefficient n-octanol/water</b> not determined
<b>Relative vapor density (air=1)</b> not determined
<b>Viscosity</b> 4.3 mPa.s (20°C / 68°F)
<b>Active oxygen content</b> 7.17%
<b>Peroxide content</b> 97%
<b>Autoignition temperature</b> Test method not applicable (See Section 7)
<b>SADT</b> 35 °C. See also Section 10.
<b>Upper/lower flammability or explosive limits</b> not determined
<b>Volatile %</b> not determined

## 10. STABILITY AND REACTIVITY

## TRIGONOX 21S

<b>Chemical stability</b>	<p>SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the following temperature: 35 °C. Contact with incompatible substances can cause decomposition at or below the SADT 35 °C.</p> <p>To insure against possible exothermic self-accelerating decomposition, storage temperatures must not exceed emergency temperature of 25 °C.</p>
<b>Conditions to avoid</b>	<p>Under no circumstances should this product be exposed to temperatures above the emergency temperature of 25 °C. If the product temperature exceeds 25 °C all available means shall be used to bring the temperature under control and the emergency procedures shall be started. Emergency procedures will vary depending on conditions. Contact Akzo Nobel for assistance with developing an emergency response plan.</p> <p>Avoid temperatures below -30 °C.</p> <p>To maintain quality store in original closed container below: 10 °C.</p> <p>Avoid shock and friction. Confinement must be avoided.</p>
<b>Incompatible materials</b>	<p>Avoid contact with rust, iron and Copper. Contact with incompatible materials such as acids, alkalies, heavy metals and reducing agents will result in hazardous decomposition. Do not mix with peroxide accelerators. Use only Stainless steel 316, PP, polyethylene or glass-lined equipment . Contact Akzo Nobel for more information.</p>
<b>Possibility of hazardous reactions</b>	<p>Polymerization does not occur.</p>
<b>Hazardous decomposition products</b>	<p>Hazardous decomposition products; tert-Butanol, Heptane, 3-tert-Butoxyheptane.</p>
<b>Other information</b>	<p>Emergency procedures will vary depending on conditions. The customer must have an emergency response plan in place. Contact Akzo Nobel for assistance with developing an emergency response plan.</p>

## 11. TOXICOLOGICAL INFORMATION

<b>tert-Butyl peroxy-2-ethylhexanoate</b>
<b>Acute toxicity</b>
<b>Oral LD50</b> >10000 mg/kg (rat)
<b>Dermal LD50</b> 14142 mg/kg (rabbit)
<b>Inhalation LC50</b> 4 hours exposure time: 42.2 mg/l (rat) , aerosols
<b>Germ cell mutagenicity</b> Based on available data, the classification criteria are not met .
<b>Irritation</b>
<b>Skin</b> Non-irritating (rabbit)
<b>Eye</b> Non-irritating (rabbit)
<b>Sensitization</b> Sensitizing (Buehler test)
<b>Genotoxicity</b> in vitro: Ames test: Positive (OECD 471). in vitro: Mammalian cell gene mutation assay : Positive (OECD 476). In vivo micronucleus test: Negative (OECD 474).
<b>Carcinogenicity / Mutagenic data</b> Study scientifically unjustified .

**TRIGONOX 21S**

**Chronic toxicity / Carcinogenicity**  
 28 days, No Observed Adverse Effect Level (NOAEL); 100 mg/kg/day (rat)

No Observed Adverse Effect Level (NOAEL); 300 mg/kg/day

## 12. ECOLOGICAL INFORMATION

<b>tert-Butyl peroxy-2-ethylhexanoate</b>	
<b>Ecotoxicity</b>	
<b>fish</b>	96h-LC50: 8.66 mg/l (Poecilia reticulata)
<b>daphnia</b>	48h-EC50: 7.5 mg/l (Daphnia magna)
<b>algae</b>	72h-EC50: 0.44 mg/l (Pseudokirchneriella subcapitata)
<b>bacteria</b>	EC50: 64 mg/l (Activated sludge)
<b>Fate</b>	
<b>Degradation Abiotic</b>	
Half-life: 15.8 days at 12 °C 60 hours at 37 °C	
<b>Degradation Biotic</b>	
Not readily biodegradable. (Closed bottle test)	
<b>Bioaccumulation</b>	
Bio Concentration Factor (BCF): 672	
<b>Fate</b>	
Koc = 1202 Log Koc = 3.08	

## 13. DISPOSAL CONSIDERATIONS

<b>Product</b>	Due to the high risk of contamination recycling/recovery is not recommended. Waste disposal in accordance with regulations (most probably controlled incineration).
<b>Contaminated packaging</b>	According to local regulations. Emptied container might retain product residues. Follow all warnings even after the container is emptied. Do not wash residues into drains or other waterways.
<b>Other information</b>	For further advice contact manufacturer.

## 14. TRANSPORT INFORMATION

<i>Land transport</i>	
<b>Transport hazard class</b>	5.2
<b>TREM-Card or ERG number</b>	NA ERG No. 148
<b>UN number</b>	3113
<b>Proper Shipping Name</b>	Organic peroxide type C, liquid, temperature controlled ( tert-Butyl peroxy-2-ethylhexanoate, 97% )

**TRIGONOX 21S**

<b>Other information</b> This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.
<b>Required labels</b> 5.2
EMERGENCY TEMPERATURE: 25 °C.
CONTROL TEMPERATURE: 20 °C.
The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

<b>Sea transport (IMO / IMDG-code)</b>
<b>Transport hazard class</b> 5.2
<b>UN number</b> 3113
<b>EMS</b> F-F, S-R
<b>Marine pollutant</b> yes
<b>Proper Shipping Name</b> Organic peroxide type C, liquid, temperature controlled ( tert-Butyl peroxy-2-ethylhexanoate )
<b>Other information</b> Label(s): 5.2  Special precautions for user/ shipper: Organic Peroxides Type C show under normal transport conditions in original packagings no explosion risk and this subsidiary risk label is not required for transport. This risk is under all circumstances not present when confinement is avoided. All packagings used for transport are designed to avoid confinement of the product. In case of fire the container or packagings must be cooled with plenty of water. Waste should not be confined- spilled product has to be kept wetted. For sea- transport: Dispose damaged or leaking receptacles overboard. Flush surroundings with large amounts of water and wash overboard..
EMERGENCY TEMPERATURE: 25 °C.
CONTROL TEMPERATURE: 20 °C.
The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

<b>Air transport (ICAO-TI / IATA-DGR)</b>
<b>UN number</b> Forbidden

15. REGULATORY INFORMATION

<b>Product and or components listed below are subject to the following</b>	
<b>tert-Butyl peroxy-2-ethylhexanoate</b>	
New Jersey R-T-K Hazard. Sub.	yes
US Toxic Subst. Cont. Act (TSCA)	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes

**TRIGONOX 21S**

Hazard classes	
Description	Applicable
EPA Immediate health	yes
EPA Delayed health	no
EPA Fire	yes
EPA Pressure	no
EPA Reactive	yes
EHS Material	no
Hazard Rating Source	HMIS
HMIS Health	2
HMIS Flammability	2
HMIS Reactivity	3
WHMIS Hazard classes	B-3,C,D-2B,F
	

**Other regulatory information**

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

**16. OTHER INFORMATION**

<b>History</b>
<b>Other information</b> TRIGONOX: This is a registered trademark of Akzo Nobel Chemicals BV or any of its affiliated companies in one or more territories in the world.
<b>Date of printing/ pdf file generated</b> 2014/03/17
<b>Revision</b> 3.00
<b>Composed by</b> Regulatory Affairs - North America , T +1-312-544-7000. Regulatory Affairs- Europe.
<b>Changes were made in section</b> All (Classification)
<small>The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions as to the merchantability or fitness of the product for any particular purpose, or that any suggested use will not infringe any patent. Nothing in here shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current.</small>

**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)

Emission Unit ID <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
T-570	T-570E	Dispersant Separation Tank	2016	24,000L	New	N/A
T-580	T-580E	Recycle Toluene Tank	2017	23,000L	New	N/A
T-581	T-581E	Recycle Toluene Tank	2017	23,000L	New	N/A
T-590	T-590E	Finished Product Storage Tank	2017	39,000L	New	N/A
T-591	T-591E	Finished Product Storage Tank	2017	39,000L	New	N/A
T-592	T-592E	Finished Product Storage Tank	2017	39,000L	New	N/A
T-593	T-593E	Finished Product Storage Tank	2017	39,000L	New	N/A

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

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

<sup>3</sup> New, modification, removal

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

**ATTACHMENT J**

**EMISSION POINTS DATA SUMMARY SHEET**

**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

**Table 1: Emissions Data**

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type <sup>1</sup>	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 <sup>3</sup> (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration <sup>7</sup> (ppmv or mg/m <sup>3</sup> )	
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr				
T-570	Upward vertical stack	T-570E	Dispersant Separation Tank	N/A	N/A			*Please see Attachment N for Supporting Emission Calculations						EE		
T-580	Upward vertical stack	T-580E	Recycle Toluene Tank	N/A	N/A										EE	
T-581	Upward vertical stack	T-581E	Recycle Toluene Tank	N/A	N/A										EE	
T-590	Upward vertical stack	T-590E	Finished Product Storage Tank	N/A	N/A										EE	
T-591	Upward vertical stack	T-591E	Finished Product Storage Tank	N/A	N/A										EE	
T-592	Upward vertical stack	T-592E	Finished Product Storage Tank	N/A	N/A										EE	
T-593	Upward vertical stack	T-593E	Finished Product Storage Tank	N/A	N/A										EE	

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

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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 (ie., 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, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. **DO NOT LIST** H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, 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 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/m<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

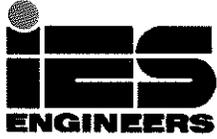
**Attachment J**  
**EMISSION POINTS DATA SUMMARY SHEET**

**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 <sup>1</sup> (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height <sup>2</sup> (Release height of emissions above ground level)	Northing	Eastings
T-570					660		4397.33880	514.59346
T-580					660		4397.33880	514.59346
T-581					660		4397.33880	514.59346
T-590					660		4397.33880	514.59346
T-591					660		4397.33880	514.59346
T-592					660		4397.33880	514.59346
T-593					660		4397.33880	514.59346

<sup>1</sup> Give at operating conditions. Include inerts.

<sup>2</sup> Release height of emissions above ground level.



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**ATTACHMENT K**

**FUGITIVE EMISSIONS DATA SUMMARY SHEET**



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ATTACHMENT K  
FUGITIVE EMISSIONS DATA SUMMARY SHEET

No increase in fugitive emissions is anticipated as a result of the installation of the proposed tanks.

**ATTACHMENT L**  
**EMISSION UNIT DATA SHEET**





25F. Describe deck fittings; indicate the number of each type of fitting:		
ACCESS HATCH		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
COLUMN WELL		
BUILT-UP COLUMN – SLIDING COVER, GASKETED:	BUILT-UP COLUMN – SLIDING COVER, UNGASKETED:	PIPE COLUMN – FLEXIBLE FABRIC SLEEVE SEAL:
LADDER WELL		
PIP COLUMN – SLIDING COVER, GASKETED:	PIPE COLUMN – SLIDING COVER, UNGASKETED:	
GAUGE-HATCH/SAMPLE PORT		
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:	
ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)
VACUUM BREAKER		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
RIM VENT		
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
DECK DRAIN (3-INCH DIAMETER)		
OPEN:	90% CLOSED:	
STUB DRAIN		
1-INCH DIAMETER:		
OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)		

26. Complete the following section for Internal Floating Roof Tanks <input type="checkbox"/> Does Not Apply	
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded	
26B. For Bolted decks, provide deck construction:	
26C. Deck seam: <input type="checkbox"/> Continuous sheet construction 5 feet wide <input type="checkbox"/> Continuous sheet construction 6 feet wide <input type="checkbox"/> Continuous sheet construction 7 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 7.5 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 12 feet wide <input type="checkbox"/> Other (describe)	
26D. Deck seam length (ft)	26E. Area of deck (ft <sup>2</sup> )
For column supported tanks:	26G. Diameter of each column:
26F. Number of columns:	

**IV. SITE INFORMATION** (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based.
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft <sup>2</sup> ·day))
33. Atmospheric Pressure (psia)

**V. LIQUID INFORMATION** (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid:			
34A. Minimum (°F)	34B. Maximum (°F)		
35. Average operating pressure range of tank:			
35A. Minimum (psig)	35B. Maximum (psig)		
36A. Minimum Liquid Surface Temperature (°F)	36B. Corresponding Vapor Pressure (psia)		
37A. Average Liquid Surface Temperature (°F)	37B. Corresponding Vapor Pressure (psia)		
38A. Maximum Liquid Surface Temperature (°F)	38B. Corresponding Vapor Pressure (psia)		
39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.			
39A. Material Name or Composition			
39B. CAS Number			
39C. Liquid Density (lb/gal)			
39D. Liquid Molecular Weight (lb/lb-mole)			
39E. Vapor Molecular Weight (lb/lb-mole)			

Maximum Vapor Pressure 39F. True (psia)			
39G. Reid (psia)			
Months Storage per Year 39H. From			
39I. To			

**VI. EMISSIONS AND CONTROL DEVICE DATA (required)**

40. Emission Control Devices (check as many as apply):  Does Not Apply

Carbon Adsorption<sup>1</sup>

Condenser<sup>1</sup>

Conservation Vent (psig)

Vacuum Setting Pressure Setting

Emergency Relief Valve (psig)

Inert Gas Blanket of

Insulation of Tank with

Liquid Absorption (scrubber)<sup>1</sup>

Refrigeration of Tank

Rupture Disc (psig)

Vent to Incinerator<sup>1</sup>

Other<sup>1</sup> (describe):

<sup>1</sup> Complete appropriate Air Pollution Control Device Sheet.

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name & CAS No.	Breathing Loss (lb/hr)	Working Loss		Annual Loss (lb/yr)	Estimation Method <sup>1</sup>
		Amount	Units		
<b>See Attachment N- Emissions Calculations</b>					

<sup>1</sup> EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets if applicable.

**Attachment L**  
**EMISSIONS UNIT DATA SHEET**  
**STORAGE TANKS**

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT [www.epa.gov/tnn/tanks.html](http://www.epa.gov/tnn/tanks.html)), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (<http://www.epa.gov/tnn/chief/>).

**I. GENERAL INFORMATION (required)**

1. Bulk Storage Area Name Raw Materials Storage Area	2. Tank Name Recycle Toluene Tank
3. Tank Equipment Identification No. (as assigned on <i>Equipment List Form</i> ) T-580, T-581	4. Emission Point Identification No. (as assigned on <i>Equipment List Form</i> ) T-580E, T-581E
5. Date of Commencement of Construction (for existing tanks)	
6. Type of change <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> New Stored Material <input type="checkbox"/> Other Tank Modification	
7. Description of Tank Modification (if applicable) Recycle toluene storage vessels	
7A. Does the tank have more than one mode of operation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (e.g. Is there more than one product stored in the tank?)	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode).	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.):	

**II. TANK INFORMATION (required)**

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. <p style="text-align: center;">23,000 L</p>	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights. <p style="text-align: center;">23,000 L</p>	



25F. Describe deck fittings; indicate the number of each type of fitting:		
ACCESS HATCH		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
COLUMN WELL		
BUILT-UP COLUMN – SLIDING COVER, GASKETED:	BUILT-UP COLUMN – SLIDING COVER, UNGASKETED:	PIPE COLUMN – FLEXIBLE FABRIC SLEEVE SEAL:
LADDER WELL		
PIP COLUMN – SLIDING COVER, GASKETED:	PIPE COLUMN – SLIDING COVER, UNGASKETED:	
GAUGE-HATCH/SAMPLE PORT		
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:	
ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)
VACUUM BREAKER		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
RIM VENT		
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
DECK DRAIN (3-INCH DIAMETER)		
OPEN:	90% CLOSED:	
STUB DRAIN		
1-INCH DIAMETER:		
OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)		

26. Complete the following section for Internal Floating Roof Tanks <input type="checkbox"/> Does Not Apply	
26A. Deck Type:	<input type="checkbox"/> Bolted <input type="checkbox"/> Welded
26B. For Bolted decks, provide deck construction:	
26C. Deck seam:	
<input type="checkbox"/> Continuous sheet construction 5 feet wide <input type="checkbox"/> Continuous sheet construction 6 feet wide <input type="checkbox"/> Continuous sheet construction 7 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 7.5 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 12 feet wide <input type="checkbox"/> Other (describe)	
26D. Deck seam length (ft)	26E. Area of deck (ft <sup>2</sup> )
For column supported tanks:	26G. Diameter of each column:
26F. Number of columns:	

**IV. SITE INFORMATION** (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based.
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft <sup>2</sup> ·day))
33. Atmospheric Pressure (psia)

**V. LIQUID INFORMATION** (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid:			
34A. Minimum (°F)	34B. Maximum (°F)		
35. Average operating pressure range of tank:			
35A. Minimum (psig)	35B. Maximum (psig)		
36A. Minimum Liquid Surface Temperature (°F)	36B. Corresponding Vapor Pressure (psia)		
37A. Average Liquid Surface Temperature (°F)	37B. Corresponding Vapor Pressure (psia)		
38A. Maximum Liquid Surface Temperature (°F)	38B. Corresponding Vapor Pressure (psia)		
39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.			
39A. Material Name or Composition			
39B. CAS Number			
39C. Liquid Density (lb/gal)			
39D. Liquid Molecular Weight (lb/lb-mole)			
39E. Vapor Molecular Weight (lb/lb-mole)			



**Attachment L**  
**EMISSIONS UNIT DATA SHEET**  
**STORAGE TANKS**

Provide the following information for each new or modified bulk liquid storage tank as shown on the *Equipment List Form* and other parts of this application. A tank is considered modified if the material to be stored in the tank is different from the existing stored liquid.

IF USING US EPA'S TANKS EMISSION ESTIMATION PROGRAM (AVAILABLE AT [www.epa.gov/tnn/tanks.html](http://www.epa.gov/tnn/tanks.html)), APPLICANT MAY ATTACH THE SUMMARY SHEETS IN LIEU OF COMPLETING SECTIONS III, IV, & V OF THIS FORM. HOWEVER, SECTIONS I, II, AND VI OF THIS FORM MUST BE COMPLETED. US EPA'S AP-42, SECTION 7.1, "ORGANIC LIQUID STORAGE TANKS," MAY ALSO BE USED TO ESTIMATE VOC AND HAP EMISSIONS (<http://www.epa.gov/tnn/chief/>).

**I. GENERAL INFORMATION (required)**

1. Bulk Storage Area Name Finished Product Storage Tank Area	2. Tank Name Finished Product Storage Tank
3. Tank Equipment Identification No. (as assigned on <i>Equipment List Form</i> ) T-590, T-591, T-592, T-593	4. Emission Point Identification No. (as assigned on <i>Equipment List Form</i> ) T-590E, T-591E, T-592E, T-593E
5. Date of Commencement of Construction (for existing tanks)	
6. Type of change <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> New Stored Material <input type="checkbox"/> Other Tank Modification	
7. Description of Tank Modification (if applicable) Finished product storage tanks	
7A. Does the tank have more than one mode of operation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (e.g. Is there more than one product stored in the tank?)	
7B. If YES, explain and identify which mode is covered by this application (Note: A separate form must be completed for each mode).	
7C. Provide any limitations on source operation affecting emissions, any work practice standards (e.g. production variation, etc.): Not Applicable	

**II. TANK INFORMATION (required)**

8. Design Capacity (specify barrels or gallons). Use the internal cross-sectional area multiplied by internal height. <p style="text-align: center;">39,000 Litres</p>	
9A. Tank Internal Diameter (ft)	9B. Tank Internal Height (or Length) (ft)
10A. Maximum Liquid Height (ft)	10B. Average Liquid Height (ft)
11A. Maximum Vapor Space Height (ft)	11B. Average Vapor Space Height (ft)
12. Nominal Capacity (specify barrels or gallons). This is also known as "working volume" and considers design liquid levels and overflow valve heights. <p style="text-align: center;">39,000 Litres</p>	

13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of Turnovers per year (annual net throughput/maximum tank liquid volume)	
15. Maximum tank fill rate (gal/min)	
16. Tank fill method <input type="checkbox"/> Submerged <input type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Complete 17A and 17B for Variable Vapor Space Tank Systems <input checked="" type="checkbox"/> Does Not Apply	
17A. Volume Expansion Capacity of System (gal)	17B. Number of transfers into system per year
18. Type of tank (check all that apply): <input type="checkbox"/> Fixed Roof    ___ vertical    ___ horizontal    ___ flat roof    ___ cone roof    ___ dome roof ___ other (describe) <input type="checkbox"/> External Floating Roof    ___ pontoon roof    ___ double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof    ___ vertical column support    ___ self-supporting <input type="checkbox"/> Variable Vapor Space    ___ lifter roof    ___ diaphragm <input type="checkbox"/> Pressurized    ___ spherical    ___ cylindrical <input type="checkbox"/> Underground <input type="checkbox"/> Other (describe)	

**III. TANK CONSTRUCTION & OPERATION INFORMATION** (optional if providing TANKS Summary Sheets)

19. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunitite lined <input type="checkbox"/> Epoxy-coated rivets <input type="checkbox"/> Other (describe)		
20A. Shell Color	20B. Roof Color	20C. Year Last Painted
21. Shell Condition (if metal and unlined): <input type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable		
22A. Is the tank heated? <input type="checkbox"/> YES <input type="checkbox"/> NO		
22B. If YES, provide the operating temperature (°F)		
22C. If YES, please describe how heat is provided to tank.		
23. Operating Pressure Range (psig):                      to		
24. Complete the following section for <b>Vertical Fixed Roof Tanks</b> <input type="checkbox"/> Does Not Apply		
24A. For dome roof, provide roof radius (ft)		
24B. For cone roof, provide slope (ft/ft)		
25. Complete the following section for <b>Floating Roof Tanks</b> <input type="checkbox"/> Does Not Apply		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type: <input type="checkbox"/> Metallic (Mechanical) Shoe Seal <input type="checkbox"/> Liquid Mounted Resilient Seal <input type="checkbox"/> Vapor Mounted Resilient Seal <input type="checkbox"/> Other (describe):		
25C. Is the Floating Roof equipped with a Secondary Seal? <input type="checkbox"/> YES <input type="checkbox"/> NO		
25D. If YES, how is the secondary seal mounted? (check one) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):		
25E. Is the Floating Roof equipped with a weather shield? <input type="checkbox"/> YES <input type="checkbox"/> NO		

25F. Describe deck fittings; indicate the number of each type of fitting:		
ACCESS HATCH		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
AUTOMATIC GAUGE FLOAT WELL		
BOLT COVER, GASKETED:	UNBOLTED COVER, GASKETED:	UNBOLTED COVER, UNGASKETED:
COLUMN WELL		
BUILT-UP COLUMN – SLIDING COVER, GASKETED:	BUILT-UP COLUMN – SLIDING COVER, UNGASKETED:	PIPE COLUMN – FLEXIBLE FABRIC SLEEVE SEAL:
LADDER WELL		
PIP COLUMN – SLIDING COVER, GASKETED:	PIPE COLUMN – SLIDING COVER, UNGASKETED:	
GAUGE-HATCH/SAMPLE PORT		
SLIDING COVER, GASKETED:	SLIDING COVER, UNGASKETED:	
ROOF LEG OR HANGER WELL		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	SAMPLE WELL-SLIT FABRIC SEAL (10% OPEN AREA)
VACUUM BREAKER		
WEIGHTED MECHANICAL ACTUATION, GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
RIM VENT		
WEIGHTED MECHANICAL ACTUATION GASKETED:	WEIGHTED MECHANICAL ACTUATION, UNGASKETED:	
DECK DRAIN (3-INCH DIAMETER)		
OPEN:	90% CLOSED:	
STUB DRAIN		
1-INCH DIAMETER:		
OTHER (DESCRIBE, ATTACH ADDITIONAL PAGES IF NECESSARY)		

26. Complete the following section for Internal Floating Roof Tanks <input type="checkbox"/> Does Not Apply	
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded	
26B. For Bolted decks, provide deck construction:	
26C. Deck seam: <input type="checkbox"/> Continuous sheet construction 5 feet wide <input type="checkbox"/> Continuous sheet construction 6 feet wide <input type="checkbox"/> Continuous sheet construction 7 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 7.5 feet wide <input type="checkbox"/> Continuous sheet construction 5 × 12 feet wide <input type="checkbox"/> Other (describe)	
26D. Deck seam length (ft)	26E. Area of deck (ft <sup>2</sup> )
For column supported tanks:	26G. Diameter of each column:
26F. Number of columns:	

**IV. SITE INFORMATION** (optional if providing TANKS Summary Sheets)

27. Provide the city and state on which the data in this section are based.
28. Daily Average Ambient Temperature (°F)
29. Annual Average Maximum Temperature (°F)
30. Annual Average Minimum Temperature (°F)
31. Average Wind Speed (miles/hr)
32. Annual Average Solar Insulation Factor (BTU/(ft <sup>2</sup> ·day))
33. Atmospheric Pressure (psia)

**V. LIQUID INFORMATION** (optional if providing TANKS Summary Sheets)

34. Average daily temperature range of bulk liquid:	
34A. Minimum (°F)	34B. Maximum (°F)
35. Average operating pressure range of tank:	
35A. Minimum (psig)	35B. Maximum (psig)
36A. Minimum Liquid Surface Temperature (°F)	36B. Corresponding Vapor Pressure (psia)
37A. Average Liquid Surface Temperature (°F)	37B. Corresponding Vapor Pressure (psia)
38A. Maximum Liquid Surface Temperature (°F)	38B. Corresponding Vapor Pressure (psia)
39. Provide the following for <u>each</u> liquid or gas to be stored in tank. Add additional pages if necessary.	
39A. Material Name or Composition	
39B. CAS Number	
39C. Liquid Density (lb/gal)	
39D. Liquid Molecular Weight (lb/lb-mole)	
39E. Vapor Molecular Weight (lb/lb-mole)	



**Attachment L  
EMISSIONS UNIT DATA SHEET  
CHEMICAL PROCESS**

For chemical processes please fill out this sheet and all supplementary forms (see below) that apply. Please check all supplementary forms that have been completed.

- Emergency Vent Summary Sheet*
- Leak Sources Data Sheet*
- Toxicology Data Sheet*
- Reactor Data Sheet*
- Distillation Column Data Sheet*

**\*See Emission Master® Information in Attachment N**

1. Chemical process area name and equipment ID number (as shown in *Equipment List Form*)  
**See Attachment I- Emissions Units Table for a list of proposed new equipment and ID numbers.**

2. Standard Industrial Classification Codes (SICs) for process(es)  
**SIC Code 2869**

3. List raw materials and  attach MSDSs  
**\*See information provided in Attachment H in the April 2013 application, which is incorporated by reference.**  
**Safety Data Sheets for the following chemicals, which were not included in the 2013 application, is provided in Attachment H to the current application:**  
**Ammonium Hydroxide, Nuosperse® FX 600, Molten Maleic Anhydride, Naxcat®TSA-97, Nuosperse®FX 631, Nuosperse®FX 665, Trigonox 21S**

4. List Products and Maximum Production and  attach MSDSs

Description and CAS Number	Maximum Hourly (lb/hr)	Maximum Annual (ton/year)
<b>*See Emission Master® Information In Attachment N</b>		
<b>See Attachment H for MSDS</b>		

5. Complete the *Emergency Vent Summary Sheet* for all emergency relief devices.

6. Complete the *Leak Source Data Sheet* and describe below or attach to application the leak detection or maintenance program to minimize fugitive emissions. Include detection instruments, calibration gases or methods, planned inspection frequency, and record-keeping, and similar pertinent information. If subject to a rule requirement (e.g. 40CFR60, Subpart VV), please list those here.

**Not Applicable- As discussed in Attachment D- Regulatory Discussion, Elementis is not subject to these regulations.**

7. Clearly describe below or attach to application Accident Procedures to be followed in the event of an accidental spill or release.

**Elementis has developed a Risk Management Plan, which includes emergency response procedures and emergency contacts.**

8A. Complete the *Toxicology Data Sheet* or attach to application a toxicology report (an up-to-date material safety data sheets (MSDS) may be used) outlining the currently known acute and chronic health effects of each compound or chemical entity emitted to the air. If these compounds have already been listed in Item 3, then a duplicate MSDS sheet is not required. Include data such as the OSHA time weighted average (TWA) or mutagenicity, teratogenicity, irritation, and other known or suspected effects should be addressed. Indicate where these are unknown, and provide references.

8B. Describe any health effects testing or epidemiological studies on these compounds that are being or may be conducted by the company or required under TSCA, RCRA or other federal regulations. Discuss the persistence in the environment of any emission (e.g. pesticides, etc.).

9. **Waste Products** - Waste products status: (If source is subject to RCRA or 45CSR25, please contact the Hazardous Waste Section of WVDEP, OAQ at (304) 926-3647.)

9A. Types and amounts of wastes to be disposed: **At this time, the facility is a Small Quantity Generator of hazardous waste. Waste products will be transferred off site by a licensed hauler to a licensed waste facility.**

9B. Method of disposal and location of waste disposal facilities:  
**Carrier: Approved Hazardous Waste Disposal Company Phone:**

9C. Check here if approved USEPA/State Hazardous Waste Landfill will be used

10. Maximum and Projected Typical Operating Schedule for process or project as a whole (circle appropriate units).

circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)
10A. Maximum	24 hours per day	7 days	365 days/year
10B. Typical	Varies	Varies	365 days/year

11. Complete a *Reactor Data Sheet* for each reactor in this chemical process.

12. Complete a *Distillation Column Data Sheet* for each distillation column in this chemical process.

13. **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	RECORDKEEPING
Condenser Temperatures	Condenser Temperatures
Pressure Difference	Pressure Difference
Production Records	Production Records
Raw Material Usage	Raw Material Usage
	Maintenance Activities

REPORTING	TESTING
As required by DEP	As required by DEP

**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 or 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 or air pollution control device.

14. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty  
**This process falls under the EPA's RMP Program. Equipment will be maintained as described in the integrity maintenance section of the Risk Management Program.**

## INFORMATION REQUIRED FOR CHEMICAL PROCESSES

The notes listed below for chemical processes are intended to help the applicant submit a complete application to the OAQ; these notes are not intended to be all inclusive. The requirements for a complete application for a permit issued under 45CSR13 are designed to provide enough information for a permit reviewer to begin a technical review. Additional information beyond that identified may be required to complete the technical review of any individual application.

### Process Description

Please keep these points in mind when completing your process description as part of this permit application.

1. Provide a general process overview. This brief, but complete, process description should include chemical or registered trademark names of chemical products, intermediates, and/or raw materials to be produced or consumed, and the ultimate use(s) of the product(s). A list of the various chemical compounds is helpful.
2. Describe each process step. Include the process chemistry and stoichiometrically balanced reaction equation or material mass balance on all components.
3. Describe the methods and equipment used to receive, store, handle, and charge raw materials.
4. Describe the methods and equipment used to handle, store, or package final products and intermediates.
5. Provide process flow diagrams or equipment layout drawings which clearly show the process flow relationships among all pieces of process and control equipment. Identify all air emission discharge points. Discuss instrumentation and controls for the process.
6. Discuss the possibilities of process upsets, the duration and frequency of upsets, and consequences (including air emissions) of these upsets. Include a description of rupture discs, pressure relief valves, and secondary containment systems.
7. Discuss any fugitive emissions and the methods used to minimize them.
8. Include the following plans for the process if available:
  - a. preventative maintenance and malfunction abatement plan (recommended for all control equipment).
  - b. continuous emissions (in-stack) monitoring plan
  - c. ambient monitoring plan
  - d. emergency response plan

### Regulatory Discussion

The following state and federal air pollution control regulations may be applicable to your chemical process. You should review these regulations carefully to determine if they apply to your process. Please summarize the results of your review in your permit application along with any other regulations you believe are applicable.

- Title 45 Legislative Rule Division of Environmental Protection, Office of Air Quality contains West Virginia's air pollution control regulations, including the following promulgated rules which may require emissions reductions or control technologies for your chemical process:
  - a. 45CSR27 - Best Available Technology (BAT) for Toxic Air Pollutants (TAPs)
  - b. 45CSR21 - VOC emissions controls for ozone maintenance in Kanawha, Cabell, Putnam, Wayne, and Wood counties.
  - c. 45CSR13 (Table 45-13A) - plantwide emission thresholds for permitting for certain pollutants.
- Federal Guidelines for case-by-case MACT determinations under section 112(g) of the 1990 CAAA for individual and total HAPs greater than 10 and 25 tons per year, respectively.
- There are also subparts of the federal Standards of Performance for New Stationary Sources (NSPS), 40CFR60, and the National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40CFR61 and 40CFR63, which apply to various chemical and nonchemical processes. These subparts are too numerous to list here, but these areas of the federal regulations should be consulted carefully to determine applicability to your process.

### Emissions Summary and Calculations

Please keep these points in mind when submitting your emissions calculations as part of this permit application.

1. For each pollutant, provide the basis for the emissions estimate and for all emission reduction(s) or control efficiency(ies) claimed.
2. For all batch processes provide the following
  - a. Emissions of each pollutant in pound(s) per batch, from each process step
  - b. Annual emissions based on number of batches requested per year
  - c. The total time for each process step and the duration of the emissions during the process step
  - d. Total batch time, total emissions per batch (or per day), and annual emissions based on the number of batches requested per year.



**LEAK SOURCE DATA SHEET - NOT APPLICABLE**

Source Category	Pollutant	Number of Source Components <sup>1</sup>	Number of Components Monitored by Frequency <sup>2</sup>	Average Time to Repair (days) <sup>3</sup>	Estimated Annual Emission Rate (lb/yr) <sup>4</sup>
Pumps <sup>5</sup>	light liquid VOC <sup>6,7</sup>				
	heavy liquid VOC <sup>8</sup>				
	Non-VOC <sup>9</sup>				
Valves <sup>10</sup>	Gas VOC				
	Light Liquid VOC				
	Heavy Liquid VOC				
Safety Relief Valves <sup>11</sup>	Non-VOC				
	Gas VOC				
	Non VOC				
Open-ended Lines <sup>12</sup>	VOC				
	Non-VOC				
Sampling Connections <sup>13</sup>	VOC				
	Non-VOC				
Compressors	VOC				
	Non-VOC				
Flanges	VOC				
	Non-VOC				
Other	VOC				
	Non-VOC				

<sup>1-13</sup> See notes on the following page.

## Notes for Leak Source Data Sheet

1. For VOC sources include components on streams and equipment that contain greater than 10% w/w VOC, including feed streams, reaction/separation facilities, and product/by-product delivery lines. Do not include certain leakless equipment as defined below by category.
2. By monitoring frequency, give the number of sources routinely monitored for leaks, using a portable detection device that measures concentration in ppm. Do not include monitoring by visual or soap-bubble leak detection methods. "M/Q(M)/Q/SA/A/O" means the time period between inspections as follows:

Monthly/Quarterly, with Monthly follow-up of repaired leakers/Quarterly/Semi-annual/Annually/Other (specify time period)

If source category is not monitored, a single zero in the space will suffice. For example, if 50 gas-service valves are monitored quarterly, with monthly follow-up of those repaired, 75 are monitored semi-annually, and 50 are checked bimonthly (alternate months), with non checked at any other frequency, you would put in the category "valves, gas service:" 0/50/0/75/0/50 (bimonthly).

3. Give the average number of days, after a leak is discovered, that an attempt will be made to repair the leak.
4. Note the method used: MB - material balance; EE - engineering estimate; EPA - emission factors established by EPA (cite document used); O - other method, such as in-house emission factor (specify).
5. Do not include in the equipment count sealless pumps (canned motor or diaphragm) or those with enclosed venting to a control device. (Emissions from vented equipment should be included in the estimates given in the Emission Points Data Sheet.)
6. Volatile organic compounds (VOC) means the term as defined in 40 CFR §51.100 (s).
7. A light liquid is defined as a fluid with vapor pressure equal to or greater than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if 20% w/w or more of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a light liquid.
8. A heavy liquid is defined as a fluid with a vapor pressure less than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if less than 20% w/w of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a heavy liquid.
9. LIST CO, H<sub>2</sub>S, mineral acids, NO, NO<sub>2</sub>, SO<sub>3</sub>, etc. DO NOT LIST CO<sub>2</sub>, H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
10. Include all process valves whether in-line or on an open-ended line such as sample, drain and purge valves. Do not include safety-relief valves, or leakless valves such as check, diaphragm, and bellows seal valves.
11. Do not include a safety-relief valve if there is a rupture disk in place upstream of the valve, or if the valve vents to a control device.
12. Open-ended lines include purge, drain and vent lines. Do not include sampling connections, or lines sealed by plugs, caps, blinds or second valves.
13. Do not include closed-purge sampling connections.



## REACTOR DATA SHEET

Provide the following information for each piece of equipment that is a potential or actual source of emissions as shown on the *Equipment List Form* and other parts of application.

Identification Number (as shown on <i>Equipment List Form</i> ):							
1. Name and type of equipment (e.g. CSTR, plug flow, batch, etc.) Reactor R-201							
2. Type of operation <input checked="" type="checkbox"/> Batch <input type="checkbox"/> Continuous <input type="checkbox"/> Semi-batch							
3. Projected Actual Equipment Operating Schedule (complete appropriate lines):							
hrs/day		days/week			weeks/year		
hrs/batch		batches/day, weeks (Circle one)			day, weeks/yr (Circle one)		
4. Feed Data     Flow In =                      gal/hr, or gal/batch							
Material Name & CAS No.	Phase <sup>a</sup>	Specific Gravity	Vapor Pressure <sup>b</sup>	Charge Rate			Fill Time (min/batch, run) <sup>c</sup>
				Normal	Max	Units	
<p><b>*See Emission Master® Information in Attachment N</b></p>							
<p>a. S = Solid, L = Liquid, G = gas or vapor  b. At feed conditions  c. Total time that equipment is filling per batch or run (start-up), for tank or vessel-type equipment.</p>							
5. Provide all <b>chemical reactions</b> that will be involved (if applicable), including the residence time and any side reactions that may occur as well as gases that may be generated during these reactions. Indicate if the reaction(s) are exothermic or endothermic. <p><b>*See Emission Master® Information in Attachment N</b></p>							

6. Maximum Temperature <b>*See Emission Master® Information in Attachment N</b>  °C °F	7A. Maximum Pressure 7B. Max. Set Pressure for venting  mmHg psig
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8. Output Data		Flow Out = gal/hr or gal/batch				
Material Name and CAS No.	Phase	Specific Gravity	Vapor Pressure	Hourly or Batch Output Rate		Units
				Normal	Maximum	
<b>* See Emission Master® Information in Attachment N.</b>						

9. Complete the following emission data for equipment connected to a header exhaust system, giving emissions levels before entering header system (i.e. before control equipment).

Check here if not applicable

Emission Point ID (exhaust point of header system):

Material Name and CAS No.	Maximum Potential Emission Rate (lb/hr)	Method **

\*\* MB - material balance: EE - Engineering Estimate: TM - Test Measurement (submit test data): O - other (Explain)

10. Provide the following information pertaining to each condenser that may be attached to this reactor. Attach additional pages as necessary if more than one condenser is used for this reactor. Complete the Condenser Air Pollution Control Device Sheet if necessary.

Check here if not applicable **\*Reactor 201 is equipped with a process condenser, not an air pollution control device.**

- 10A. Cooling material
- 10B. Minimum and Maximum flowrate of cooling material (gal/hr)
- 10C. Inlet temperature of cooling material (°F)
- 10D. Outlet temperature of cooling material (°F)
- 10E. Pressure drop of gas to be condensed from inlet to outlet (psig)
- 10F. Inlet temperature of gas stream (°F)
- 10G. Outlet temperature of gas stream (°F)
- 10H. Number of passes

11. Provide the following pertaining to auxiliary equipment that burns fuel (heaters, dryers, etc.):

Check here if not applicable

11A. Type of fuel and maximum fuel burn rate, per hour:

11B. Provide maximum percent sulfur (S), ash content of fuel, and the energy content using appropriate units:

%S	% Ash	BTU/lb, std. ft <sup>3</sup> /day, gal
		(circle one)

11C. Theoretical combustion air requirement in SCFD per unit of fuel (circle appropriate unit) @ 70°F and 14.7 PSIA:

SCFD/lb, SCFD, gal (circle one)

11D. Percent excess air: %

11E. Type, amount, and BTU rating of burners and all other firing equipment that are planned to be used:

11F. Total maximum design heat input: ×10<sup>6</sup> BTU/hr.

**12. 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**

Condenser Temperatures  
Production Records  
Raw Material Usage

**RECORDKEEPING**

Condenser Temperatures  
Production Records  
Raw Materials Usage  
Maintenance Activities

**REPORTING**

As required DEP

**TESTING**

As required by DEP

**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 OR 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 OR AIR POLLUTION CONTROL DEVICE.

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

**Equipment warranty details have not been determined.**

**NOTE:** An *AIR POLLUTION CONTROL DEVICE SHEET* must be completed for any air pollution device(s) (except emergency relief devices) used to control emissions from this reactor.

## DISTILLATION COLUMN DATA SHEET

Identification Number (as assigned on <i>Equipment List Form</i> ): <b>NOT APPLICABLE</b>		
1. Name and type of equipment		
#. Projected actual equipment operating schedule (complete appropriate lines):		
hrs/day  hrs/batch	days/week  batches/day, batches/week (circle one)	weeks/year  days/yr, weeks/yr (circle one)
2. Number of stages (plates), excluding condenser		
3. Number of feed plates and stage location		
4. Specify details of any reheating, recycling, or stage conditioning along with the stage locations		
5. Specify reflux ratio, R (where R is defined as the ratio of the reflux to the overhead product, given symbolically as $R=L/D$ , where L = liquid down column, D = distillation product)		
6. Specify the fraction of feed which is vaporized, f (where f is the molal fraction of the feed that leaves the feed plate continuously as vapor).		
7A. Type of condenser used: <input type="checkbox"/> total <input type="checkbox"/> partial <input type="checkbox"/> multiple <input type="checkbox"/> other		
7B. For each condenser provide process operating details including all inlet and outlet temperatures, pressures, and compositions.		
8. Feed Characteristics <ul style="list-style-type: none"> <li>A. Molar composition</li> <li>B. Individual vapor pressure of each component</li> <li>C. Total feed stage pressure</li> <li>D. Total feed stage temperature</li> <li>E. Total mass flow rate of each stream into the system</li> </ul>		
9. Overhead Product <ul style="list-style-type: none"> <li>A. Molar composition of components</li> <li>B. Vapor pressure of components</li> <li>C. Total mass flow rate of all streams leaving the system as overhead products</li> </ul>		
10. Bottom Product <ul style="list-style-type: none"> <li>A. Molar composition of all components</li> <li>B. Total mass flow rate of all streams leaving the system as bottom products</li> </ul>		

11. General Information

- A. Distillation column diameter
- B. Distillation column height
- C. Type of plates
- D. Plate spacing
- E. Murphree plate efficiency
- F. Any other information necessary of describe the operation of this distillation column.

12. **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

RECORDKEEPING

REPORTING

TESTING

**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 OR 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 OR AIR POLLUTION CONTROL DEVICE.

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

NOTE: An *AIR POLLUTION CONTROL DEVICE SHEET* must be completed for any air pollution device(s) (except emergency relief devices) used to control emissions from this distillation column.

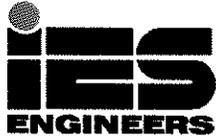
**ATTACHMENT M**

**AIR POLLUTION CONTROL DEVICE SHEETS**



ATTACHMENT M  
AIR POLLUTION CONTROL DEVICE SHEETS

Elementis is not proposing to install any air pollution control devices at the facility. The scrubber is used for odor control and no credit is taken for emission reduction.



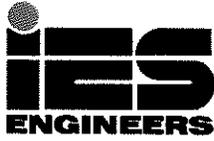
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## ATTACHMENT N

### EMISSION CALCULATIONS

REDACTED COPY – CLAIM OF CONFIDENTIALITY

**The emission calculations contain proprietary process information that has been deleted from the publicly available version of this application but provided to the Department in a separate CONFIDENTIAL submittal.**



ATTACHMENT N  
EMISSION CALCULATIONS

The new tanks will streamline the production of dispersant products. Emission Master<sup>®</sup> calculations of VOC and HAP emissions from these products have been performed and are summarized in the following table.

Product	Batch Size	Batch Time	VOC Emissions			HAP Emissions		
	(kg)	(hours)	lb/batch	lb/hr	ton/yr	lb/batch	lb/hr	ton/yr
Max Potential Emissions	15,400	55.45	62.578	1.129		56.323	1.016	
Current Permit			---	2.34	10.3	---	2.04	8.9

HAP EMISSIONS

Elementis is requesting that the permit be revised to include a limit of 8.9 tpy for any individual HAP. The current permit limit on total HAPs is 8.9 tpy of total HAPs. For operational flexibility and to account for the development of future products with greater HAP emissions, Elementis requests that the current limit on total HAPs be increased from 8.9 to 12.9 tpy, an increase of 4 tpy. The average hourly equivalent of a 12.9-tpy HAP limit is:

$$12.9 \text{ ton/yr} \times 2,000 \text{ lb/ton} \div 8,760 \text{ hr/yr} = 2.95 \text{ lb/hr}$$

The current hourly limit on total HAPs is 2.04 lb/hr. Therefore, Elementis requests that the hourly limit be increased by 0.91 lb/hr to 2.95 lb/hr.

VOC EMISSIONS

The current hourly limit on VOC is 2.34 lb/hr. Therefore, Elementis requests that the hourly limit be increased by 0.14 lb/hr to 2.48 lb/hr.

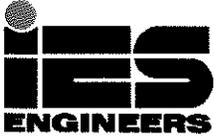
SUMMARY

In summary, Elementis is requesting the following permit changes:

- Add a limit of 8.9 tpy for any individual HAP
- Increase the average hourly VOC limit from 2.34 lb/hr to 2.48 lb/hr (0.14 lb/hr increase)
- Increase the annual VOC limit from 10.3 tpy to 10.85 tpy (0.55 tpy increase)
- Increase the average hourly HAP limit from 2.04 lb/hr to 2.95 lb/hr (0.91 lb/hr increase)
- Increase the annual HAP limit from 8.9 tpy to 12.9 tpy (increase of 4 tpy)

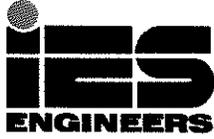


Because the VOC emission increases are less than 6 lb/hr and 10 ton/yr, and the HAP emission increases are less than 2 lb/hr and 5 ton/yr, the project qualifies for a Class II Administrative Update.



**ATTACHMENT O**

**MONITORING, RECORDING, AND TESTING PLANS**



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ATTACHMENT O  
MONITORING, RECORDING, AND TESTING PLANS

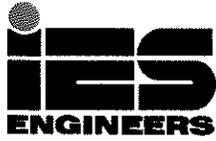
Elementis will maintain production records to calculate the VOC and HAP emission rates using Emission Master<sup>®</sup> software (Version 8.1.0.6) developed by Mitchell Scientific to demonstrate compliance with the emission limits imposed in the permit. Elementis will also monitor the temperature, pressure difference, and raw materials usage for the process condensers per existing permit conditions.



## **ATTACHMENT P**

### **PUBLIC NOTICE / AFFIDAVIT OF PUBLICATION**

[**Note:** The following legal notice will be published in the Wetzel Chronicle on **September 21, 2016**. A copy of the notice and a notarized proof of publication will be submitted to the Department upon receipt.]



## **AIR QUALITY PERMIT NOTICE**

### **Notice of Application**

Notice is given that Elementis Specialties, Inc., has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update to add new tanks to Permit No. R13-3065B at its existing specialty chemical manufacturing facility located at 17595 Energy Road, Proctor, in Marshall County, West Virginia. The latitude and longitude coordinates are: 39.727952°, -80.829961°, respectively.

This project will emit Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAPs). The emission increases from the proposed project qualify it to be permitted through a Class II Administrative Update. The HAPs will consist of toluene, vinyl acetate, acrylic acid, ethyl acrylate, methyl methacrylate, and others. Elementis is requesting changes to the permit limits to accommodate an increase in facility-wide VOC emissions of 0.55 tons per year and an increase in total HAP emissions of 4 tons per year. Additionally, Elementis is requesting the addition of a permit limit of 8.9 tons per year for any individual HAP. Based on the facility's emissions, the site is classified as a minor source under the Clean Air Act regulations.

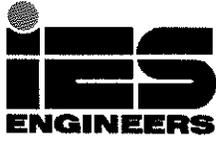
Startup of the new equipment is planned to begin on or about December 1, 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality (DAQ), 601 57<sup>th</sup> Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date 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 21<sup>st</sup> day of September 2016.

By: Elementis Specialties, Inc.  
Robert Mangold  
Vice President, Global Supply Chain & Manufacturing  
17595 Energy Road  
Proctor, WV 26055

**ATTACHMENT Q**  
**BUSINESS CONFIDENTIAL CLAIM**



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ATTACHMENT Q  
BUSINESS CONFIDENTIAL CLAIM

Elementis is claiming the following items confidential in the Class II Administrative Update Application in accordance with 45 CSR 31:

Attachment F	Detailed Process Flow Diagrams
Attachment G	Process Description
Attachment N	Emission Calculations

The information contained in these sections includes product material formulas and production related data. It is business-sensitive material that, if made public, would reveal trade secrets and confer an unfair economic advantage on Elementis' competitors. Accordingly, Elementis has redacted the information in the designated attachments and is requesting that the information be protected from disclosure to the public. Two copies of the public version of the application with the confidential information redacted are being submitted herewith. Under separate cover, we are submitting a sealed envelope marked "CONFIDENTIAL" that contains one copy of the confidential information on colored paper.