

**From:** [Air.Pollution Control](#)  
**To:** [APC Permitting](#)  
**Subject:** FW: Construction Air Permit Application - 54-0047  
**Date:** Tuesday, March 28, 2023 9:23:42 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[ABB Athens Modification Permit Application Report.pdf](#)

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**From:** Maggie Strom <mstrom@tiogaenv.com>  
**Sent:** Tuesday, March 28, 2023 7:12 AM  
**To:** Air.Pollution Control <Air.Pollution.Control@tn.gov>  
**Cc:** Lisa A. Woods-Neisler <lisa.neisler@us.abb.com>  
**Subject:** [EXTERNAL] Construction Air Permit Application - 54-0047

**\*\*\* This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. \*\*\***

Attached please find a construction Air Permit Application for Source No 54-0047. Please let us know if you have any questions.

Thank you,  
Maggie Strom

**Maggie Strom, QEP, CHMM**  
*Vice President*  
**Tioga Environmental Consultants, Inc.**  
357 North Main Street  
Memphis, TN 38103  
**Phone:** 901.791.2432 **Fax:** 901.791.2442  
**Cell:** 901.491.0011 **Email:** [mstrom@tiogaenv.com](mailto:mstrom@tiogaenv.com)  
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Thomas & Betts  
260 Dennis St.  
Athens, TN 37303  
(423) 745-6588  
www.tnb.com

March 28, 2023

State of Tennessee  
Department of Environment and Conservation  
Division of Air Pollution Control  
William R. Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue, 15<sup>th</sup> Floor  
Nashville, TN 37243

**RE: Construction Permit Application – Request to Modify Existing Permits**  
**Facility ID: 54-0047**  
**Operation Permit #076626 and #078709**  
**ABB Installation Products, Inc.**  
**Athens, Tennessee**

To Whom it May Concern,

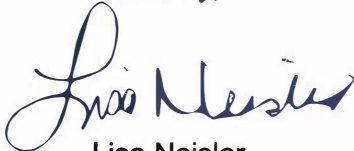
ABB Installation Products, Inc., located at 260 Dennis Street in Athens Tennessee operates electroplating operations under two different air operating permits, Number 076626 (Expiring July 1, 2029) and Number 078709 (Expiring July 1, 2031). Each of these electroplating lines includes two sulfuric acid tanks used in the preparation of parts prior to cleaning and plating.

With the enclosed construction air permit application, we are proposing to replace the sulfuric acid in these tanks with hydrochloric acid. All other operations on these lines will remain the same and emissions generated by the electroplating process will remain unchanged except for the addition of hydrochloric acid emissions from these tanks.

This application report contains a description of the emission units involved with this modification, emission calculations, a summary of the new proposed emissions, the total emissions already emitted by these units, application forms and manufacturer provided information about the equipment.

If you have any questions or if additional information is needed, please contact me at (423)745-6588.

Sincerely,



Lisa Neisler  
ABB Installation Products, Inc



# Construction Air Permit Application

**ABB Installation Products, Inc.**

**260 Dennis Street**

**Athens, Tennessee**

**Source No: 57-0047**

**March 2023**

**Project No. 111409.00**

**Prepared For Submission to:**

**Tennessee Department of Environment and Conservation**

**Division of Air Pollution Control**

**William R. Snodgrass Tennessee Tower**

**312 Rosa L. Parks Avenue, 15<sup>th</sup> Floor**

**Nashville, TN 37243**

**Prepared By:**



**357 North Main Street  
Memphis, Tennessee 38103**

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## 1.0 INTRODUCTION

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ABB Installation Products currently maintains a facility located at 260 Dennis Street in Athens, Tennessee. At this facility, ABB manufactures stamped metal electrical components. Operating Permit # Number 076626 (Expiring July 1, 2029) and Number 078709 (Expiring July 1, 2031) allow for the operation of two zinc electroplating lines at this facility. This permit modification requests to convert the facility's sulfuric acid dip tanks to hydrochloric acid dip tanks.

ABB proposes the following modifications to be accomplished under this Construction Permit Application:

- Permit # Number 076626 – Source ID 54-0047-14 – Tanks 7A and 7B from Sulfuric Acid to Hydrochloric Acid
- Permit # Number 078709 – Source ID 54-0047-16 – Tanks 7A and 7B from Sulfuric Acid to Hydrochloric Acid

In the existing permits, sulfuric acid emissions from the dip tanks are not included because sulfuric acid emissions are below regulated levels, these sources are only permitted for particulate emissions from the electroplating process. This application will add emissions of hydrochloric acid from the dip tanks to account for the conversion from sulfuric acid to hydrochloric acid. Additionally, tanks 7A and 7B in each line are controlled by a wet packed-bed scrubber and chemical suppressants and so emissions calculated in Section 3 of this permit application report will include uncontrolled, fugitive and controlled emissions from these tanks.

Because changing these tanks to hydrochloric acid will result in emissions of an air contaminant not previously permitted, this application report and associated attachments represent a construction application prepared in accordance with 1200-03-09-.01(1)(a) as required by the definition of a modification contained at 1200-03-02-.01(aa)(4.).

This application report is divided into sections for ease of review. Section 2.0 provides a process description. Section 3.0 describes the emissions for the proposed construction. A regulatory review is contained in Section 4.0 and the appendices contain information such as reporting forms, maps/facility diagrams, and manufacturer supplied information.

## 2.0 FACILITY AND PROCESS DESCRIPTION

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### 2.1 ELECTROPLATING LINES

ABB Installation Products currently operates two zinc electroplating lines at this facility (EU14 and EU16). Each electroplating line is used to coat steel struts with zinc to prevent corrosion. The Electroplating lines are comprised of various tanks with various aqueous solutions including cleaners, rinse waters, acid, non-cyanide alkaline zinc electroplating solution and trivalent chromium conversion coatings. After being dipped in wash tanks, parts are rinsed and then dipped in acid. Under the current configuration, two dip tanks of sulfuric acid are being used. This construction application requests to replace the sulfuric with hydrochloric acid in both dip tanks on each line. Converting from sulfuric acid to hydrochloric acid will result in fewer replates and a better plated quality.

On both process lines, the pre-clean tanks, including the acid dip tanks, are controlled by a push pull ventilation/scrubbing system designed to efficiently capture and remove the fumes and mist generated from these process tanks. This ventilation system is designed to capture 6,500 cfm from each acid tank on each line and slot velocities are designed for 2,000 – 2,500 ft per min (along the entire length of the tanks). The ventilation system is connected to a horizontal cross flow wet packed bed fume scrubber equipped with a chevron blade style mist eliminator designed to remove mist particles as small as 20 microns at 99% efficiency.

### 3.0 EMISSION CALCULATIONS

Emissions resulting from the replacement of sulfuric acid with hydrochloric acid on each line are summarized in the following sub-sections. Specific calculation methods used for each source will be discussed in each.

#### 3.1 SOURCE 54-0047-14 ELECRROPLATING LINE

Emissions of hydrochloric acid from each tank on the Source 54-0047-14 Electroplating line have been calculated using a worksheet prepared by the Texas Commission on Environmental Quality entitled Calculations Guidance Package, Hot Dip Galvanizing. This worksheet contains a calculation methodology for determining hydrochloric acid emissions from an Acid Pickle Tank. A copy of this worksheet is contained in Appendix B

This worksheet contains the methodology, calculations and the calculated hydrochloric acid emissions from one acid pickle tank. The table below summarizes the results. This table shows the calculated uncontrolled and controlled emissions for each tank and both tanks combined. For these calculations, the fume suppressant chemical is assumed to provide a 95% control efficiency, the fume capture system has a 90% capture efficiency, and the wet scrubber is assumed to provide a 99% control efficiency.

**Table 3-1**  
**HCl Emissions from Source 54-0047-14**

Pollutant	One Tank		Two Tanks	
	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)
HCl Uncontrolled	0.1023	0.4481	0.2046	0.8961
HCl Controlled	4.60E-05	2.02E-04	9.21E-05	0.00040
HCl Fugitive	2.56E-04	0.001121	5.12E-04	0.00224
HCl Controlled + Fugitive	3.02E-04	0.001323	6.04E-04	0.00265

#### 3.2 SOURCE 54-0047-16 ELECRROPLATING LINE

Emissions of hydrochloric acid from each tank on the Source 54-0047-16 Electroplating line have also been calculated using the worksheet prepared by the Texas Commission on Environmental Quality entitled Calculations Guidance Package, Hot Dip Galvanizing. This worksheet contains a calculation methodology for determining hydrochloric acid emissions from an Acid Pickle Tank. The worksheet contained in Appendix B is also used to calculate emissions for this source.

This worksheet contains the methodology, calculations and the calculated hydrochloric acid emissions from one acid pickle tank on this line. The table below summarizes the results. This table shows the calculated uncontrolled and controlled emissions for each tank and both tanks combined. For these calculations, the fume suppressant chemical is assumed to provide a 95% control efficiency, the fume capture system has a 90% capture efficiency and the wet scrubber is assumed to provide an additional 99% control efficiency.

**Table 3-2**  
**HCl Emissions from Source 54-0047-16**

Pollutant	One Tank		Two Tanks	
	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)
HCl Uncontrolled	0.1023	0.4481	0.2046	0.8961
HCl Controlled	4.60E-05	2.02E-04	9.21E-05	0.00040
HCl Fugitive	2.56E-04	0.001121	5.12E-04	0.00224
HCl Controlled + Fugitive	3.02E-04	0.001323	6.04E-04	0.00265

### 3.3 SOURCE EMISSIONS SUMMARY

Particulate matter emissions for each source affected by this application as calculated and presented in previous applications and as represented in existing permits will remain unchanged. These permit limits are as follows:

**Table 3-3**  
**Existing Permit Emissions**

Facility Permit	Particulate Matter	
	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)
Permit No 076626 Source No 54-0047-14	0.00835	0.0366
Permit No 078709 Source No 54-0047-16	0.0075	0.033

This construction permit application proposes the addition of emissions of hydrochloric acid, a hazardous air pollutant. A summary of the additional HAP emissions requested for each permit is as follows:

**Table 3-4**  
**Proposed Additional HAP Permit Emissions**

Facility Permit	Hazardous Air Pollutant Hydrochloric Acid Uncontrolled		Hazardous Air Pollutant Hydrochloric Acid Controlled + Fugitive	
	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)	Hourly Emissions (lb/hr)	Annual Emissions (Tons/year)
Permit No 076626 Source No 54-0047-14	0.2046	0.8961	6.04E-04	0.00265
Permit No 078709 Source No 54-0047-16	0.2046	0.8961	6.04E-04	0.00265

## 4.0 REGULATORY REVIEW

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Below is a review of the applicable regulations. For requirements applicable to the facility and/or that require a response the text has been emphasized.

### LOCAL REGULATIONS

#### 1200-3-2 Definitions

(aa) Modification is any physical change in or change in the method of operation of an air contaminant source, which increases the amount of any air contaminant (to which an emission standard applies) emitted by such source or which results in the emission of any air contaminant (to which an emission standard applies) not previously emitted except that:

1. Routine maintenance, repair, and replacement shall not be considered physical changes, and
2. The following shall not be considered a change in the method of operation:
  - (i) An increase in the production rate, if such increase does not exceed the operating design capacity nor the stated production rate on the permit of the affected source.
  - (ii) An increase in hours of operation if such increase does not exceed the operating hours stipulated as a permit condition of the source.
  - (iii) The use of an alternative fuel if the source is designed to accommodate such alternative fuel.
  - (iv) Required alterations to equipment for the use of an alternative fuel or raw material by reason of an order under Section 2(a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (or any superseding legislation) or by reason of a natural gas curtailment plan in effect pursuant to the Federal Power Act.
3. Any physical change in or change in the method of operation of an air contaminant source subject to a major source operating permit issued under paragraph 1200-03-09-.02(11), which does not meet the definition of "Title I Modification" under part 1200-03-09-.02(11)(b)28. but which qualifies as an operational flexibility change under part 1200-03-09-.02(11)(a)4., as a minor permit modification under subpart 1200-03-09-.02(11)(f)5.(ii), or for group processing of minor permit modifications under subpart 1200-03-09-.02(11)(f)5.(iii), shall not require a construction permit under subparagraph 1200-03-09-.01(1)(a).
4. Any physical change in or change in the method of operation of an air contaminant source not subject to requirements of paragraphs 1200-03-09-.02(11), 1200-03-09-.01(4), and 1200-03-09-.01(5) and which does not result in emissions exceeding the emissions allowable under the existing operating permit **and which does not result in the emission of any air contaminant (to which an emission standard applies) not previously emitted, shall not require a construction permit under subparagraph 1200-03-09-.01(1)(a).** The air contaminant source, to make changes pursuant to this part, shall provide the Technical Secretary with written notification of at least 7 days in advance of the proposed change. The written notification shall contain a brief description of the change, the date on which the change will occur, pollutants emitted, declaration of any change in emissions, and any applicable requirements that would apply as

- a result of the change. The written notice shall also contain a statement that the change does not result in emissions exceeding the emissions allowable under the existing operating permit. The Technical Secretary and the air contaminant source shall attach each such notice to their copy of the relevant permit.
5. The burden of proof establishing that a change is excepted under parts 1., 2., 3., and 4., is on the owner or operator. Further expansions or restrictions of the definition may be listed in specific chapters or rules.
  6. "Major modification" is defined in paragraph 1200-03-09-.01(4) and shall be overriding for the purposes of that paragraph.

***Under the definition of "modification" and specifically 1200-3-2(1)(aa)(4.), because this change will result in emissions of air contaminants not previously emitted, a construction application is required.***

### **1200-3-5 Visible Emissions**

#### **1200-3-5-.01 GENERAL STANDARDS.**

(1) No person shall cause, suffer, allow or permit discharge of a visible emission from any air contaminant source with opacity in excess of twenty (20) percent for an aggregate of more than five (5) minutes in any one (1) hour or more than twenty (20) minutes in any twenty-four (24) hour period.

#### **1200-3-5-.03 METHODS OF EVALUATION AND RECORDING**

A determination of visible emissions shall be made by a certified evaluator using six minute averaging.

### **1200-3-6 Non-process Emission Standards**

***No applicable standards from this section.***

### **1200-3-7 Process Emission Standards**

***No applicable standards from this section apply to this construction permit application.***

### **1200-3-9 Construction and Operating Permits**

#### **1200-3-9-.01 CONSTRUCTION PERMITS**

***This application serves as a request to construct a new emission source because a new pollutant will be emitted by acid tanks in place at this facility.***

#### **1200-3-9-.03 GENERAL PROVISIONS**

***ABB will comply with the General Provisions contained in this section.***

### **1200-3-10 Required Sampling, Recording and Reporting**

***1200-3-10 ABB will comply with any and all requests by the Technical Secretary regarding required sampling, recording and reporting as outlined in this Rule.***

### **1200-3-11 Hazardous Air Contaminants**

1200-3-11 *This application does not contain sources of hazardous air contaminants covered in this regulation.*

**1200-3-12 Methods of Sampling and Analysis**

1200-3-12 *ABB will comply with any and all methods of sampling and analysis that are requested by the Technical Secretary as outlined in this Rule.*

**1200-3-14 Control of Sulfur Dioxide Emissions**

*No applicable standards from this section apply to this construction permit application.*

**1200-3-16 New Source Performance Standards**

*This construction permit application is not subject to any standards in this rule.*

**1200-3-18 Volatile Organic Compounds**

*There are general requirements of this rule that are applicable to this facility, however there are no requirements in this chapter applicable to this application.*

**1200-3-20 Limits on Emissions due to Malfunctions, Startups and Shutdowns**

*These rules contain general requirements applicable to the facility. ABB shall comply with these general requirements.*

**1200-3-30 Acid Precipitation Standards**

*This application does not contain sources subject to this regulation.*

**1200-3-31 National Emission Standards for Hazardous Air Pollutants for Source Categories**

*Applicable MACT regulations will be discussed under the federal regulation section of this report.*

## **FEDERAL REGULATIONS**

### **PSD/NSR**

#### **40 CFR 51.165 - New Source Review**

***New source review does not need to be considered because McMinn County TN is in attainment with all ambient air quality standards.***

#### **40 CFR 51.166 Prevention of Significant Deterioration**

***PSD is not applicable because ABB and this proposed change do not meet the PSD definition of an affected source. Under PSD an affected source is a facility with emissions exceeding 250 TPY of any regulated NSR pollutants, or emissions exceeding 100 TPY of any regulated NSR pollutants at sources in specific categories.***

### **40 CFR Part 60 - Standards of Performance for New Stationary Sources**

The new source performance standards contained in 40 CFR 60 require new sources to control emissions to the level achievable by the best-demonstrated technology specified in the applicable provisions. This regulation is divided into Subparts, each providing regulations for specific source categories.

***There are no NSPS regulations applicable to this proposed modification.***

### **40 CFR Part 61 - National Standards for Hazardous Air Pollutants**

These rules were established by the U.S. Environmental Protection Agency for the specific pollutants asbestos, benzene, beryllium, inorganic arsenic, mercury, radionuclides, radon 222, and vinyl chloride. ***This facility does not emit any of the pollutants regulated by this part.***

### **40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories**

#### **Subpart W (6W) - National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations**

***This facility is subject to the provisions of this Subpart and applicable management practices apply. These applicable conditions are contained in existing applications.***

### **40 CFR Part 68 - Risk Management Plans**

Section 112(r) of the Clean Air Act (CAA) Amendments mandates regulated facilities to develop and implement appropriate risk management programs to minimize the frequency and severity of chemical accidents. ***This facility does not emit or store any substances regulated by this rule in sufficient quantities and is therefore not subject to this rule.***

### **40 CFR Part 70 - Major Source Operating Permits**

The State of Tennessee has been delegated authority to implement the major source operating permit program (Title V) in accordance with the requirements of 40 CFR Part 70 and Title V of the CAA amendments of 1990.



***Based upon the calculated maximum potential emissions from this facility it is not considered a major source of air pollutant emissions and this regulation is not longer applicable.***

#### **40 CFR Parts 72 through 78 - Acid Rain Regulations**

***ABB is not an affected facility as defined in these regulations and is, therefore, not subject to the requirements of the acid rain program.***

#### **40 CFR Part 82 - Ozone Depleting Substances**

40 CFR 82 establishes regulation to control emissions of substances known to degrade ozone in the upper atmosphere. These regulations establish requirements related to maintenance, service, repair or disposal of ozone depleting substances. They also provide recycling, recovery, and record keeping requirements.

***This request does not contain any sources that are required to comply with this rule.***

#### **40 CFR Part 98 – Greenhouse Gas Reporting**

***This part establishes mandatory greenhouse gas (GHG) reporting requirements for owners and operators of certain facilities that directly emit GHG. This application does not include sources that contribute to greenhouse gasses.***

## APPENDIX A

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**NON-TITLE V PERMIT APPLICATION  
FACILITY IDENTIFICATION**

Type or print and submit. Attach appropriate source description forms.			
<b>SITE INFORMATION</b>			
<b>1. Organization's legal name and SOS control number</b> [as registered with the TN Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #000909235			
<b>2. Site name</b> (if different from legal name)			
<b>3. Is a construction permit application fee being submitted?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (see instructions for appropriate fee to submit)			
<b>4. Site address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>County name</b> MCMINN
<b>City</b> ATHENS	<b>Zip code</b> 37303		<b>5. NAICS or SIC code</b> 335932
<b>6. Site location</b> (in lat. /long.)	<b>Latitude</b> 35.457389	<b>Longitude</b> 84.604261	
<b>CONTACT INFORMATION (RESPONSIBLE PERSON)</b>			
<b>7. Responsible person/Authorized contact</b> SHANE SPARKS			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b> TN	<b>Zip code</b> 37303	<b>Email address</b> SHANE.SPARKS@US.ABB.COM
<b>CONTACT INFORMATION (TECHNICAL)</b>			
<b>8. Principal technical contact</b> LISA NEISLER			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b>	<b>Zip code</b> 37303	<b>Email address</b>
<b>CONTACT INFORMATION (BILLING)</b>			
<b>9. Billing contact</b> ACCOUNTS PAYABLE			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b>	<b>Zip code</b> 37303	<b>Email address</b>

**AIR CONTAMINANT SOURCE(S) INFORMATION**

**10. Description of air contaminant source(s) and Unique Source ID(s).** List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

ABB INSTALLATION PRODUCTS CURRENTLY EMISSION SOURCE 54-0047-14 WHICH IS AN ELECTROPLATING LINE USED TO COAT STEEL STRUTS WITH ZINC TO PREVENT CORROSION. THIS ELECTROPLATING LINE IS COMPRISED OF VARIOUS TANKS WITH VARIOUS AQUEOUS SOLUTIONS INCLUDING CLEANERS, RINSE WATERS, ACID, NON-CYANIDE ALKALINE ZINC ELECTROPLATING SOLUTION AND TRIVALENT CHROMIUM CONVERSION COATINGS. AFTER BEING DIPPED IN WASH TANKS, PARTS ARE RINSED AND THEN DIPPED IN ACID.

UNDER THE CURRENT CONFIGURATION, TWO DIP TANKS OF SULFURIC ACID ARE BEING USED ON THIS LINE. THIS CONSTRUCTION APPLICATION REQUESTS TO REPLACE THE SULFURIC WITH HYDROCHLORIC ACID IN BOTH DIP TANKS.

ON THIS PROCESS LINE, THE PRE-CLEAN TANKS, INCLUDING THE ACID DIP TANKS, ARE CONTROLLED BY A PUSH PULL VENTILATION/SCRUBBING SYSTEM DESIGNED TO EFFICIENTLY CAPTURE AND REMOVE THE FUMES AND MIST GENERATED FROM THESE PROCESS TANKS. THIS VENTILATION SYSTEM IS DESIGNED TO CAPTURE 6,500 CFM FROM EACH ACID TANK ON EACH LINE AND SLOT VELOCITIES ARE DESIGNED FOR 2,000 – 2,500 FT PER MIN (ALONG THE ENTIRE LENGTH OF THE TANKS). THE VENTILATION SYSTEM IS CONNECTED TO A HORIZONTAL CROSS FLOW WET PACKED BED FUME SCRUBBER EQUIPPED WITH A CHEVRON BLADE STYLE MIST ELIMINATOR DESIGNED TO REMOVE MIST PARTICLES AS SMALL AS 20 MICRONS AT 99% EFFICIENCY.

**11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed.** Yes ☐ No ☒

<b>12. Normal operation:</b>	Hours/Day 24	Days/Week 7	Weeks/Year 52	Days/Year 365
<b>13. Percent annual throughput</b>	Dec. – Feb. 25	March – May 25	June – August 25	Sept. – Nov. 25

**TYPE OF PERMIT REQUESTED (check appropriate box)**

14. Operating permit <input type="checkbox"/>	Date construction started	Date completed	Date of ownership change (if applicable)
	Last permit number(s)		Emission Source Reference Number(s)
Construction permit <input checked="" type="checkbox"/>	Last permit number(s) 076626		Emission Source Reference Number(s) 54-0047-14

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

New Construction <input checked="" type="checkbox"/>	Starting date AS SOON AS APPROVED	Completion date WITHIN 2 WEEKS OF START
Modification <input type="checkbox"/>	Date modification started or will start	Date completed or will complete
Location Transfer <input type="checkbox"/>	Transfer date	Address of last location

**15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:**

N/A

**16. Comments**

N/A

**SIGNATURE**

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

**17. Signature** (application must be signed before it will be processed)

**Date**

**Signer's name** (type or print)

**Title**

**Phone number with area code**

SHANE SPARKS

GENERAL MANAGER

3-27-2023  
423-381-6384



**NON-TITLE V PERMIT APPLICATION  
EMISSION POINT DESCRIPTION**

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.					
<b>GENERAL IDENTIFICATION AND DESCRIPTION</b>					
<b>1. Organization's legal name and SOS control number</b> [as registered with the TN Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #00909235					
<b>2. Unique Source ID</b> (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1) #17161 (54-0047-14 )					
<b>3. Unique Emission Point ID</b> (name/number/letter which uniquely identifies this emission point, like Stack #1) #1					
<b>4. Brief description of air contaminant source</b> (Attach a diagram if appropriate): JESSUP PLATER ELECTROPLATING MACHINE, NON CYANIDE ALKALINE ZINC PLATING WITH TRIVALENT CHROMIUM CONVERSION COATING - CONSTRUCTION IS TO REPLACE SULFURIC ACID WITH HYDROCHLORIC IN CLEANING TANK					
<b>5. Emission point location</b>	Latitude 35.457389	Longitude 84.604261	<b>6. Distance to nearest property line (Ft.)</b> 125		
<b>STACK AND EMISSION DATA</b>					
<b>7. Stack or emission point data:</b> →	Height above grade (Ft.) 39	Diameter (Ft.) 4.67	Temperature (°F) AMBIENT	% of time over 125°F 0%	Direction of exit (Up, down or horizontal) UP
Data at exit conditions: →	Flow (actual Ft. <sup>3</sup> /Min.) 51460	Velocity (Ft. /Sec.) 52.63	Moisture (Grains/Ft. <sup>3</sup> ) 6.2		Moisture (Percent) 80
Data at standard conditions: →	Flow (Dry std. Ft. <sup>3</sup> /Min.) 51460	Velocity (Ft. /Sec.) 52.63	Moisture (Grains/Ft. <sup>3</sup> ) 3.9		Moisture (Percent) 50
<b>8. Monitoring device and recording instrument (check all that apply):</b> Opacity monitor <input type="checkbox"/> SO <sub>2</sub> monitor <input type="checkbox"/> NO <sub>x</sub> monitor <input type="checkbox"/> Strip chart <input type="checkbox"/> Electronic data logger <input type="checkbox"/> Other (specify in comments) <input checked="" type="checkbox"/> No monitor (none) <input type="checkbox"/>					
<b>9. Control device.</b> Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.). WET-BED PACKED FUME SCRUBBER WITH FLOW RATE MONITORING					

**10. Air contaminants.** Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

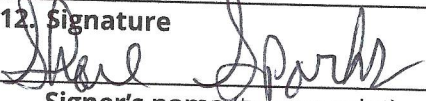
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concentration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Efficiency %
Particulate matter (PM)		0.00835	**	0.0366		3	001	99
LIMITS CONTAINED IN EXISTING PERMIT								
Sulfur dioxide (SO <sub>2</sub> )			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO <sub>x</sub> )			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO <sub>2</sub> equivalents)								
Hazardous air pollutant (specify) HCL	6.04e-4	0.2046		0.00265	0.8961	6 (see application)	001	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

11. Comments

**SIGNATURE**

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

12. Signature		Date
		3-27-2023
Signer's name (type or print)	Title	Phone number with area code
SHANE SPARKS	GENERAL MANAGER	423-381-6384

- \* Refer to the tables in the instructions for estimation method and control device codes.
- \*\* Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft<sup>3</sup> (70°F), Wood fired boilers - Grains/Dry Standard Ft<sup>3</sup> (70°F), all other boilers – Lbs. /Million BTU heat input.
- \*\*\* Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input





**NON-TITLE V PERMIT APPLICATION**  
**SURFACE COATING DESCRIPTION**

Type or print. Submit for each spray booth, dip tank, or other surface coating equipment. Submit with the APC 100.									
<b>GENERAL IDENTIFICATION AND DESCRIPTION</b>									
<b>1. Organization's legal name and SOS control number</b> [as registered with the Tennessee Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #00909235						<b>2. Emission Source Reference Number</b> 54-0047-14			
<b>3. Is this air contaminant source subject to an NSPS or NESHAP rule?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If Yes, list rule citation, including Part, Subpart, and applicable Sections: SUBPAR WWWWWW									
<b>COATING OPERATION DATA</b>									
<b>4. Unique Source ID</b> (name/number/letter that uniquely identifies this air contaminant source, like Paint Line 1) #17161									
<b>5. Type of coating operation</b>		Spray booth <input type="checkbox"/>	Dip tank <input checked="" type="checkbox"/>	Other (describe)					
<b>6. Spray booth dimensions</b>		Width (ft.)		Height (ft.)		Depth (ft.)		Number of open sides	
<b>7. Method of spray:</b>		Airless <input type="checkbox"/>		Air atomized <input type="checkbox"/>		Electrostatic Airless <input type="checkbox"/> Disc <input type="checkbox"/> Air atomized <input type="checkbox"/>		Overspray (Percent) Date purchased *	
<b>8. Exhaust data:</b>		Number of fans		Total horsepower		Total volume (CFM)			
<b>9. Exhaust control:</b>		None <input type="checkbox"/>		Waterwash <input type="checkbox"/>		Exhaust filters <input type="checkbox"/>		Baffle plates <input type="checkbox"/> Adsorption ** <input type="checkbox"/> Other (Describe) WEB-BED PACKED FUME SCRUBBER	
<b>10. Exhaust stack data **</b>		Diameter (Ft.) 4		Height (Ft.) Above Grade 22		Flow (CFM) 51,460		Specify serial numbers that share this vent 17161	
<b>11. Control device.</b> Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).									

\* The actual surface coating equipment (spray gun, spray heads, etc.) and not the spray booth per se determines the status of the source (new or existing).

\*\* Complete one line for each stack or vent. Attach additional sheets if necessary

**12. Coatings, Thinners, and Clean-up Solvents used:**

List all types of coatings, thinners, and clean-up solvents used and attach a statement of the chemical composition of each (i.e. Safety Data Sheet). This statement usually may be obtained from the coating, thinner, or clean-up solvent supplier. The minimum information required is the percent of solids by weight, the percent volatile by weight, the hydrocarbon composition and/or description of the volatile component, and the density of the coating, thinner, or clean-up solvent in pounds per gallon.

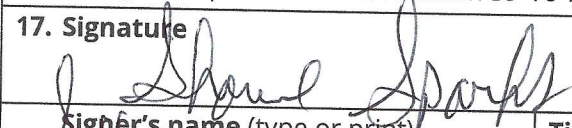
Coating name	Base [Water, Powder or Solvent*]	%Solids by Weight	%Volatile by Weight	Density (Lbs. /Gal.)	Quantity used		
					Gallons/Day		Gal./Mo.
					Average	Maximum **	Average
HYDROCHLORIC ACID	AQ		14%	9.90			
Thinner name							
Clean – up solvent name							

\*\* For new construction, this quantity will be used as a permit limitation on capacity.

**13. Air contaminants.** Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concentration	Average Emissions (Tons/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Efficiency %
Particulate matter (PM)		0.00835		0.0366		3	001	99
LIMITS CONTAINED IN EXISTING PERMIT								
Sulfur dioxide (SO <sub>2</sub> )								
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO <sub>x</sub> )			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO <sub>2</sub> equivalents)								
Hazardous air pollutant (specify) HCl	6.04e-4	0.2046		0.00265	0.8961	6 (see applicaion)	001	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								

\* Refer to the tables in the instructions for estimation method and control device codes.

EQUIPMENT DESCRIPTION		
<b>14. Equipment manufacturer</b> JESSUP ENGINEERING	Model number	Serial number (or plant ID) 17161
Construction date 2-1-2018		Modification date ASAP
Describe any modifications* THIS CONSTRUCTION PERMIT APPLICATION IS TO EXCHANGE SULFURIC ACID IN CLEANING TANKS WITH HCl.		
<b>15. Describe articles coated</b> BLACK STEEL IS DIPPED IN A SERIES OF CLEANING TANKS PRIOR TO BEING COATED WITH ALKALINE ZINC AND A TRIVALENT CHROMIUM CONVERSION COATING.  THIS APPLICATION IS TO CHANGE THE ACID IN TWO CLEANING TANKS FROM SULFURIC ACID TO HYDROCHLORIC.		
<b>16. Comments</b>		
<b>SIGNATURE</b> If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required. Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.		
<b>17. Signature</b>		<b>Date</b>
 Signer's name (type or print) SHANE SPARKS		3-27-2023 <b>Phone number with area code</b> 423-381-6384
Title General Manager		



**NON-TITLE V PERMIT APPLICATION  
FACILITY IDENTIFICATION**

Type or print and submit. Attach appropriate source description forms.			
<b>SITE INFORMATION</b>			
<b>1. Organization's legal name and SOS control number</b> [as registered with the TN Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #000909235			
<b>2. Site name</b> (if different from legal name)			
<b>3. Is a construction permit application fee being submitted?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (see instructions for appropriate fee to submit)			
<b>4. Site address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>County name</b> MCMINN
<b>City</b> ATHENS	<b>Zip code</b> 37303		<b>5. NAICS or SIC code</b> 335932
<b>6. Site location</b> (in lat. /long.)	<b>Latitude</b> 35.457389	<b>Longitude</b> 84.604261	
<b>CONTACT INFORMATION (RESPONSIBLE PERSON)</b>			
<b>7. Responsible person/Authorized contact</b> SHANE SPARKS			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b> TN	<b>Zip code</b> 37303	<b>Email address</b> SHANE.SPARKS@US.ABB.COM
<b>CONTACT INFORMATION (TECHNICAL)</b>			
<b>8. Principal technical contact</b> LISA NEISLER			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b>	<b>Zip code</b> 37303	<b>Email address</b>
<b>CONTACT INFORMATION (BILLING)</b>			
<b>9. Billing contact</b> ACCOUNTS PAYABLE			<b>Phone number with area code</b> 423-745-6588
<b>Mailing address</b> (St./Rd./Hwy.) 260 DENNIS STREET			<b>Fax number with area code</b> 423-745-9545
<b>City</b> ATHENS	<b>State</b>	<b>Zip code</b> 37303	<b>Email address</b>

**AIR CONTAMINANT SOURCE(S) INFORMATION**

**10. Description of air contaminant source(s) and Unique Source ID(s).** List, identify, and briefly describe process emission sources, fuel burning installations, and incinerators that are contained in this application and include a Unique Source ID for each source. The Unique Source ID is a name/number/letter, which uniquely identifies the air contaminant source(s), like Boiler #1, Paint Line #1, Engine #1, etc. (see instructions for more details)

ABB INSTALLATION PRODUCTS CURRENTLY EMISSION SOURCE 54-0047-14 WHICH IS AN ELECTROPLATING LINE USED TO COAT STEEL STRUTS WITH ZINC TO PREVENT CORROSION. THIS ELECTROPLATING LINE IS COMPRISED OF VARIOUS TANKS WITH VARIOUS AQUEOUS SOLUTIONS INCLUDING CLEANERS, RINSE WATERS, ACID, NON-CYANIDE ALKALINE ZINC ELECTROPLATING SOLUTION AND TRIVALENT CHROMIUM CONVERSION COATINGS. AFTER BEING DIPPED IN WASH TANKS, PARTS ARE RINSED AND THEN DIPPED IN ACID.

UNDER THE CURRENT CONFIGURATION, TWO DIP TANKS OF SULFURIC ACID ARE BEING USED ON THIS LINE. THIS CONSTRUCTION APPLICATION REQUESTS TO REPLACE THE SULFURIC WITH HYDROCHLORIC ACID IN BOTH DIP TANKS.

ON THIS PROCESS LINE, THE PRE-CLEAN TANKS, INCLUDING THE ACID DIP TANKS, ARE CONTROLLED BY A PUSH PULL VENTILATION/SCRUBBING SYSTEM DESIGNED TO EFFICIENTLY CAPTURE AND REMOVE THE FUMES AND MIST GENERATED FROM THESE PROCESS TANKS. THIS VENTILATION SYSTEM IS DESIGNED TO CAPTURE 6,500 CFM FROM EACH ACID TANK ON EACH LINE AND SLOT VELOCITIES ARE DESIGNED FOR 2,000 – 2,500 FT PER MIN (ALONG THE ENTIRE LENGTH OF THE TANKS). THE VENTILATION SYSTEM IS CONNECTED TO A HORIZONTAL CROSS FLOW WET PACKED BED FUME SCRUBBER EQUIPPED WITH A CHEVRON BLADE STYLE MIST ELIMINATOR DESIGNED TO REMOVE MIST PARTICLES AS SMALL AS 20 MICRONS AT 99% EFFICIENCY.

**11. Is the air contaminant source(s) in a nonattainment area? If "Yes", then minor source BACT must be addressed.** Yes      No

☐
☒

<b>12. Normal operation:</b>	Hours/Day 24	Days/Week 7	Weeks/Year 52	Days/Year 365
<b>13. Percent annual throughput</b>	Dec. – Feb. 25	March – May 25	June – August 25	Sept. – Nov. 25

**TYPE OF PERMIT REQUESTED (check appropriate box)**

<b>14. Operating permit</b> <input type="checkbox"/>	Date construction started	Date completed	Date of ownership change (if applicable)
	Last permit number(s)		Emission Source Reference Number(s)
<b>Construction permit</b> <input checked="" type="checkbox"/>	Last permit number(s) 078709		Emission Source Reference Number(s) 54-0047-16

If you chose Construction permit above, then choose either New Construction, Modification, or Location Transfer

<b>New Construction</b> <input checked="" type="checkbox"/>	Starting date AS SOON AS APPROVED	Completion date WITHIN 2 WEEKS OF START
<b>Modification</b> <input type="checkbox"/>	Date modification started or will start	Date completed or will complete
<b>Location Transfer</b> <input type="checkbox"/>	Transfer date	Address of last location



15. Describe changes that have been made to this equipment or operation(s) since the last construction or operating permit application:

N/A

16. Comments

N/A

**SIGNATURE**

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

17. Signature (application must be signed before it will be processed)

Date

Signer's name (type or print)

Title

Phone number with area code

SHANE SPARKS

General Manager

3-27-2023  
423-381-6384



**NON-TITLE V PERMIT APPLICATION  
EMISSION POINT DESCRIPTION**

Type or print and submit for each stack or air contaminant source. Submit with the APC 100.					
<b>GENERAL IDENTIFICATION AND DESCRIPTION</b>					
<b>1. Organization's legal name and SOS control number</b> [as registered with the TN Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #00909235					
<b>2. Unique Source ID</b> (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1) #05081 (54-0047-16)					
<b>3. Unique Emission Point ID</b> (name/number/letter which uniquely identifies this emission point, like Stack #1) #2					
<b>4. Brief description of air contaminant source</b> (Attach a diagram if appropriate): JESSUP PLATER ELECTROPLATING MACHINE, NON CYANIDE ALKALINE ZINC PLATING WITH TRIVALENT CHROMIUM CONVERSION COATING - CONSTRUCTION IS TO REPLACE SULFURIC ACID WITH HYDROCHLORIC IN CLEANING TANK					
<b>5. Emission point location</b>	Latitude 35.457389	Longitude 84.604261	<b>6. Distance to nearest property line (Ft.)</b> 125		
<b>STACK AND EMISSION DATA</b>					
<b>7. Stack or emission point data:</b> →	Height above grade (Ft.) 39	Diameter (Ft.) 4	Temperature (°F) AMBIENT	% of time over 125°F 0%	Direction of exit (Up, down or horizontal) UP
Data at exit conditions: →	Flow (actual Ft. <sup>3</sup> /Min.) 37900	Velocity (Ft. /Sec.) 52.63	Moisture (Grains/Ft. <sup>3</sup> ) 6.2		Moisture (Percent) 80
Data at standard conditions: →	Flow (Dry std. Ft. <sup>3</sup> /Min.) 37900	Velocity (Ft. /Sec.) 52.63	Moisture (Grains/Ft. <sup>3</sup> ) 3.9		Moisture (Percent) 50
<b>8. Monitoring device and recording instrument (check all that apply):</b> Opacity monitor <input type="checkbox"/> SO <sub>2</sub> monitor <input type="checkbox"/> NO <sub>x</sub> monitor <input type="checkbox"/> Strip chart <input type="checkbox"/> Electronic data logger <input type="checkbox"/> Other (specify in comments) <input checked="" type="checkbox"/> No monitor (none) <input type="checkbox"/>					
<b>9. Control device.</b> Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.). WET-BED PACKED FUME SCRUBBER WITH FLOW RATE MONITORING					



**10. Air contaminants.** Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

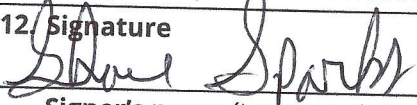
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concentration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Efficiency %
Particulate matter (PM)		0.0075	**	0.033		3	001	99
Sulfur dioxide (SO <sub>2</sub> )			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO <sub>x</sub> )			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO <sub>2</sub> equivalents)								
Hazardous air pollutant (specify) HCL	6.04e-4	0.2046		0.00265	0.8961	6 (see application)	001	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

## 11. Comments

## SIGNATURE

If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required.

Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

12. Signature 		Date 3-27-23
Signer's name (type or print) SHANE SPARKS	Title GENERAL MANAGER	Phone number with area code 423 381 6384

- \* Refer to the tables in the instructions for estimation method and control device codes.
- \*\* Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft<sup>3</sup> (70°F), Wood fired boilers - Grains/Dry Standard Ft<sup>3</sup> (70°F), all other boilers – Lbs. /Million BTU heat input.
- \*\*\* Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input



### NON-TITLE V PERMIT APPLICATION SURFACE COATING DESCRIPTION

Type or print. Submit for each spray booth, dip tank, or other surface coating equipment. Submit with the APC 100.							
<b>GENERAL IDENTIFICATION AND DESCRIPTION</b>							
<b>1. Organization's legal name and SOS control number</b> [as registered with the Tennessee Secretary of State (SOS)] ABB INSTALLATION PRODUCTS, INC. #00909235						<b>2. Emission Source Reference Number</b> 54-0047-16	
<b>3. Is this air contaminant source subject to an NSPS or NESHAP rule?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If Yes, list rule citation, including Part, Subpart, and applicable Sections: SUBPAR WWWWWW							
<b>COATING OPERATION DATA</b>							
<b>4. Unique Source ID</b> (name/number/letter that uniquely identifies this air contaminant source, like Paint Line 1) #05081							
<b>5. Type of coating operation</b>		Spray booth <input type="checkbox"/>		Dip tank <input checked="" type="checkbox"/>		Other (describe)	
<b>6. Spray booth dimensions</b>	Width (ft.)		Height (ft.)		Depth (ft.)		Number of open sides
<b>7. Method of spray:</b>	Airless <input type="checkbox"/>	Air atomized <input type="checkbox"/>	Electrostatic			Overspray (Percent)	Date purchased *
			Airless <input type="checkbox"/>	Disc <input type="checkbox"/>	Air atomized <input type="checkbox"/>		
<b>8. Exhaust data:</b>	Number of fans		Total horsepower			Total volume (CFM)	
<b>9. Exhaust control:</b>	None <input type="checkbox"/>	Waterwash <input type="checkbox"/>	Exhaust filters <input type="checkbox"/>	Baffle plates <input type="checkbox"/>	Adsorption ** <input type="checkbox"/>	Other (Describe) WEB-BED PACKED FUME SCRUBBER	
<b>10. Exhaust stack data **</b>	Diameter (Ft.) 4	Height (Ft.) Above Grade 39		Flow (CFM) 37900		Specify serial numbers that share this vent 05081	
<b>11. Control device.</b> Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).							

\* The actual surface coating equipment (spray gun, spray heads, etc.) and not the spray booth per se determines the status of the source (new or existing).

\*\* Complete one line for each stack or vent. Attach additional sheets if necessary

## 12. Coatings, Thinners, and Clean-up Solvents used:

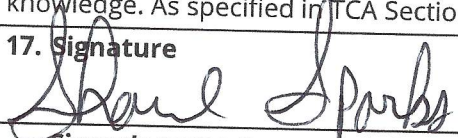
Coating name	Base [Water, Powder or Solvent*]	%Solids by Weight	%Volatile by Weight	Density (Lbs. /Gal.)	Quantity used		
					Gallons/Day		Gal./Mo.
					Average	Maximum <small>**</small>	Average
HYDROCHLORIC ACID	AQ		14%	9.90			
Thinner name							
Clean – up solvent name							

\*\* For new construction, this quantity will be used as a permit limitation on capacity.

**13. Air contaminants.** Emission estimates for each air contaminant emitted from this point should be based on stack sampling results or engineering calculations. Calculations should be attached on a separate sheet. (see instructions for more details)

Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concentration	Average Emissions (Tons/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Efficiency %
Particulate matter (PM)		0.0075		0.033		3	001	99
LIMITS CONTAINED IN EXISTING PERMIT								
Sulfur dioxide (SO <sub>2</sub> )								
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO <sub>x</sub> )			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO <sub>2</sub> equivalents)								
Hazardous air pollutant (specify) HCl	6.04e-4	0.2046		0.00265	0.8961	6 (see applicaion)	001	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								

\* Refer to the tables in the instructions for estimation method and control device codes.

EQUIPMENT DESCRIPTION		
<b>14. Equipment manufacturer</b> JESSUP ENGINEERING	Model number	Serial number (or plant ID) <del>17161</del> #05081
Construction date 2-1-2018		Modification date ASAP
Describe any modifications* THIS CONSTRUCTION PERMIT APPLICATION IS TO EXCHANGE SULFURIC ACID IN CLEANING TANKS WITH HCl.		
<b>15. Describe articles coated</b> BLACK STEEL IS DIPPED IN A SERIES OF CLEANING TANKS PRIOR TO BEING COATED WITH ALKALINE ZINC AND A TRIVALENT CHROMIUM CONVERSION COATING.  THIS APPLICATION IS TO CHANGE THE ACID IN TWO CLEANING TANKS FROM SULFURIC ACID TO HYDROCHLORIC.		
<b>16. Comments</b>		
<b>SIGNATURE</b> If this form is being submitted at the same time as an APC 100 form, then a signature is not required on this form. Date this form regardless of whether a signature is provided. If this form is NOT being submitted at the same time as an APC 100 form, then a signature is required. Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.		
<b>17. Signature</b> 		<b>Date</b> 3-27-2023
<b>Signer's name</b> (type or print) SHANE SPARKS	<b>Title</b> General Manager	<b>Phone number with area code</b> 423-381-6384

## APPENDIX B

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**Texas Commission on Environmental Quality  
Calculations Guidance Package  
Hot Dip Galvanizing**

**I. Instructions**

This manual was developed for the purpose of providing a guide for calculating emissions at hot-dip galvanizing facilities. Tables are provided for identifying the input data required and the emission calculation results. In most cases, the upper portions of the tables are used to record input data/calculation parameters. Use the equations which follow the table to perform the emission calculations and record the results in the lower portion of the table.

Note: Some of the calculations are made using data from TCEQ Tables 6, 11, and 13. You should complete these forms for maximum operating conditions and actual equipment specifications for your facility.

The information provided below will be used throughout the calculations and establishes limitations for the permit.

**II. Galvanizing Facility Capacity Data**

AP = Maximum annual production (tons/year)	_____
DP = Maximum daily production (tons/year)	_____
HD = Hours of operation per day	24
DW = Number of days operated per week	7
WY = Number of weeks operated per year	52
HY = Maximum number of hours operated per year	8760
ZN = Tons of zinc used per year	3253

**III. Degreasing/Cleaning Operations**

1. Number of degreasing tanks? n/a

2. Degreasing Tank Parameters

Tank No. 1	_____ feet (ft) wide	x	_____ feet (ft) long
Tank No. 2	_____ feet (ft) wide	x	_____ feet (ft) long

Type of degreasing compound used: \_\_\_\_\_  
Concentration of degreasing compound: \_\_\_\_\_  
Temperature of degreasing tank solution: \_\_\_\_\_  
Type of heat source: \_\_\_\_\_

Note: The permit engineer will review the above data and determine if degreasing tank emissions will be considered.



#### IV. Acid/Pickle Tank Emissions

Instructions: Acid/Pickle tank emissions are calculated using the procedure below.

##### A. Acid Tank Data

Number of pickle tanks at facility: 2 per line = 4  
(calculations below for each tank)

Tank No. 1 2 feet wide x 26 feet long  
Tank No. 2 \_\_\_\_\_ feet wide x \_\_\_\_\_ feet long

Type acid used: Hydrochloric Acid

Maximum acid concentration: 14 % weight/weight (w/w)  
Minimum acid concentration: 9 % w/w (concentration at recharge)  
Temperature of acid tanks: 75 degrees F

Fume suppressant used? ☒ Yes ☐ No

Submit a copy of the Safety Data Sheet (SDS) for the acid, the fume suppressant, and any other chemicals or additives used.

Are capture hoods used over the acid tanks? ☐ Yes ☒ No

Are any exhaust fans located near the tanks? ☒ Yes ☐ No

If yes, show their location on the plot plan and indicate the fan size (diameter), flow rate cubic feet per minute (CFM), and the height of the fan discharge point above the ground where it exhausts to the atmosphere.

##### B. Acid Pickle Tank Emission Calculation Procedure

## Hydrochloric (HCl) Acid Tank Table

Table 2

HCl Pickle Tanks	1	2	3	4	5
A = Surface Area of tank (ft <sup>2</sup> )	52				
T = Operating temperature (C°)	25				
Conc. = Percent concentration of HCl by weight (%w/w)	14				
V = Air velocity across surface of tank (fps)	2000 ft/min = 33.33 ft/s				
P <sub>v</sub> = Vapor pressure of HCl (mmHg from the table in the Appendix)	0.0316				
E = Evaporation rate from tank (lb/hr-ft <sup>2</sup> )	0.001968				
ER <sub>1</sub> = Emission rate uncontrolled (lb/hr)	0.10235				
FE = Suppressant efficiency 1 - (%) / 100	0.05				
CE = Hood capture efficiency (%)	90				
AE = Abatement device efficiency 1 - (%) / 100	0.01				
ER <sub>4</sub> = Emission rate controlled (lb/hr)	4.60e-5				
FUG = Fugitive emissions (lb/hr)	2.56e-4				
OY = Annual operating hours	8760				
AFUG = Annual HCl fugitive emission rate (tons/year)	0.001121				
AER = Annual HCl emission rate (tons/year)	0.000202				

## Supplementary Information

Table 2a

HCl Pickle Tanks	1	2	3	4	5
ER <sub>1</sub> (enter into Table 2 (lbs/hr)	0.1023				
ER <sub>2</sub> (lbs/hr)	0.005115				
ER <sub>3</sub> (lbs/hr)	0.004604				
(ER <sub>2</sub> - ER <sub>3</sub> ) (lbs/hr)	0.000511				
ER <sub>4</sub> (enter into Table 2) (lbs/hr)	4.60e-5				

### C. Hydrochloric (HCl) Acid Tank Emissions Calculations

The following calculations are made with data provided by the applicant. To assist in these calculations, Table 2, Table 2a, and the table of Partial Pressures of HCl over Aqueous Solutions of HCl in the Appendix are provided for your use. A completed Table 2 and Table 2a, in addition to the applicant's calculations, will serve to expedite the permit review process.

#### Calculation Steps

1. Calculate the surface area (A) each tank in square feet and enter the value of A into Table 2.
2. Enter the operating temperature (T) in degrees centigrade (C°), acid concentration (conc.) by weight percent, Table 2.

3. Determine the vapor pressure ( $P_v$ ) of the HCl solution from the table in the Appendix. Using the temperature ( $T$ ,  $^{\circ}\text{C}$ ) and the percent acid concentration (Conc.) determine the partial pressure of the solution in mmHg and enter the value of  $P_v$  into Table 2.
4. Calculate the evaporation rate of HCl from the tank using the following equation <sup>1,2,3</sup> and enter the value of  $E$  ( $\text{lb/hr-ft}^2$ ) into Table 2 (Requires a calculator with logarithmic functions):  

$$E = 25[0.46 + 0.117(V)]\log[(760 - P_a)/(760 - P_v)] \text{ (lb/hr-ft}^2\text{)}$$

$$P_a = 0 \text{ for this calculation.}$$
5. Calculate and enter into Tables 2 and 2a the uncontrolled emission rate:  

$$ER_1 = E \times A \text{ (lb/hr).}$$
6. Do you use a suppressant (foam, fume, or mechanical) in your HCl tank? If yes, complete the following then go to 7.  

$$FE = [1 - (\%)/100], \text{ where } \% \text{ is the efficiency of the suppressant.}$$

The efficiency of the suppressant can usually be found in the manufacturer's literature or by contacting the manufacturer of your particular suppressant.

Enter the value of  $FE$  into Table 2, then calculate the following (enter the value of):

$$ER_2 \text{ into Table 2a}$$

$$ER_2 = ER_1 \times FE \text{ (lbs/hr)}$$

If you do not use a fume suppressant, complete the following (enter the value of  $ER_2$  into Table 2a) then go to 7.

$$ER_2 = ER_1$$
7. Do you use a capture hood on your HCl tank? If yes, complete the following appropriate calculation, then go to 10. If no, skip to 8.  

If you use a hood, and do not use a fume suppressant, calculate the following (enter the value of  $ER_3$  into TABLE 2a), then go to 10:

$$ER_3 = ER_2 \times CE/100 \text{ (lbs/hr) (Hood, no fume suppressant)}$$

Note:  $CE$  is the percent capture efficiency of your hood design. Hoods designed in accordance with the Industrial Ventilation, A Manual of Recommended Practice, can be conservatively considered to have 98% capture efficiency.

If you use a hood, and also use a fume suppressant, calculate the following (enter the value of  $ER_3$  into Table 2a), then go to 10.

$$ER_3 = ER_2 \times CE/100 \text{ (lbs/hr) (Hood and a fume suppressant)}$$
8. If you do not use a capture hood but use a fume suppressant use the following (enter the value of  $ER_3$  into Table 2a), then go to 12.  

$$ER_3 = ER_2 \text{ (lbs/hr) (No hood, use a fume suppressant)}$$

If you do not use a capture hood, and also do not use a fume suppressant, then go to 9.
9. You will not be authorized to operate a HCl pickle tank without the use of, as a minimum, a fume suppressant or a capture hood.
10. Do you have an abatement device that controls the emissions from your hood exhaust? If yes, complete the following calculations, enter the values of  $AE$  and  $ER_4$  into Table 2, then go to 13. If not, then go to 11.

The efficiency of the abatement device you propose to use, or you are using, can be determined from the manufacturers literature or by contacting the manufacturer directly.

$AE = [1-(\%)/100]$ , where % is the abatement device efficiency.

$$ER_4 = ER_3 \times AE \text{ (lbs/hr)}$$

11. Without an abatement device your hourly emission rate is the same as calculated in 7.

Complete the following, enter the value of  $ER_4$  into Tables 2 and 2a, then go to 13:

$$ER_4 = ER_3 \text{ (lbs/hr)}$$

12. Calculate the hourly fugitive emission rate from the tank and enter the value of FUG into Table 2, then go to 14:

Fugitive emissions are those emissions that escape into the building. These emissions are eventually emitted to the atmosphere through a building vent (exhaust fan, open door, window, etc.). You are given a 50% capture efficiency for the building.

$$FUG = (ER_3) (0.5) \text{ (lbs/hr) (Fume suppressant only)}$$

13. Calculate the hourly fugitive emission rate from the tank and enter the value of FUG into Table 2, then go to 15:

Fugitive emissions are those emissions that are not captured by the hood system and; therefore, escape into the building. These emissions are eventually emitted to the atmosphere through a building vent (exhaust fan, open door, window, etc.). You are given a 50% capture efficiency for the building.

$$FUG = (ER_2 - ER_3)(0.5) \text{ (lbs/hr)}$$

14. Calculate your annual fugitive emission rate (AFUG) and enter the value of AFUG into Table 2:

$$AFUG = (FUG \times OY)/2000 \text{ (tons/year)}$$

15. Calculate your annual emission rate (AER) and the annual fugitive rate (AFUG) and enter the values of AER and AFUG into Table 2.

$$AER = (ER_4 \times OY)/2000 \text{ (tons/year)}$$

$$AFUG = (FUG \times OY)/2000 \text{ (tons/year)}$$

#### **D. Sulfuric Acid Emission Calculations**

If sulfuric acid is used as a pickling agent, use the above Steps 5 through 15 and Tables 2 and 2a. Begin with Step 5 and use 0.00015 lbs/hr-ft<sup>2</sup> for "E," the emission factor for sulfuric acid.

# Appendix: Partial Pressures (P<sub>v</sub>) of HCl over Aqueous Solutions of HCl\*

% HCl	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	60°	70°	80°	90°	100°	110°
2			0.0000117	0.000023	0.000044	0.000084	0.000151	0.000275	0.00047	0.00083	0.00104	0.0038	0.01	0.0245	0.058	0.132	0.28
4	0.000018	0.000036	0.000069	0.000131	0.00024	0.00044	0.00077	0.00134	0.0023	0.00385	0.0064	0.0165	0.0405	0.095	0.21	0.46	0.93
6	0.000066	0.000125	0.000234	0.000425	0.00076	0.00131	0.00225	0.0038	0.0062	0.0102	0.0163	0.04	0.094	0.206	0.44	0.92	1.78
8	0.000118	0.000323	0.000583	0.00104	0.00178	0.0031	0.00515	0.0085	0.0136	0.022	0.0344	0.081	0.183	0.39	0.82	1.64	3.1
10	0.00042	0.00075	0.00134	0.0232	0.00395	0.0067	0.0111	0.0178	0.0282	0.045	0.069	0.157	0.35	0.73	1.48	2.9	5.4
12	0.00099	0.00175	0.00305	0.0052	0.008	0.0145	0.0234	0.037	0.058	0.091	0.136	0.305	0.66	1.34	2.65	5.1	9.3
14	0.0024	0.00415	0.0071	0.0118	0.0196	0.0316	0.05	0.078	0.121	0.185	0.275	0.6	1.25	2.5	4.8	9	16
16	0.0056	0.0095	0.0016	0.0265	0.0428	0.0685	0.106	0.163	0.247	0.375	0.55	1.17	2.4	4.66	8.8	16.1	28
18	0.0135	0.0225	0.037	0.06	0.095	0.148	0.228	0.345	0.515	0.77	1.11	2.3	4.55	8.6	15.7	28	48
20	0.0316	0.052	0.084	0.132	0.205	0.32	0.48	0.72	1.06	1.55	2.21	4.4	8.5	15.6	28.1	49	83
22	0.0734	0.119	0.187	0.294	0.45	0.68	1.02	1.5	2.18	3.14	4.42	8.6	16.3	29.3	52	90	146
24	0.175	0.277	0.43	0.66	1	1.49	2.17	3.14	4.5	6.4	8.9	16.9	31	54.5	94	157	253
26	0.41	0.64	0.98	1.47	2.17	3.2	4.56	6.5	9.2	12.7	17.5	32.5	58.5	100	169	276	436
28	1	1.52	2.27	3.36	4.9	7.05	9.9	13.8	19.1	26.4	35.7	64	112	188	309	493	760
30	2.4	3.57	5.23	7.6	10.6	15.1	21	28.6	39.4	53	71	124	208	340	542	845	
32	5.7	8.3	11.8	16.8	23.5	32.5	44.5	60	81	107	141	238	390	623	970		
34	13.1	18.8	26.4	36.8	50.5	68.5	92	122	161	211	273	450	720				
36	29	41	56.4	78	105.5	142	188	246	322	416	535	860					
38	63	87	117	158	210	277	360	464	598	758	955						
40	130	176	233	307	399	515	627	830									
42	253	332	430	560	709	900											
44	510	655	840														
46	940																

\*Note: %HCL, weight percent; Temperature, centigrade (C°); partial pressures, mmHg.

## References

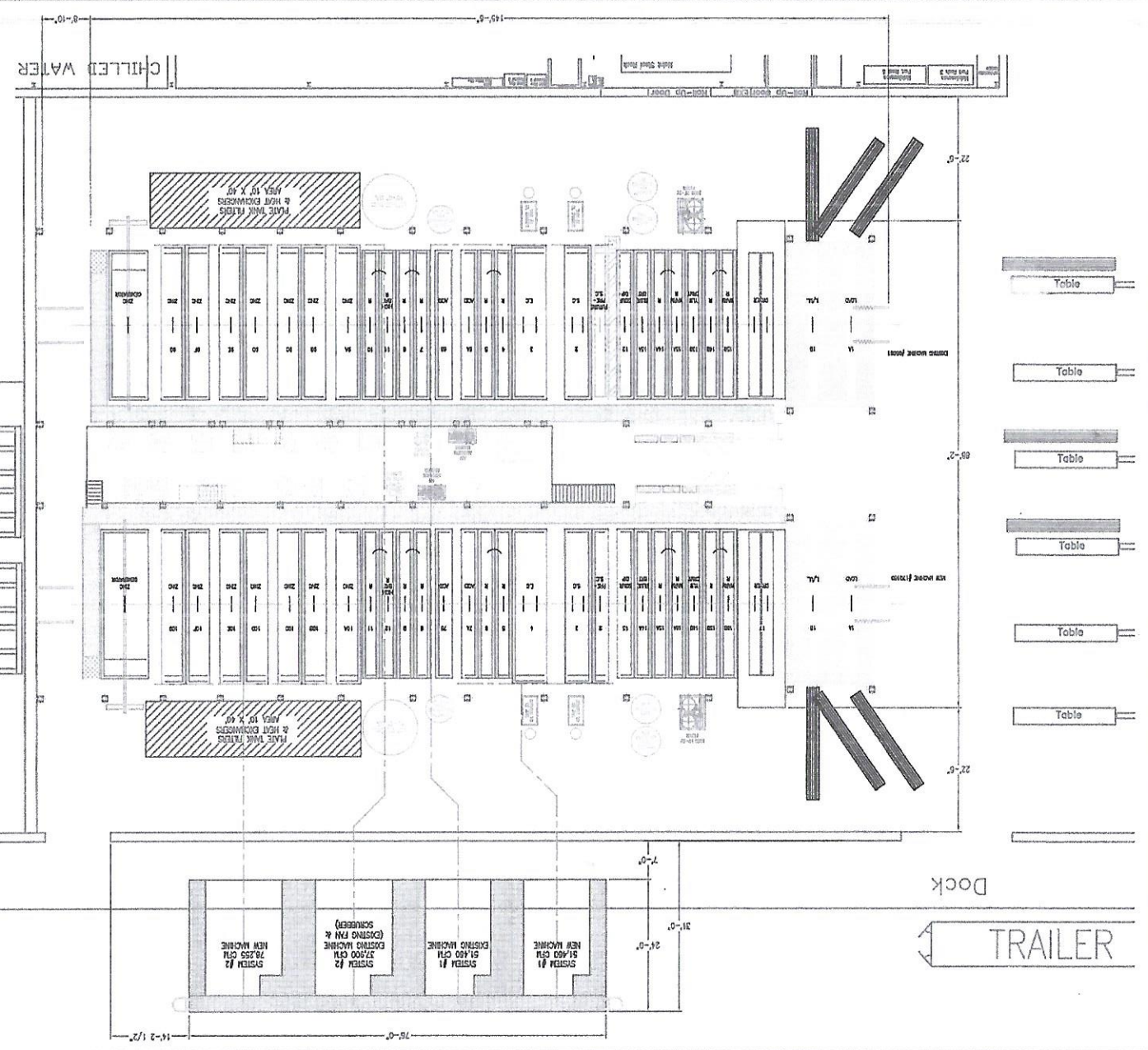
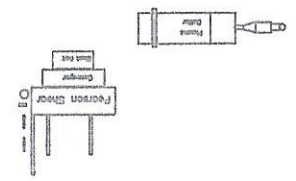
1. National Emission Standards for Hazardous Air Pollutants (NESHAP) for Steel Pickling HCl Process-Background Information for Proposed Standards  
Appendix E, 1997
2. "Emissions from Open Tanks" model for HCl pickling process developed by Mr. Neil Stone of Esco Engineering Company  
available on the [Esco Engineering](#) website
3. "Heat Losses from Tanks, Vats, and Kettles," Friedman, S.J., Heating and Ventilating, April 1948. p 94-107
4. Emissions from Hot-Dip Galvanizing Processes Final Report EPA – 905/4-76-002, 1976

## APPENDIX C

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JESSUP ENGINEERING, Inc.  
 2745 BOND STREET, ROCKFORD, ILL. 61109  
 PHONE 815/398-1177  
 FAX 815/398-1178  
 E-MAIL JESSUP@JESSUP-ENG.COM  
 DUCT FLOW DIAGRAM  
 THOMAS & BETTS



REVISION	DATE	BY	CHKD



## XXIV. TANK SCHEDULE

CUSTOMER

THOMAS &amp; BETTS

- 25 -



QUOTATION NO.

17Q180B

DATE

August 7, 2017

																				August 7, 2017		
TANK No.	PROCESS	NO. CELLS	IMMER TIME MIN	TANK DOT "	TANK VOL GAL	TANK CONSTRUCT /LINING	OVERFLOW TYPE SIZE	DRN SIZE	BTM DRN SIZE	C'FLW TO TNK#	TANK TEMP (F)	HEATING/ COOLING EQUIP	EXHAUST CFM/SYS	AIR AGT CFM	CHEM FEED PMP	WTR MGMT CNTL	LEVEL CNTL TYPE	FLTR RATE TPH	DC PWR SUPPLY AMP/VOLT	PROCESS	TANK No.	
1A/B	LOAD/UNLOAD	2		120		MILD STL	--	--	--												LOAD/UNLOAD	1A/B
2	PRE-SOAK CLEAN	1		34	3,120	MILD STL	ET/12"	3"	3"		180	SS COIL	①		1		AUTO				PRE-SOAK CLEAN	2
3	SOAK CLEAN	2		46	4,220	MILD STL	ET/12"	3"	3"		180	SS COIL	①		1		AUTO				SOAK CLEAN	3
4	ELECTROCLEAN	2		62	5,690	MILD STL	ET/12"	3"	3"		170	SS COIL	①		1		AUTO				ELECTROCLEAN	4
5	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"								AUTO		15,000/18		RINSE	5
6	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC5				52							RINSE	6
7A	ACID (SULFURIC)	1		24	2,200	304SS/NP	EW/6"	3"	3"				①								ACID (SULFURIC)	7A
7B	ACID (SULFURIC)	1		24	2,200	304SS/NP	EW/6"	3"	3"				①								ACID (SULFURIC)	7B
8	RINSE	1		24	2,200	304SS/NP	EW/6"	3"	3"					52							RINSE	8
9	RINSE	1		24	2,200	304SS/NP	EW/6"	3"	3"	PC8				52							RINSE	9
10A	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②		1			1.2	10,000/12		ALKALINE ZINC	10A
10B	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②						10,000/12		ALKALINE ZINC	10B
10C	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②		1			1.2	10,000/12		ALKALINE ZINC	10C
10D	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②						10,000/12		ALKALINE ZINC	10D
10E	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②						10,000/12		ALKALINE ZINC	10E
10F	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②		1			0.8	10,000/12		ALKALINE ZINC	10F
10G	ALKALINE ZINC	1		40	3,670	MS/PB	ET/12"	4"	3"		110	EXT. P&F	②						10,000/12		ALKALINE ZINC	10G
11	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52							RINSE	11
12	HIGH BAY RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC11				52							HIGH BAY RINSE	12
13	SOUR DIP	1		24	2,200	316SS	--	--	3"					52							SOUR DIP	13
14A	BLUE BRIGHT	1		24	2,200	316SS	--	--	3"		85	SS COIL		52	2						BLUE BRIGHT	14A
15A	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52							RINSE	15A
16A	WARM RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC15A	100	SS COIL		52							WARM RINSE	16A
14B	YELLOW CHROMATE	1		24	2,200	316SS	--	--	3"		110	SS COIL		52	2						YELLOW CHROMATE	14B
15B	RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"					52							RINSE	15B
16B	WARM RINSE	1		24	2,200	MS/PVC	EW/4"	3"	3"	PC15B	100	SS COIL		52							WARM RINSE	16B
17	DRYER	2		51	4,680	ALUM STL	--	--	2"					52							DRYER	17

TANK WIDTH 312

TANK DEPTH 72

MS = MILD STEEL  
 SS = STAINLESS STEEL  
 PVC = POLYVINYL CHLORIDE  
 HTR = HIGH TEMP RUBBER  
 TI = TITANIUM  
 PB = POLYPRO BUMPER

NP = NEOPRENE  
 DRN = DRAIN  
 DOT = DIRECTION OF TRAVEL  
 CFM = CUBIC FEET/ MINUTE  
 GPM = GALLONS/ MINUTE  
 AGT = AGITATION

FLTR = FILTER  
 LVL = LEVEL CONTROL  
 COND = CONDUCTIVITY CONTROL  
 pH = pH CONTROL  
 TPH = TURNS/ HOUR

C'FLW = COUNTERFLOW  
 BC = BAFFLE COUNTERFLOW  
 PC = PIPED COUNTERFLOW  
 M = PUMP COUNTERFLOW  
 W = SIDE WEIR OVERFLOW  
 EW = END WEIR OVERFLOW  
 T = SIDE TRAP OVERFLOW

## APPENDIX D

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## SAFETY DATA SHEET

OLIN CORPORATION

**Product name:** Hydrochloric acid, < 37%

**Issue Date:** 03/15/2017

**Print Date:** 03/21/2017

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

---

### 1. IDENTIFICATION

---

**Product name:** Hydrochloric acid, < 37%

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

**Identified uses:** For industrial formulation as a food processing agent. Pharmaceuticals. Organic Chemical Synthesis Oil and gas extraction.

**COMPANY IDENTIFICATION**

OLIN CORPORATION  
190 CARONDELET PLAZA  
CLAYTON MO 63105  
UNITED STATES

**Customer Information Number:**

+1 844-238-3445  
INFO@OLINBC.com

**EMERGENCY TELEPHONE NUMBER**

**Local Emergency Contact:** 1 800-424-9300

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### 2. HAZARDS IDENTIFICATION

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**Hazard classification**

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

Corrosive to metals - Category 1

Skin corrosion - Category 1B

Serious eye damage - Category 1

Specific target organ toxicity - single exposure - Category 3

**Label elements**

**Hazard pictograms**



Signal word: **DANGER!**

**Hazards**

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

**Precautionary statements****Prevention**

Keep only in original container.  
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
Wash skin thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response**

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
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/doctor.  
Wash contaminated clothing before reuse.  
Absorb spillage to prevent material damage.

**Storage**

Store in a well-ventilated place. Keep container tightly closed.  
Store locked up.  
Store in corrosive resistant container with a resistant inner liner.

**Disposal**

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

**Other hazards**

No data available

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

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This product is a mixture.

Component	CASRN	Concentration
Hydrochloric acid	7647-01-0	>= 20.0 - <= 36.5 %

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**4. FIRST AID MEASURES**

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**Description of first aid measures**

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Properly dispose of leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

**Eye contact:** - Wash eyes with plenty of water for 15 minutes at least. Do not forget to remove contact lenses. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth unless the person is fully conscious.

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

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Material may cause severe pulmonary edema. For persons receiving significant exposure to this material, consider chest x-ray and keep under observation for 48 - 72 hr. for delayed onset of pulmonary edema. Humidified oxygen, intermittent positive pressure breathing, assisted respiration/CPAP and steroid therapy should be considered in treatment. Physical exertion may potentiate exposure effects during the first 24 - 72 hours. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. Repeated exposure to acid fumes or mists may be associated with bleeding, ulceration of nose, mouth and gums and erosion of dental enamel. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

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## **5. FIREFIGHTING MEASURES**

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**Suitable extinguishing media:** This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

**Unsuitable extinguishing media:** Do not use water.

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

**Hazardous combustion products:** Fire conditions may cause this product to decompose. Refer to section 10 - Thermal Decomposition.



**Unusual Fire and Explosion Hazards:** Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available. This material does not burn. Fight fire for other material that is burning. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

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## **6. ACCIDENTAL RELEASE MEASURES**

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**Personal precautions, protective equipment and emergency procedures:** Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Refer to section 7, Handling, for additional precautionary measures. See Section 10 for more specific information. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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

**Methods and materials for containment and cleaning up:** Small spills: Dilute with large quantities of water. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Attempt to neutralize by adding materials such as Limestone. Lime. Soda ash. Pump into suitable and properly labeled containers. Contact your supplier for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

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## **7. HANDLING AND STORAGE**

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**Precautions for safe handling:** Do not get in eyes, on skin, on clothing. Do not swallow. Do not breathe vapour. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

**Conditions for safe storage:** Store in the following material(s): Plastic. Polyethylene-lined container. Natural rubber. See Section 10 for more specific information. Store away from incompatible materials. See STABILITY AND REACTIVITY section. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Hydrochloric acid	ACGIH	C	2 ppm
	OSHA Z-1	C	7 mg/m3 5 ppm
	CAL PEL	PEL	0.45 mg/m3 0.3 ppm
	CAL PEL	C	2 ppm
	OSHA P0	C	7 mg/m3 5 ppm

### Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

### Individual protection measures

**Eye/face protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

#### Skin protection

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

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

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Acid gas cartridge with particulate pre-filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

**Physical state** Liquid.

**Color** White to yellow

**Odor** acidic

**Odor Threshold** No test data available

**pH** < 2 Literature



<b>Melting point/range</b>	-27 - 57.22 °C ( -17 - 135.00 °F)
<b>Freezing point</b>	-27 - 57.22 °C ( -17 - 135.00 °F)
<b>Boiling point (760 mmHg)</b>	53 - 107.78 °C ( 127 - 226.00 °F)
<b>Flash point</b>	<i>Not applicable</i> None
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammability (solid, gas)</b>	Not Applicable
<b>Lower explosion limit</b>	<i>Literature</i> Not applicable
<b>Upper explosion limit</b>	<i>Literature</i> Not applicable
<b>Vapor Pressure</b>	No data available
<b>Relative Vapor Density (air = 1)</b>	11 <i>Literature</i>
<b>Relative Density (water = 1)</b>	1.01 - 1.186 at 20 °C (68 °F) <i>Literature</i>
<b>Water solubility</b>	Miscible in water
<b>Partition coefficient: n-octanol/water</b>	log Pow: -2.65
<b>Auto-ignition temperature</b>	<i>Literature</i> Not applicable
<b>Decomposition temperature</b>	No test data available No test data available
<b>Kinematic Viscosity</b>	2 m2/s <i>Calculated.</i>
<b>Explosive properties</b>	No data available
<b>Oxidizing properties</b>	No data available
<b>Liquid Density</b>	71.6 - 72.6 lb/ft3 at 20 °C (68 °F) <i>Estimated.</i>
<b>Molecular weight</b>	36.46 g/mol
<b>Percent volatility</b>	>= 99 % <i>Literature</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** No data available

**Chemical stability:** Thermally stable at typical use temperatures.

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

**Conditions to avoid:** Exposure to elevated temperatures can cause product to decompose.

**Incompatible materials:** Heat is generated when mixed with water. Spattering and boiling can occur. Avoid contact with strong bases. Avoid contact with: Sulfuric acid. Amines. Bases. Carbonates. Oxidizers. Corrosive to some metals. Contact with common metals can generate flammable hydrogen gas.

**Hazardous decomposition products:** Decomposition products can include and are not limited to: Hydrogen chloride.

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## 11. TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### Acute toxicity

#### Acute oral toxicity

Swallowing may result in gastrointestinal irritation or ulceration. Swallowing may result in burns of the mouth and throat.

Oral LD50 has not been determined due to corrosivity.

#### Acute dermal toxicity

Absorption has not been determined due to corrosivity.

The dermal LD50 has not been determined.

#### Acute inhalation toxicity

Brief exposure (minutes) to easily attainable concentrations may cause adverse effects. Mist may cause severe irritation of the upper respiratory tract (nose and throat) and lungs. Vapor may cause severe irritation of the upper respiratory tract (nose and throat) and lungs. May cause severe pulmonary edema (fluid in the lungs). Excessive exposure may cause lung injury.

LC50, Rat, 4 Hour, dust/mist, 1.03 mg/l

### Skin corrosion/irritation

Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

### Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Vapor may cause lacrimation (tears).

### Sensitization

For skin sensitization:

No relevant information found.

For respiratory sensitization:

No relevant information found.

### Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

Route of Exposure: Inhalation

Target Organs: Respiratory Tract

### Specific Target Organ Systemic Toxicity (Repeated Exposure)

Repeated excessive exposure may cause erosion of teeth and bleeding and ulceration of nose, mouth and gums.

### Carcinogenicity

Did not cause cancer in laboratory animals. An epidemiology study of workers did not show any association between hydrogen chloride exposure and lung cancer.

**Teratogenicity**

No relevant data found.

**Reproductive toxicity**

No relevant data found.

**Mutagenicity**

No relevant data found.

**Aspiration Hazard**

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

**COMPONENTS INFLUENCING TOXICOLOGY:****Hydrochloric acid****Acute oral toxicity**

Swallowing may result in gastrointestinal irritation or ulceration. Swallowing may result in burns of the mouth and throat.

Oral LD50 has not been determined due to corrosivity.

**Acute dermal toxicity**

The dermal LD50 has not been determined.

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**12. ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*

**Toxicity****Acute toxicity to fish**

May decrease pH of aquatic systems to < pH 5 which may be toxic to aquatic organisms.

**Persistence and degradability**

**Biodegradability:** Biodegradation is not applicable.

**Bioaccumulative potential**

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable. No bioconcentration is expected because of the relatively high water solubility.

**Partition coefficient: n-octanol/water(log Pow):** -2.65

**Mobility in soil**

No data available for assessment due to technical difficulties with testing.

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**13. DISPOSAL CONSIDERATIONS**

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**Disposal methods:** DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and

compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Waste water treatment system.

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## 14. TRANSPORT INFORMATION

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### DOT

Proper shipping name	Hydrochloric acid
UN number	UN 1789
Class	8
Packing group	II
Reportable Quantity	Hydrochloric acid

### Classification for SEA transport (IMO-IMDG):

Proper shipping name	HYDROCHLORIC ACID
UN number	UN 1789
Class	8
Packing group	II
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

### Classification for AIR transport (IATA/ICAO):

Proper shipping name	Hydrochloric acid
UN number	UN 1789
Class	8
Packing group	II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## 15. REGULATORY INFORMATION

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

Acute Health Hazard

## Chronic Health Hazard

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313**

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

**Components**

Hydrochloric acid

**CASRN**

7647-01-0

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103**

Calculated RQ exceeds reasonably attainable upper limit.

**Components**

Hydrochloric acid

**CASRN**

7647-01-0

**RQ (RCRA Code)**

5000 lbs RQ

**Pennsylvania Worker and Community Right-To-Know Act:**

The following chemicals are listed because of the additional requirements of Pennsylvania law:

**Components**

Hydrochloric acid

**CASRN**

7647-01-0

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

This product is not listed, but it may contain elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 Safe Drinking Water and Toxic Enforcement Act. For additional information, contact Olin.

**United States TSCA Inventory (TSCA)**

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

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**16. OTHER INFORMATION**

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**Hazard Rating System****NFPA**

Health	Fire	Reactivity
3	0	0

**Revision**

Identification Number: 10000001219 / A619 / Issue Date: 03/15/2017 / Version: 1.1

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

ACGIH	USA. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)
C	Ceiling limit
CAL PEL	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
PEL	Permissible exposure limit

**Information Source and References**

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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



## SAFETY DATA SHEET

(In accordance with HazCom 201/United States)

### SECTION 1: IDENTIFICATION

<b>PRODUCT NAME:</b> AMBIENOL® C	<b>MANUFACTURER IDENTITY CODE:</b> MEAMBC
<b>WEBSITE:</b> www.metallinechemicals.com	<b>CUSTOMER SERVICE PHONE NUMBERS:</b> (262) 241-3200 (8:00 a.m. – 4:30 p.m. Central Time)
<b>MANUFACTURER NAME AND ADDRESS:</b> Metalline Corporation 10620 North Port Washington Road Mequon WI 53092	<b>24 HOUR EMERGENCY PHONE NUMBER:</b> CHEMTREC: (800) 424-9300
<b>OTHER MEANS OF IDENTIFICATION:</b> Not Available	<b>Relevant identified uses of the substance or mixture and uses advised against:</b> Not Available

### SECTION 2: HAZARDS IDENTIFICATION

<b>OSHA/HCS Status:</b>	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)
<b>Classification of substance or mixture:</b>	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A SKIN SENSITIZATION - Category 1
<b>GHS label elements hazard pictograms:</b>	
<b>Signal word:</b>	Warning
<b>Hazard Statements:</b>	Causes severe eye irritation May cause an allergic skin reaction.

#### PRECAUTIONARY STATEMENTS

<b>Prevention:</b>	Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid breathing vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
<b>Response:</b>	IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
<b>Storage:</b>	Not applicable.
<b>Disposal:</b>	Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Hazards not otherwise classified:</b>	None known
<b>Substance/mixture</b>	Mixture
<b>Other means of identification:</b>	Not available



## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous ingredients*	Weight %	CAS #
Proprietary	Proprietary	Proprietary
2-(2-Butoxyethoxy)ethanol	1 - 5	112-34-5
Butane-1,4-diol	1 - 5	110-63-4
Trade Secret ingredients	balance	-

\*all ingredients in quantities > 1.0 % (0.1 % for carcinogens) that are potentially hazardous per OSHA definitions

NE = not established NA = not applicable NDA = no data available. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

## SECTION 4: FIRST AID MEASURES

### DESCRIPTION OF NECESSARY FIRST AID MEASURES

Eye contact:	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
Inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Get medical attention if symptoms occur.
Skin contact:	Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Get medical attention if symptoms occur.
Ingestion:	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

## MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED

### I. Potential Acute Health Effects

Eye contact:	Causes serious eye irritation.
Inhalation:	No known significant effects or critical hazards.
Skin contact:	May cause an allergic skin reaction.
Ingestion:	Irritating to mouth, throat, and stomach.

### II. Over-exposure symptoms/signs

Eye contact:	Adverse symptoms may include the following: pain or irritation, watering, redness
Inhalation:	No known significant effects or critical hazards
Skin contact:	Adverse symptoms may include the following: irritation, redness
Ingestion:	No known significant effects or critical hazards



**III. Indication of immediate medical attention and special treatment needed, if necessary.**

<b>Notes to physician:</b>	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatment:</b>	No specific treatment
<b>Protection to first responders:</b>	It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

**SECTION 5: FIRE FIGHTING MEASURES**

<b>Suitable extinguishing media:</b>	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media:</b>	None known.
<b>Specific hazards arising from the chemical:</b>	No specific or fire explosion hazard.
<b>Hazardous thermal decomposition products:</b>	Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides, metal oxide/oxides.
<b>Special protective actions for firefighters:</b>	No special measures are required.
<b>Special protective equipment and precautions for firefighters:</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES**

<b>For non-emergency personnel:</b>	Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
<b>For emergency responders:</b>	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>Environmental precautions:</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

**METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP**

<b>Spill:</b>	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
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## **SECTION 7: HANDLING AND STORAGE**

### **PRECAUTIONS FOR SAFE HANDLING**

<b>Protective measures:</b>	Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
<b>Advice on general occupational hygiene:</b>	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
<b>Conditions for safe storage including any incompatibilities:</b>	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

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

### **CONTROL PARAMETERS**

#### **OCCUPATIONAL EXPOSURE LIMITS**

<b>Ingredient name*</b>	<b>Exposure limits</b>
2-(2-Butoxyethoxy)ethanol	ACGIH TLV (United States, 6/2013). TWA: 10 ppm 8 hours. Form: Inhalable fraction and vapor

\*all ingredients in quantities > 1.0 % (0.1 % for carcinogens) that are potentially hazardous per OSHA definitions (skin) - indicates harmful amounts may be absorbed through the skin

\*\* Some States enforce the PEL's that OSHA promulgated in 1989, which were subsequently vacated by the U.S. Supreme Court. Check with your State OSHA agency to determine which PEL is enforced in your jurisdiction.

NE = not established NA = not applicable NDA = no data available

<b>Appropriate engineering controls:</b>	Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
<b>Environmental exposure controls:</b>	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

**INDIVIDUAL PROTECTION MEASURES**

<b>Hygiene measures:</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Eye/face protection:</b>	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

**SKIN PROTECTION**

<b>Hand protection:</b>	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary..
<b>Body protection:</b>	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Other skin protection:</b>	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Respirator protection:</b>	Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**SECTION 9: PHYSICAL AND CHEMICAL PARAMETERS**

<b>Physical state:</b> Liquid	<b>Flammable limits:</b> UEL: NA      LEL: NA
<b>Color:</b> Red (Amber)	<b>Vapor Pressure:</b> <2.7 kPa (<20 mm Hg) ambient
<b>Odor:</b> Mint	<b>Vapor density (air=1):</b> NA
<b>Odor Threshold:</b> NA	<b>Relative Density:</b> > 1 to 1.2
<b>pH:</b> 7-8	<b>Solubility:</b> Soluble
<b>Melting Point:</b> NA	<b>Solubility in water:</b> NA
<b>Boiling Point:</b> >212°F (100°C)	<b>Partition / coefficient n-octanol/water:</b> NA
<b>Flash Point:</b> NA	<b>Auto ignition temperature:</b> NA
<b>Burning time:</b> NA	<b>Decomposition temperature:</b> NA
<b>Burning rate:</b> NA	<b>SADT:</b> NA
<b>Evaporation rate (n-butyl acetate=1):</b> 1 (Water = 1)	<b>Viscosity:</b> NA
<b>Flammability (solid, gas):</b> NA	

**SECTION 10: STABILITY AND REACTIVITY**

<b>Reactivity:</b>	No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability:</b>	This product is stable. (standard temperature and pressure).
<b>Possibility of hazardous reactions:</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid:</b>	No specific data.
<b>Incompatible materials:</b>	Reactive or incompatible with the following materials: strong oxidizers, mercury salts, alkalis, halides.
<b>Hazardous decomposition products:</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## **SECTION 11: TOXICOLOGICAL INFORMATION**

### **ACUTE TOXICITY**

Product/Ingredient Name	Result	Species	Dose	Exposure
Proprietary	LD50 Oral	Rat	11 g/kg	-
2-(2-Butoxyethoxy)ethanol	LD 50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	4500 mg/kg	-
Butane-1,4-diol	LD50 Oral	Rat	1525 mg/kg	-

### **IRRITATION/CORROSION**

Product/Ingredient Name	Result	Species	Score	Exposure	Observation
Proprietary	Eyes Moderate Irritant	Rabbit	-	24 hours 20 mg	-
	Skin Mild Irritant	Rabbit	-	24 hours 500 mg	-
2-(2-Butoxyethoxy)ethanol	Eyes Moderate Irritant	Rabbit	-	24 hours 20 mg	-
	Eyes Severe Irritant	Rabbit	-	20 mg	-

### **SENSITIZATION**

Skin:	There is no data available
Respiratory:	There is no data available

Mutagenicity:	There is no data available
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## **CARCINOGENICITY**

### **CLASSIFICATION**

Product/Ingredient Name	OSHA	IARC	ACGIH	NTP

Reproductivity toxicity:	There is no data available
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Teratogenicity:	There is no data available
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Specific target organ toxicity (single repeated exposure):	There is no data available
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### **SPECIFIC TARGET ORGAN TOXICITY (repeated exposure)**

Name	Category	Route of Exposure	Target organs
Butane-1,4-diol	Category 3	Not applicable	Narcotic effects

Aspiration hazard:	There is no data available
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## **EXPOSURE**

### **INFORMATION ON LIKELY ROUTES OF EXPOSURE**

Routes of entry anticipated:	Dermal contact, Eye contact, Inhalation, Ingestion
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**POTENTIAL ACUTE HEALTH EFFECTS**

<b>Eye contact:</b>	Causes serious eye damage.
<b>Inhalation:</b>	No significant effects or critical hazards.
<b>Skin contact:</b>	May cause an allergic reaction.
<b>Ingestion:</b>	Irritating to mouth, throat and stomach.

**SYSTEMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS**

<b>Eye contact:</b>	Adverse symptoms may include the following: pain or irritation, watering, redness
<b>Inhalation:</b>	No known significant effects or critical hazards
<b>Skin contact:</b>	Adverse symptoms may include the following: irritation, redness
<b>Ingestion:</b>	No known significant effects or critical hazards

**DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE****SHORT TERM EXPOSURE**

<b>Potential immediate effects:</b>	No significant effects or critical hazards.
<b>Potential delayed effects:</b>	No significant effects or critical hazards.

**LONG TERM EXPOSURE**

<b>Potential immediate effects:</b>	No significant effects or critical hazards.
<b>Potential delayed effects:</b>	No significant effects or critical hazards.

**POTENTIAL CHRONIC HEALTH EFFECTS**

<b>General:</b>	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
<b>Carcinogenicity:</b>	No significant effects or critical hazards.
<b>Mutagenicity:</b>	No significant effects or critical hazards.
<b>Teratogenicity:</b>	No significant effects or critical hazards.
<b>Development effects:</b>	No significant effects or critical hazards.
<b>Fertility effects:</b>	No significant effects or critical hazards.

**NUMERICAL MEASURES OF TOXICITY****ACUTE TOXICITY ESTIMATES**

Route	ATE value
Oral	35012.8 mg/kg
Dermal	67500 mg/kg

**SECTION 12: ECOLOGICAL INFORMATION****TOXICITY**

Product/Ingredient Name	Result	Species	Exposure
Proprietary 2-(2-Butoxyethoxy)ethanol	Acute LC50 8665000 µg/l Fresh water Acute LC50 1300000 µg/l Fresh water	Daphnia - Daphnia magna Fish - Lepomis macrochirus	48 hours 96 hours

<b>Persistence and degradability:</b>	There is no data available
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**BIOACCUMULATIVE POTENTIAL**

Product/Ingredient Name	LogP	BCF	Potential
Proprietary	-2.61	<5	low
2-(2-Butoxyethoxy)ethanol	1	-	low
Butane-1,4-diol	-0.88	-	low

**MOBILITY IN SOIL**

<b>Soil/water partition coefficient (Koc):</b>	There is no data available
<b>Other adverse effects:</b>	No known significant effects or critical hazards

**SECTION 13: DISPOSAL CONSIDERATIONS**

<b>Disposal methods:</b>	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
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## **SECTION 14: TRANSPORTATION INFORMATION**

	DOT CLASSIFICATION	IMDG	IATA
UN number	Not regulated	Not regulated	Not regulated
UN proper shipping name			
Transportation hazard class(es)			
Packing group			
Environmental hazards	No	No	No
Additional information			

Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to annex II of Marpol 73/78 and the IBC code:	Not available.

## **SECTION 15: REGULATORY INFORMATION**

U.S. federal regulations:	TSCA 4(a) final test rules: Proprietary TSCA 8(a) PAIR: Proprietary TSCA 8(a) CDR Exempt/Partial exemption: Not determined TSCA 12(b) one-time export: Proprietary United States inventory (TSCA 8b): All components are listed or exempted.
Clean air act section 112 (b) hazardous air pollutants (HAPs):	Listed.
Clean air act section 602 class I substances:	Not listed.
Clean air act section 602 class II substances:	Not listed.
DEA list I chemicals (precursor chemicals):	Not listed.
DEA list II chemicals (essential chemicals):	Not listed.

### **SARA 302/304**

#### **COMPOSITION/INFORMATION ON INGREDIENTS**

Product/Ingredient Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gal)	SARA 304 TPQ (lbs)	SARA 304 TPQ (gal)

SARA 304 RQ:	Not applicable
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**SARA 311/312**

<b>Classification:</b>	Immediate (acute) health hazard
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**COMPOSITION/INFORMATION ON INGREDIENTS**

Product/Ingredient Name	%	Fire Hazard	Sudden Release of Pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Proprietary		No	No	No	Yes	No
2-(2-Butoxyethoxy)ethanol	1-5	Yes	No	No	Yes	No
Butane-1,4-diol	1-5	No	No	No	Yes	No

**SARA 313**

	Product Name	CAS Number	%
<b>Form R - reporting requirements:</b>	2-(2-Butoxyethoxy)ethanol	112-34-5	1-5
<b>Supplier notifications:</b>	2-(2-Butoxyethoxy)ethanol	112-34-5	1-5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

**STATE REGULATIONS**

<b>Massachusetts:</b>	None of the components are listed
<b>New York:</b>	None of the components are listed
<b>New Jersey:</b>	The following components are listed: 2-(2-Butoxyethoxy)ethanol
<b>Pennsylvania:</b>	The following components are listed: 2-(2-Butoxyethoxy)ethanol

**CALIFORNIA PROP. 65**

**WARNING:** This product does not contain a chemical known to the State of California to cause cancer

Ingredient Name	Cancer	Reproductive	No Significant Risk Level	Maximum Acceptable Dosage Level

**SECTION 16: OTHER INFORMATION**

<b>Date of issue:</b>	6/2015
<b>Version:</b>	1
<b>Revised section(s):</b>	Not Applicable
<b>Key to abbreviations:</b>	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

**Notice to reader**

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