PERMIT DETERMINATION FORM
MARTINSBURG FACILITY
ECOLAB, INC.
BERKELEY COUNTY, WEST VIRGINIA

Prepared for:

Ecolab, Inc.
370 Wabasha Street North
St. Paul, Minnesota 55102-1390

Prepared by:

Potesta & Associates, Inc.
7012 MacCorkle Avenue, SE
Charleston, West Virginia 25304
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Email: potesta@potesta.com

Project No. 0101-15-0407

October 2015

POTESTA

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SECTION I

PERMIT DETERMINATION FORM

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

PERMIT DETERMINATION FORM (PDF)

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
Ecolab, Inc.

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):
Martinsburg Facility

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE:
325611 (SIC 2841)

4A. MAILING ADDRESS:
370 Wabasha Street North
St. Paul, Minnesota 55102-1390

4B. PHYSICAL ADDRESS:
942 Baker Road
Martinsburg, West Virginia 25401

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP** AS **ATTACHMENT A**):
From I-81, take Exit 12; head east on 45, 45 East runs into 9 East (same road and turns into highway), Take Opequon Lane/Baker Heights Exit, make left at end of ramp, go 1/3 mile and make right on to Charles Town Road, turn left onto Shockey Memorial Blvd (½ mile after second traffic light), turn right at stop sign (½ mile) onto Baker Road, Baker Road curves to the left and Plant is on your right.

5B. NEAREST ROAD:	5C. NEAREST CITY OR TOWN:	5D. COUNTY:
Baker Road	Martinsburg	Berkeley
5E. UTM NORTHING (KM):	5F. UTM EASTING (KM):	5G. UTM ZONE:
4,366.732	250.351	18

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:		6B. TITLE:
John Hemmen		SHE Manager
6C. TELEPHONE:	6D. FAX:	6E. E-MAIL:
(304) 260-3550	(304) 260-3546	john.hemmen@ecolab.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):
NA

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH **THIS** PROCESS (FOR AN EXISTING FACILITY ONLY):
NA

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: No

8A. TYPE OF EMISSION SOURCE (CHECK ONE):
☒ **NEW SOURCE** ☐ **ADMINISTRATIVE UPDATE**
☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?
☐ **YES** ☐ **NO** N/A

9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☒ **YES** ☐ **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:
Upon DAQ's concurrence that no permit is needed.

10B. DATE OF ANTICIPATED START-UP:
Upon DAQ's concurrence that no permit is needed.

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B.** See Attached

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C.** See Attached

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D.** FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.
See Attached

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

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

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

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

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.0729	0.0013 (Estimated Usage) 0.3193 (8760)
PM_{10}	0.0345	0.0007 (Estimated Usage) 0.1511 (8760)
VOCs		
CO		
NO_x		
SO_2		
Pb		
HAPs (AGGREGATE AMOUNT)		
TAPs (INDIVIDUALLY)*		
Mineral Acids	3.44E-04	5.87E-06 (estimated usage) 1.50E-03 (8,760)

* ATTACH ADDITIONAL PAGES AS NEEDED

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

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

14. **CERTIFICATION OF DATA**

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

SIGNATURE OF RESPONSIBLE OFFICIAL: Gerald E Denson

TITLE: Vice President Supply Chain North America, ECOLAB DATE: 10 / 29 / 2015

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

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

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

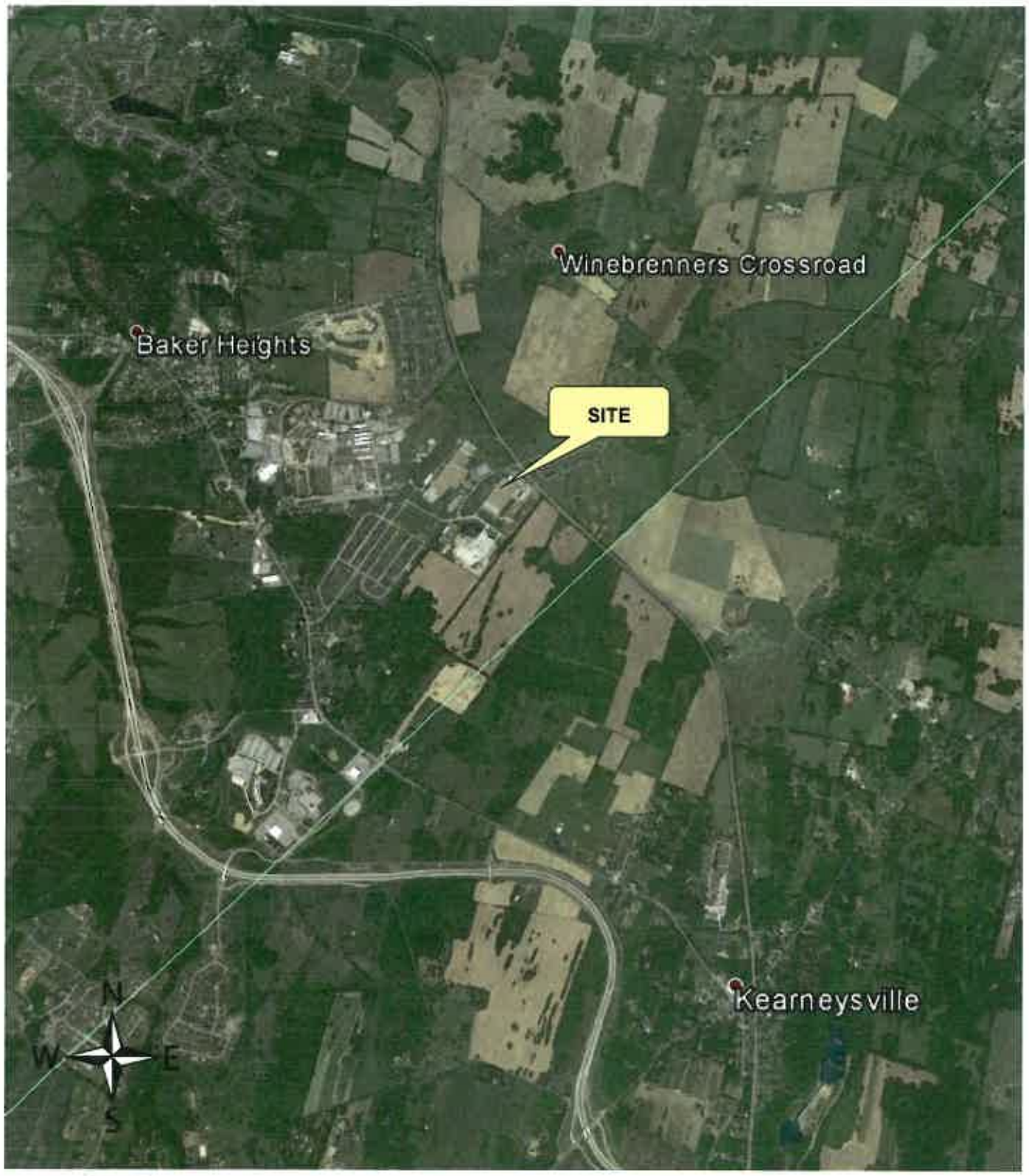
RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

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

www.dep.wv.gov/daq

ATTACHMENT A

AREA MAP



POTESTA
Engineers and Environmental Consultants

DATE: October 2015

PROJECT NO. 0101-15-0407

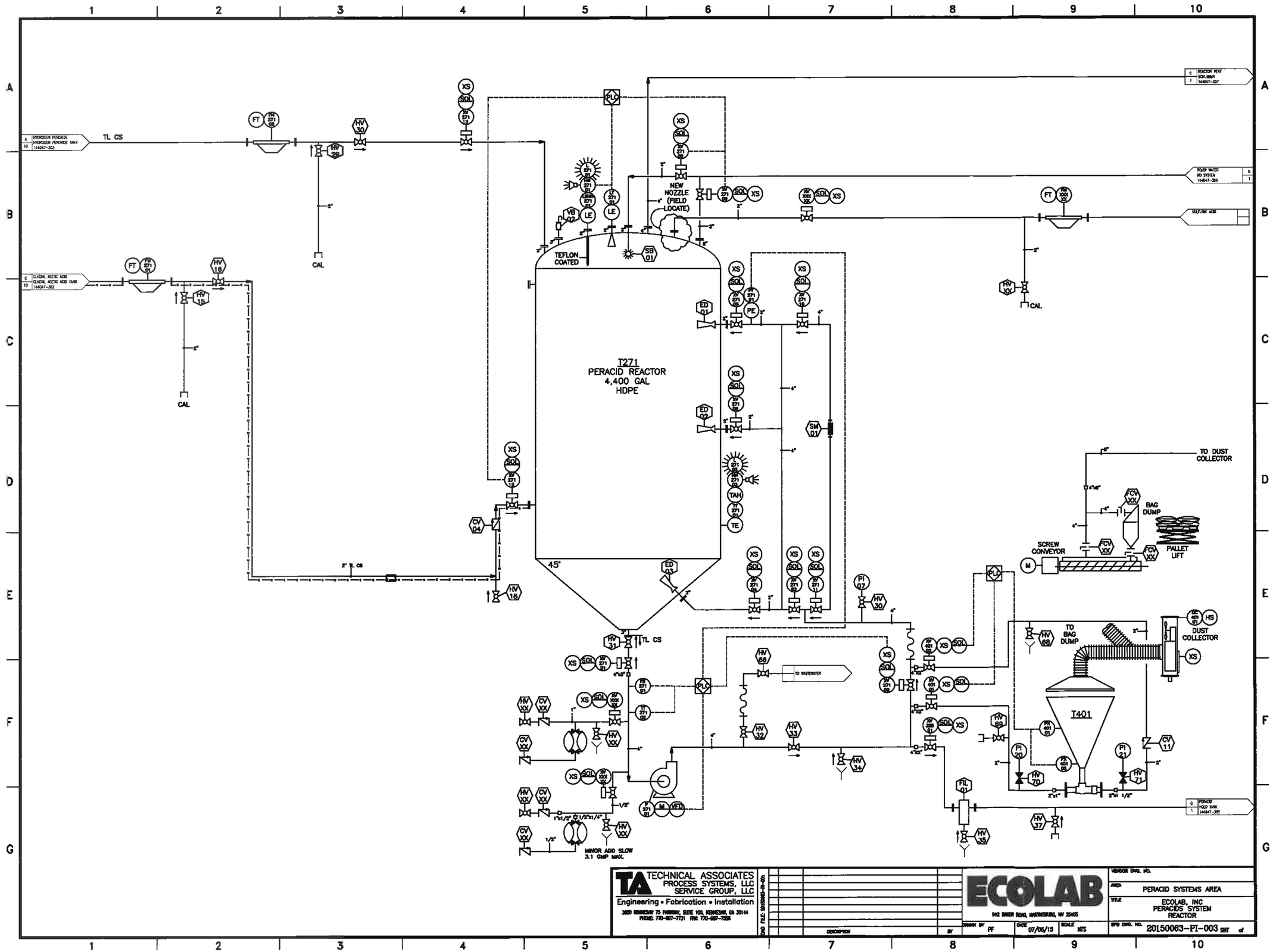
MAPPING FOR VISUAL REPRESENTATION ONLY

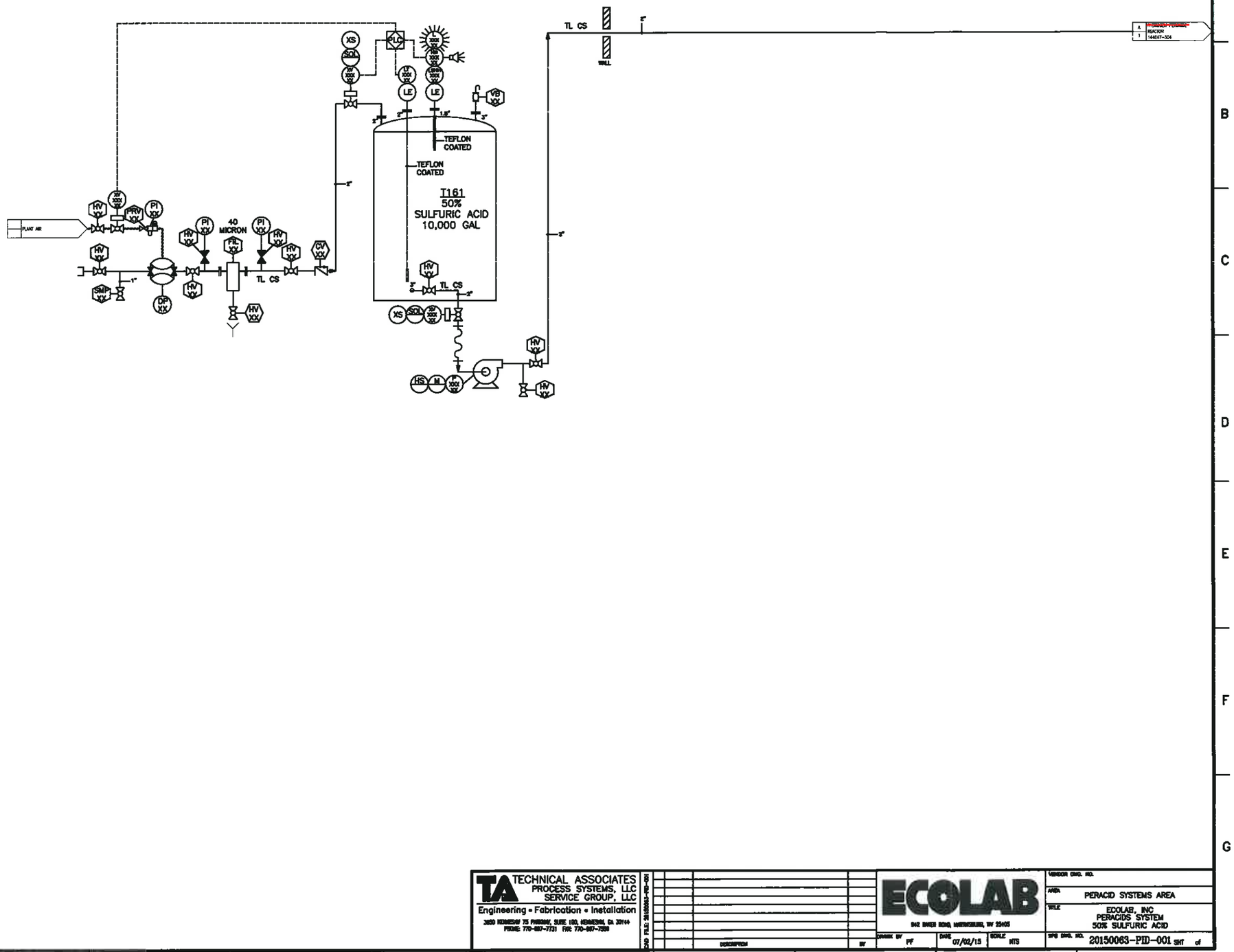
AREA MAP
ECOLAB, INC. MARTINSBURG FACILITY
MARTINSBURG, BERKELEY COUNTY, WV

NOT TO SCALE

ATTACHMENT B

PROCESS FLOW DIAGRAM


TL CS
CAL
NEW NOZZLE (FIELD LOCATE)
TEFLON COATED
T271
PERACID REACTOR
4,400 GAL
HDPE
45°
TL CS
TO WASTEWATER
TO DUST COLLECTOR
BAG DUMP
SCREW CONVEYOR
PALLET LIFT
DUST COLLECTOR
T401
MINOR ADD SLOW
3.1 GMP MAX.
TECHNICAL ASSOCIATES
PROCESS SYSTEMS, LLC
SERVICE GROUP, LLC
Engineering • Fabrication • Installation
ECOLAB
PERACID SYSTEMS AREA
ECOLAB, INC
PERACIDS SYSTEM
REACTOR
07/06/15
20150063-PI-003



1	2	3	4	5	6	7	8	9	10

A
B
C
D
E
F
G

TECHNICAL ASSOCIATES
PROCESS SYSTEMS, LLC
SERVICE GROUP, LLC
Engineering • Fabrication • Installation
3020 NORMANDY 75 PARKWAY, SUITE 100, KENNESAW, GA 30144
PHONE: 770-887-7731 FAX: 770-887-7599

DWG FILE: 20150063-PID-001

DESCRIPTION	BY

ECOLAB
642 RIVER ROAD, MARTINSBURG, WV 25405

DRAWN BY	DATE	SCALE
PF	07/02/15	NTS

VENDOR DWG. NO.

AREA: PERACID SYSTEMS AREA

TITLE: ECOLAB, INC
PERACIDS SYSTEM
50% SULFURIC ACID

SPS DWG. NO. 20150063-PID-001 SHT of

ATTACHMENT C

PROCESS DESCRIPTION

ATTACHMENT C

PROCESS DESCRIPTION

Ecolab, Inc. (ECOLAB) proposes to install one (1) 10,000 gallon Sulfuric Acid tank and one (1) Powder Feeder with a dust collector at its Martinsburg Facility. The sulfuric acid will be brought in by tanker truck and transferred to the raw material storage tank. Dry additive will be brought in by truck in bulk bags and transferred to a storage area. The Powder Feeder will receive pyridine-2,6-dicarboxylic acid and aluminum sulfate, or other powder material currently used by ECOLAB that will mix with the sulfuric acid solution and pumped to an existing 4,400 gallon Peracid Reactor. The pump rate for the liquid system is 3,000 gallons per hour (gal/hr) and the dry additive rate is ten (10) pounds per minute (lbs/min). Pyridine-2,6-dicarboxylic acid will constitute 0.05% and aluminum sulfate 0.5% of the product formula. The product will be transferred to packages, totes, and/or drums by existing equipment to be shipped off-site by truck.

The Sulfuric Acid tank was evaluated using an annual new product production of 4,013,100 pounds per year. The annual throughput of each material was supplied by ECOLAB and is included in Attachment E. The annual throughput of sulfuric acid solution will be approximately 3,991,028 pounds and the working and breathing losses were calculated based on this amount. Dry powder additive annual throughput will be approximately 22,072 pounds. Emissions for both were also estimated on an 8,760 hours per year basis.

The dust collector is being installed to control respirable dust within the building, and it does vent inside the building. The dust collector is not used as a control device in this request since the emissions must be uncontrolled.

The emissions for this equipment are below the trigger levels for permitting; therefore, we believe a Regulation 13 permit is not required for installation. By the submission of this permit determination form and attachments, we are requesting the Division of Air Quality's review and concurrence that a permit is not required.

ATTACHMENT D

MATERIAL SAFETY DATA SHEETS

143027

DELTA CHEMICAL CORPORATION

Aluminum sulfate, solid

MSDS No. 010
2/5/2008

Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product/Chemical Name:	Aluminum Sulfate, Dry
Chemical Formula:	$Al_2(SO_4)_3 \bullet (14\text{-}18)(H_2O)$
CAS Number:	10043-01-3
General Use:	Water Treatment Chemical
Emergency Contact:	**800-424-9300** Chemtrec

Manufacturer:
Delta Chemical Corporation
2601 Cannery Avenue
Baltimore, MD 21226-1595
Phone 410-354-0100 (7:00am 5:00pm)
FAX 410-354-1021

HMIS	
H	1
F	0
R	1
PPE†	

†Sec. 11

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt
Aluminum sulfate (hydrated)	10043-01-3	100

	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
Ingredient	**TWA**	**STEL**	**TWA**	**STEL**	**TWA**	**STEL**	**IDLH**
Aluminum sulfate	2 mg/m^3 *as aluminum*	none estab.	2 mg/m^3 *as aluminum*	none estab.	2 mg/m^3 *as aluminum*	none estab.	none estab.

Section 3 - Emergency Overview

Description: White granule or powder. Water soluable. Not volatile. Not flammable.
Hazards: Harmful by ingestion. Irritating to eyes, respiratory system and skin. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 4 - First Aid Procedures

Eye Contact:	Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention.
Skin Contact:	Remove contaminated clothing and wash contaminated skin with water.
Ingestion:	Do not induce vomiting, drink milk or water and immediately seek medical attention. Ingestion may irritate gastrointestinal tract.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Section 5 - Physical and Chemical Properties

Physical State:	solid	**Water Solubility:**	Complete
Appearance:	White granule or powder	**Density:**	varies, <98 lb/cu ft
Odor:	negligible odor	**Boiling Point:**	117° C/242° F
Vapor Pressure:	None	**Freezing/Melting Point:**	105° C/221° F
Vapor Density (Air=1):	Not applicable	**% Volatile:**	0.0
pH of 1% solution:	3.3 ± 0.5		

Section 6 - Fire-Fighting Measures

Flash Point:	Not applicable
Burning Rate:	Not applicable
Autoignition Temperature:	Not applicable
LEL:	Not applicable
UEL:	Not applicable
Flammability Classification:	Non-flammable
Unusual Fire or Explosion Hazards:	If exposed to temperatures greater than 1400°F, Aluminum sulfate will decompose generating toxic and corrosive gas.
Hazardous Combustion Products:	See Section 7.
Fire-Fighting Instructions:	Do not release runoff from fire control methods to sewers or waterways.

Section 7 - Stability and Reactivity

Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
Polymerization:	Hazardous polymerization does not occur.
Chemical Incompatibilities:	Contact with alkalies and water-reactive materials causes exothermic reactions.
Conditions to Avoid:	None
Hazardous Decomposition Products:	Thermal oxidative decomposition of Aluminum sulfate occurs at temperatures greater than 1400°F and can produce sulfur oxides.

Section 8 - Health Hazard Information

Primary Entry Routes:	Ingestion, inhalation, eye or skin contact
Target Organs:	None
Acute Effects:	No unusual
Eye:	May cause a burning feeling.
Skin:	May cause a skin rash or burning feeling.
Ingestion:	May cause irritation of stomach and intestines. May cause nausea, vomiting or purging.
Inhalation:	Breathing aluminum sulfate can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
Carcinogenicity:	IARC, NTP, and OSHA do not list Aluminum Sulfate as a carcinogen.
Medical Conditions Aggravated by Long-Term Exposure:	Aluminum sulfate can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, an/or shortness of breath.
Chronic Effects:	IARC, NTP, and OSHA list no evidence showing that any of the ingredients cause cancer or affect reproduction.

Section 9 - Spill, Leak, and Disposal Procedures

Spill /Leak Procedures:	Spill procedures are dictated by site wastewater flow controls and will vary from site to site. General procedures are provided in this document, but authorization for any wastewater discharge must be obtained prior to the discharge.
Large and Small Spills:	Sweep and shovel up dry chemical and place in a covered container. Wash down residue with large amounts of water and neutralize with soda ash or lime if necessary. Aluminum sulfate solutions can have a pH less than two. The neutralization of aluminum sulfate can generate carbon dioxide. Adequate ventilation must be provided. Do not discharge wastewaters to the environment or a wastewater treatment plant without authorization from the appropriate officials.

Containment:	Aluminum sulfate may absorb moisture and powders or crystals can solidify into a single mass. Protect aluminum sulfate from moisture.
Cleanup:	Wash impacted areas with water to remove residues.
Regulatory Requirements:	Follow applicable OSHA regulations (29 CFR 1910.120).
Disposal:	Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
Container Cleaning and Disposal:	Make sure bags are completely empty and dispose of as industrial/commercial waste.

Section 10 - Regulatory Information

EPA Regulations:	
RCRA Hazardous Waste Number:	Not listed (40 CFR 261.33)
RCRA Hazardous Waste Classification:	(40 CFR 261.): Not classified
CERCLA Hazardous Substance (40 CFR 302.4):	Listed CWA, Sec. 311 (b)(4)
CERCLA Reportable Quantity (RQ):	5,000 lbs (2,270 kg) as $Al_2(SO_4)_3$ 8,870 lbs (4,023 kg) as $Al_2(SO_4)_3 \cdot 14(H_2O)$
SARA 311/312 Codes:	Immediate (acute) health hazard
SARA Toxic Chemical (40 CFR 372.65):	Not listed
SARA EHS (Extremely Hazardous Substance) (40 CFR 355):	Not listed
OSHA Regulations:	
Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A):	Not listed
OSHA Specifically Regulated Substance (29CFR 1910.):	Not listed
State Regulations:	Delta Chemical Corporation has not investigated state specific requirements.

Section 11 - Exposure Controls / Personal Protection

Engineering Controls:	The best protection is to enclose operations and/or provide local exhaust ventilation at the site of the chemical release. Dust emission control may be required depending on the dust generation rate. Isolation operations can also reduce exposure.
Ventilation:	Can be used to control dust exposure but may require emission controls.
Administrative Controls:	Good work practices can help to reduce exposures. Train employees to minimize dust while handling this material.
Respiratory Protection:	Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.
Protective Clothing/Equipment:	Wear protective gloves, boots, long pants and long sleeve shirts to prevent prolonged or repeated skin contact. Wear protective chemical safety glasses, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.
Safety Stations:	Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.
Contaminated Equipment:	Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments:	Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 12 - Special Precautions and Comments

Handling Precautions:	Minimize and/or control dust while handling.
Storage Requirements:	Store in a cool, dry place. Wet aluminum sulfate will corrode steel.

Section 13 - DOT Transportation Data (49 CFR 172.101)

Shipping Name:	UN3077, Environmentally Hazardous Substance, solid, n.o.s. (Aluminum sulfate), 9, PG III	**Packaging Authorizations**	
		a) Exceptions:	173.155
		b) Non-bulk Packaging:	173.213
CERCLA RQ:	5,000 lbs (2,270 kg)	**c) Bulk Packaging:**	173.240
Hazard Class:	9	**Quantity Limitations**	
DOT No.:	UN3077	**a) Passenger, Aircraft, or Railcar:**	no limit
Packing Group:	III	**b) Cargo Aircraft Only:**	no limit
Special Provisions (172.102):	8,146,B54,IB8,IP3,N20,T1,TP33	**Vessel Stowage Requirements**	
		a) Vessel Stowage:	A
2004 Emergency Response Guidebook:	Guide 171	**b) Other:**	

Prepared By: Craig T. Owen
Effective Date: 12/10/01
Revision Notes: 2/5/08-DOT shipping name updated. 9/15/04, 4/12/04- Formatting changed

DELTA Chemical Corporation

EC safety data sheet

syntharo fine chemicals

Trade name: DIPIKOLINSÄURE
Product no.: M-242 Version: 3.0.0 / GB Status: 14.12.2007

1.) Identification of the substance/preparation and of the company/undertaking

Identification of the substance or preparation

Trade name
DIPIKOLINSÄURE

Use of the substance/preparation
Dyestuff for haircolours

Company/undertaking identification

Address
Syntharo Fine Chemicals GmbH
Chempark Leverkusen, Geb. W15
D-51368 Leverkusen

Telephone no. +49 (0)214-30-47600

Fax no. +49 (0)214-40-44247

Information provided by / telephone
Mr. Lars Müller, Tel. +49 (0)214-30-47600

Emergency telephone
+49 (0)6131 - 192 40 Poison Information Center Mainz

Advice on Safety Data Sheet
msds@syntharo.com

2.) Hazards identification

Classification
Xi; R36/37/38 Irritating to eyes, respiratory system and skin.

Hazard symbols
Xi Irritant

R phrases
36/37/38 Irritating to eyes, respiratory system and skin.

3.) Composition / information on ingredients

Chemical characterization
pyridine-2,6-dicarboxylic acid

Substance / product identification
CAS no. 499-83-2
EC no. 207-894-3

4.) First aid measures

General information
In case of persisting adverse effects consult a physician. Remove contaminated clothing and shoes immediately, and launder thoroughly before reusing.

After inhalation
Remove affected person from the immediate area. Ensure supply of fresh air.

After skin contact
When in contact with the skin, clean with soap and water.

After eye contact
Separate eyelids, wash the eyes thoroughly with water (15 min.). Eye treatment by an oculist.

After ingestion
Rinse mouth thoroughly with water. Do not induce vomiting. Summon a doctor immediately. Never give anything by mouth to an unconscious person.

5.) Fire-fighting measures

Suitable extinguishing media
Foam; Carbon dioxide; extinguishing powder; Water spray jet

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
In the event of fire, the following can be released:
Carbon dioxide (CO2)
Carbon monoxide (CO)
Nitrogen oxides (NOx)

Special protective equipment for fire-fighters
Use self-contained breathing apparatus. Wear protective clothing.

6.) Accidental release measures

Personal precautions
Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Avoid dust formation.

Environmental precautions
Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up/taking up
Pick up mechanically. Send in suitable containers for recovery or disposal.

7.) Handling and storage

Handling

Advice on safe handling
Provide good ventilation of working area (local exhaust ventilation if necessary). Avoid the formation and deposition of dust. If workplace exposure limits are exceeded, respiratory protection approved for this particular job must be worn. Product inherent handling risks must be minimised taking the appropriate measures for protection and preventive actions. The working process should be designed to rule out the release of hazardous substances or skin contact as far it is possible by the by the state of the art

Advice on protection against fire and explosion
Keep away from sources of heat and ignition. Avoid formation of dust. Take precautionary measures against static charges.

Storage

Requirements for storage rooms and vessels
Store product in closed containers. Always keep in containers of same material as the original one.

Advice on storage assembly
Do not store together with:
Oxidizing agents
Alkalies
Acids

Further information on storage conditions
Keep container tightly closed and dry in a cool, well-ventilated place.

8.) Exposure controls / personal protection

Exposure limit values
DUST

OES/EH40
total inhalable dust

TWA	10	mg/m³

OES/EH40
respirable dust

TWA	4	mg/m³

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. Dust mask

Hand protection
Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product . Before use, the protective glove should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Eye protection
Safety glasses with side protection shield (EN 166)

Skin protection
Clothing as usual in the chemical industry.

General protective and hygiene measures
Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Wash hands before breaks and after work. Have eye wash fountain available. Have emergency shower available. Avoid contact with eyes and skin. Do not inhale dust.

9.) Physical and chemical properties

General information

Form	crystalline powder
Colour	white
Odour	almost odourless

Important health, safety and environmental information

Changes in physical state

Type	Melting point			
Value	224	-	255	°C

Flash point

Value	188	°C

Ignition temperature

Value	620	°C

Density

Value	no data available

Bulk density

Value		700	kg/m³

Solubility in water

Value		5	g/l
Reference temperature	20	°C	

pH value

Value		2	
Reference temperature	20	°C	
Concentration	5	g/l	

Octanol/water partition coefficient (log Pow)

Value		0,57
Source	calculated value	

10.) Stability and reactivity

Materials to avoid
Oxidizing agents; Acids; Alkalies

Hazardous decomposition products
No hazardous decomposition products known.

Thermal decomposition

Value	>	230	°C

11.) Toxicological information

Acute toxicity

Acute oral toxicity

LD50	>	10500	mg/kg
Species	rat		

Irritant/corrosive effects

Irritant effect on skin

Species	rabbit
Evaluation	irritant

Irritant effect on eyes

Species	rabbit
Evaluation	irritant

Experience in practice
The product can cause skin and eye irritation.
Inhalation may lead to irritation of the respiratory tract.

12.) Ecological information

Persistence and degradability

Biodegradability

Evaluation	biodegradable

Other adverse effects
Do not discharge into the drains or waters and do not store on public depositories.

13.) Disposal considerations

Product

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Residuals must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

14.) Transport information

Other information (chapter 14.)

The product is not defined under national/international road, rail, sea and air transport regulations as a hazardous material.

15.) Regulatory information

Labelling in accordance with EC directives

The product is classified and labelled in accordance with EC Directive 67/548/EC.

EC no.	207-894-3 (pyridine-2,6-dicarboxylic acid)

Hazard symbols

Xi	Irritant

R phrases

36/37/38	Irritating to eyes, respiratory system and skin.

S phrases

24	Avoid contact with skin.
26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

Remarks	Annex I, part 1 + 2: not mentioned. With regard to possibly appropriate decomposition products see Chapter 10.

16.) Other information

Sources of key data used to compile the data sheet:

EC Directive 67/548/EC resp. 99/45/EC as amended in each case.
Regulation (EC) No 1907/2006 (REACH) as amended in each case.
EC Directives 2000/39/EC, 2006/15/EC as amended in each case.
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding chapter.

Department issuing safety data sheet

UMCO Umwelt Consult GmbH
Georg-Wilhelm-Str. 183 b, D-21107 Hamburg
Tel.: +49 40 / 41 92 13 00 Fax: +49 40 / 41 92 13 57 e-mail: umco@umco.de

This information is based on our present state of knowledge. However, it should not constitute a guarantee for any specific product properties and shall not establish a legally valid relationship.

COLUMBUS CHEMICAL INDUSTRIES INC.

Material Safety Data Sheet

Sulfuric Acid 50% v/v

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sulfuric Acid 50%

Synonyms/Generic Names: Battery Acid, Dihydrogen Sulfate, Oil of Vitriol.

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd. Columbus, WI. 53925

For More Information Call: 920-623-2140
(Monday – Friday 8:00-4:30)

IN CASE OF EMERGENCY CALL: CHEMTREC
(24 Hours/Day, 7 Days/Week) 800-424-9300
703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight %	Component	CAS #	EINECS# / ELINCS#	Classification*
65 - 67%	Sulfuric Acid	7664-93-9	231-939-5	C; R35, **
Balance	Water	7732-18-5	231-791-2	N/A

*Symbol and R phrase according to EC Annex1
** Subject to the reporting requirements of SARA Title III Section 313

3. HAZARDS IDENTIFICATION

Clear, colorless solution.

R35 – Causes severe burns.

S26, S30, S45

Routes of Entry: Skin, eyes, inhalation and ingestion.

Ingredients found on carcinogen lists:

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST	ACGIH
Sulfuric Acid	Known*	Known*	Known*	Suspected*

*refers to sulfuric acid contained in strong inorganic acid mists

4. FIRST AID INFORMATION

Inhalation: Inhalation of mists can cause corrosive action on mucous membranes. Symptoms include burning, choking, coughing, wheezing, laryngitis, shortness of breath, headache or nausea. Move casualty to fresh air and keep at rest. Get medical attention if symptoms persist.

Eyes: Contact rapidly causes severe damage. Symptoms include eye burns, watering eyes. Permanent damage to cornea may result. In case of eye contact, rinse with plenty of water and seek medical attention immediately.

Skin: Severe and rapid corrosion from contact. Extent of damage depends on duration of contact. Symptoms include burning, itching, redness, inflammation and/or swelling of exposed tissues. harmful if absorbed through skin. Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and wash using soap. Get medical attention immediately.

Ingestion: **Do Not Induce Vomiting!** Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Wash out mouth with water and give a glass of water or milk. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES:

Flash Point:	Not Flammable
Flash Point method:	Not Applicable
Autoignition Temperature:	Not Applicable
Upper Flame Limit (volume % in air):	Not Applicable
Lower Flame Limit (volume % in air):	Not Applicable

Extinguishing Media: Product is not flammable. Use appropriate media for adjacent fire. Cool containers with water, keep away from common metals.

Special fire-fighting procedures: Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots. Material can react violently with water (spattering and misting) and react with metals to produce flammable hydrogen gas.

Hazardous combustion products: Emits toxic fumes under fire conditions. (See also Stability and Reactivity section).

Unusual fire and explosion hazards: Material can react with metals to produce flammable hydrogen gas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: See section 8 for recommendations on the use of personal protective equipment.

Environmental precautions: Cleanup personnel need personal protection from inhalation and skin/eye contact. Evacuate and ventilate the area. Prevent spillage from entering drains. Neutralize diluted spill with sodium bicarbonate or lime. Absorb neutralized spill with vermiculite or other inert absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Any release to the environment may be subject to federal/national or local reporting requirements. Dispose of all waste or cleanup materials in accordance with local regulations. Containers, even when empty, will retain residue and vapors.

7. HANDLING AND STORAGE

Normal handling: See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use.

Storage: Store in cool, dry well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities). Drains for storage or use areas for this material should have retention basins for pH adjustment and dilution of spills.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls: (consult local authorities for acceptable exposure limits)

Chemical name	Regulatory List	Value and type
Sulfuric Acid	USA OSHA PEL	1 mg/m^3
	USA ACGIH	0.2 mg/m^3 TLV
	USA NIOSH	1 mg/m^3
	Canada TLV	Not Available
	OSHA IDLH	15 mg/m^3

TWA: Time Weighted Average over 8 hours of work.
TLV: Threshold Limit Value over 8 hours of work.
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit during x minutes.
IDLH: Immediately Dangerous to Life or Health

Ventilation: Provide local exhaust, preferably mechanical.

Respiratory protection: If necessary use an approved respirator with acid vapor cartridges.

Eye protection: Wear chemical safety glasses with a face shield for splash protection.

Skin and body protection: Wear neoprene or rubber gloves, apron and other protective clothing appropriate to the risk of exposure.

Other Recommendations: Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling. Have supplies and equipment for neutralization and running water available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless to brown, oily liquid
Physical state:	Liquid
Odor:	Odorless
Odor Threshold:	Not Available
Specific Gravity:	1.400
pH:	1
Melting Point/Freezing Point:	Not Available
Boiling Point/Range:	Not Available
Flammability:	Not Flammable (See section 5)
Flash point:	Not Flammable (See section 5)
Evaporation Rate (Butyl Acetate =1):	Not Available
Explosive Limits:	Not Explosive (See section 5)
Vapor Pressure (at 145°C):	Not Available
Vapor Density (air =1):	Not Available
Solubility:	Completely soluble in water
Partition coefficient/n-octanol/water:	Not Available
% Volatile:	Not Available
Autoignition Temperature:	See section 5

10. STABILITY AND REACTIVITY

Stability: Stable

Conditions to avoid: Uncontrolled addition of water.

Incompatibility: Bases, Halides, Organic materials, Carbides, fulminates, Nitrates, picrates, Cyanides, Chlorates, alkali halides, Zinc salts, permanganates, Hydrogen peroxide, Azides, Perchlorates., Nitromethane, phosphorous, Reacts violently with water.

Hazardous decomposition products: Sulfur oxides.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects: See section 4 for symptoms of exposure and effects. Likely routes of exposure are skin, eyes and inhalation.
Target organs: Teeth, Lungs

Acute Toxicity Data:

Sulfuric Acid	LD50 [oral, rat]; 2140 mg/kg
	LC50 [rat]; 510 mg/m^3 (2 hrs)

Chronic Effects: May cause bleeding of nose and gums, nasal and oral mucosal ulceration, conjunctivitis, yellowing of teeth and erosion of tooth enamel, dermatitis.

Teratogenicity: Not Available
Mutagenicity: Not Available
Embryotoxicity: Not Available
Synergistic Products/Effects: Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial): LC50 - Gambusia affinis (Mosquito fish) - 42 mg/l - 96 h

Persistence and Degradability: Not Available

Bioaccumulative Potential: Does not accumulate.

Mobility in Soil: Not Available

Other Adverse Effects: Not Available

13. DISPOSAL CONSIDERATIONS

RCRA:

Hazardous waste? Yes RCRA ID number: DOO2

Waste Residues: Carefully dilute with water, neutralize per spill procedures in section 6. Neutralized material may be flushed to sewer (REGULATIONS PERMITTING!) or disposed of through a licensed contractor. Users should review their operations in terms of the applicable federal/nation or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

Product containers: Containers, if thoroughly cleaned, preferably by rinsing three times and handling the rinse water as waste residues, may be disposed of or recycled as non-hazardous waste. Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies before discharging or disposing of waste material.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

DOT: UN1830, Sulfuric Acid, 8, pg II

TDG: UN1830, Sulfuric Acid, 8, pg II

PIN: Not Available

IDMG: UN1830, Sulphuric Acid, 8, pg II
Marine Pollutant: No

IATA/ICAO: UN1830, Sulphuric Acid, 8, pg II

RID/ADR: Not Available

15. REGULATORY INFORMATION

TSCA Inventory Status: All ingredients are listed on the TSCA inventory.

Federal and State Regulations:
Pennsylvania RTK: Sulfuric acid
Massachusetts RTK: Sulfuric acid
New Jersey: Sulfuric acid
California Director's List of Hazardous Substances: Sulfuric acid

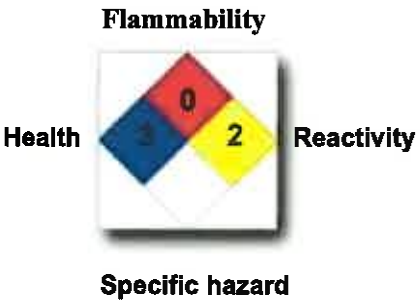
SARA 302/304/311/312 extremely hazardous substances: Sulfuric Acid
SARA 313 toxic chemical notification and release reporting: Sulfuric Acid
CERCLA: Hazardous Substances: Sulfuric Acid, 1000lbs.

California Proposition 65:	Yes, Sulfuric Acid
WHMIS Canada:	Class E - corrosive liquid. Class D-1A – Material causing other toxic effects (very toxic)
DSCL (EEC):	R35 – Causes severe burns.

HMIS (U.S.A.)

Health Hazard	3
Fire Hazard	0
Reactivity	3

National Fire Protection Association (U.S.A.)



Protective Equipment:

ADR (Europe):

TDG (Canada):

DSCL (Europe):

16. OTHER INFORMATION

Current Issue Date: March 15, 2012

ATTACHMENT E

EMISSIONS CALCULATIONS

ECOLAB, Inc.
Martinsburg Plant

POTESTA & ASSOCIATES, INC.
Project No: 0101-15-0407

By: JJD
Date: 10/14/2015

Checked By: PEW
Date: 10/26/2015

Total Facility Emissions

Emission Type	lb/hr	ton/yr
PM	0.0729	0.3193
PM_{10}	0.0345	0.1511
$PM_{2.5}$	0.0052	0.0228
Mineral Acids	3.435E-04	1.504E-03

By: JJD
Date: 10/14/2015

Checked By: PEW
Date: 10/26/2015

Sulfuric Acid Tank

According to the EPA's *Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any* particle size) [EPA document EPA-745-R-97-007] "If sulfuric acid is present in the form of a gas, fog, vapor, or mist, or any other airborne form, then sulfuric acid is considered to be in the aerosol form.

The following calculations show the loss (or manufacture) of acid aerosols from the storage tank.

1) Calculate the capacity of vapor in the tank using the Ideal Gas Equation

tank capacity =	10,000	gal	
	1,336.81	ft^3	
vapor pressure =	1.01E-06	bar	per Perry's handbook
	1.48E-05	psi	
average tank temperature =	68	°F	
	527.67	°R	
molecular weight H_2SO_4=	98	lb/lbmol	
R =	10.73164	psi-ft^3/(lbmol-R)	

Constants		
1 m^3=	35.315	ft^3
1 lb=	453592.37	mg

tank capacity (vapor) = 3.435E-04 lb

Vapor Density = 2.569E-07 lb/ft^3
= 4.116E+00 mg/m^3

2) Calculate the number of turnovers

tank capacity =	10,000	gal	
specific gravity H_2SO_4 =	1.400		per MSDS
density H_2SO_4 (liquid)=	11.684	lb/gal	
tank capacity (liquid) =	116,835.4	lb	
liquid pump rate =	3,000	gal/hr	
liquid pump rate =	35,051	lb/hr	
dry additive rate =	10	lbs/min	
	600	lbs/hr	
	22,072	lbs/yr	
percent dry additive =	0.0055	decimal percent	
product production =	4,013,100	lbs/year	
throughput =	3,991,028	lb	
turnovers =	34.16		

3) Calculate the vapor emissions assuming one tank volume is emitted for each turnover

tank capacity (vapor) =	3.435E-04	lb
turnovers =	34.16	
Annual Vapor Emissions =	1.173E-02	lb
	5.867E-06	tons

4) Assuming one (1) turnover in an hour, the annual emissions for 8,760 hours per year is estimated

Hours per year =	8760	
Annual Vapor Emissions =	3.009E+00	lb
	1.504E-03	tons

* Emissions were not calculated on the Peracid Reactor because the tank is used for mixing, not storage.

ECOLAB, Inc.
Martinsburg Plant

POTESTA & ASSOCIATES, INC.
Project No: 0101-15-0407

By: JJD
Date: 10/14/2015

Checked By: PEW
Date: 10/26/2015

Manual Transfer of Bagged Material to Small Hopper

Emission factor equation:

$E = k\ (0.0032)\ (U/5)^{1.3} / (M/2)^{1.4}$

From *AP-42 Fifth Edition*, Section 13.2.4, Aggregate Handling and Storage Piles

	PM	PM10	PM2.5	
E =	?	?	?	lb/ton
k =	0.74	0.35	0.053	dimensionless, particle size multiplier
U =	7	7	7	mph, mean wind speed
M =	?	?	?	%, moisture content

Particulate Matter (PM)

Rounding to = 4

ID	Transfer Capacity		Moisture Content (M)	Emission Factor	Control Device *		PM Uncontrolled		PM Controlled	
	(tph)	(tpy)	(%)	(lb/ton)	Type	Effic(%)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1	0.3000	11.0360	0.1	0.2431	N	0	0.0729	0.0013	0.0729	0.0013
						Estimated Useage Total PM	0.0729	0.0013	0.0729	0.0013
						8,760 hrs/yr Total PM	NA	**0.3193**	NA	**0.3193**

Particulate Matter less than 10 Microns (PM10)

ID	Transfer Capacity*		Moisture Content (M)	Emission Factor	Control Device *		PM10 Uncontrolled		PM10 Controlled	
	(tph)	(tpy)	(%)	(lb/ton)	Type	Effic(%)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1	0.3000	11.0360	0.1	0.1150	N	0	0.0345	0.0007	0.0345	0.0007
						Estimated Usage Total PM10	0.0345	0.0007	0.0345	0.0007
						8,760 hrs/yr Total PM10	NA	**0.1511**	NA	**0.1511**

Particulate Matter less than 2.5 Microns (PM2.5)

ID	Transfer Capacity*		Moisture Content (M)	Emission Factor	Control Device *		PM2.5 Uncontrolled		PM2.5 Controlled	
	(tph)	(tpy)	(%)	(lb/ton)	Type	Effic(%)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
TP1	0.3000	11.0360	0.1	0.0174	N	0	0.0052	0.0001	0.0052	0.0001
						Estimated Usage Total PM2.5	0.0052	0.0001	0.0052	0.0001
						8,760 hrs/yr Total PM2.5	NA	**0.0228**	NA	**0.0228**

* The Powder Feeder has a dust collector installed to meet OSHA safety requirements. The dust collector is not used as an emissions control device in the above calculations.