Clearon Corporation

Permit Determination
Plant ID: 03-054-03900011
Title V Permit: R30-03900011-2014

South Charleston, West Virginia

Prepared By:

ENVIRONMENTAL RESOURCES MANAGEMENT, Inc.
Hurricane, West Virginia

December 2015

ICL Industrial Products

Where needs take us

December 8, 2015

Mr. William F. Durham, Director
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, West Virginia, 25304

RE: Permit Determination
Clearon Corporation

Dear Director Durham:

Clearon Corporation (Clearon) is pleased to submit the enclosed Permit Determination for Clearon's Chlorinated Dry Bleach Plant near Charleston in Kanawha County, West Virginia. The original Permit Determination package is enclosed.

Clearon replaced the existing 20,0000 gallon sodium bisulfite tank T-7821B with a new 18,500 gallon sodium bisulfite tank. This permit determination details that there is no change to the potential to emit of the facility, since the new tank qualifies as a de Minimis source under WV 45 CSR 13 Table 1-B, Item 50.

If you should have any questions, please contact Amanda Marcks at Amanda.Marcks@icl-group.com or by phone at (304) 746-3034.

Best Regards,

John McKitrick
Operations Manager

cc: Grant Morgan, ERM – Grant.morgan@erm.com
Enclosures

ICL-Clearon Corporation
95 MacCorkle Avenue, SW
South Charleston, WV 25303

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):

Clearon Corporation

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

South Charleston Chlorinated Dry Bleach Plant

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (**NAICS**) CODE:

325180

4A. MAILING ADDRESS:

95 MacCorkle Avenue, South Charleston, WV 25303

4B. PHYSICAL ADDRESS:

95 MacCorkle Avenue, South Charleston, WV 25303

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP** AS **ATTACHMENT A**): **Exit 56 (Montrose Drive) on I-64. Turn right and go to the bottom of the hill and turn left at the light onto MacCorkle Avenue (Route 60). Go to 3rd stop light and turn right. Turn left at first driveway.**

5B. NEAREST ROAD:	5C. NEAREST CITY OR TOWN:	5D. COUNTY:
MacCorkle Avenue	**Charleston**	**Kanawha**
5E. UTM NORTHING (KM):	5F. UTM EASTING (KM):	5G. UTM ZONE:
4,246.6	**438.4**	**17**

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:		6B. TITLE:
Amanda Marcks		**Environmental Engineer**
6C. TELEPHONE:	6D. FAX:	6E. E-MAIL:
(304) 746 - 3046	**(304) 746-3034**	**Amanda.Marcks@ICL-group.com**

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

054-03900011

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

R30-03900011-2014

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:

N/A

8A. TYPE OF EMISSION SOURCE (CHECK ONE):

☐ **NEW SOURCE** ☒ **ADMINISTRATIVE UPDATE**

☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?

☒ **YES** ☐ **NO**

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

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

10/09/2015

10B. DATE OF ANTICIPATED START-UP:

10/11/2015

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

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

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

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

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

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

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

POLLUTANT	**HOURLY PTE** (LB/HR)	**YEARLY PTE** (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	--	--
PM_{10}	--	--
VOCs	--	--
CO	--	--
NO_x	--	--
SO_2	--	--
Pb	--	--
HAPs (AGGREGATE AMOUNT)	--	--
TAPs (INDIVIDUALLY)*	--	--
OTHER (INDIVIDUALLY)*	--	--

* ATTACH ADDITIONAL PAGES AS NEEDED

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

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

14. **CERTIFICATION OF DATA**

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

SIGNATURE OF RESPONSIBLE OFFICIAL: _____

TITLE: **Operations Manager** DATE: 12 / 8 / 15

****** 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:

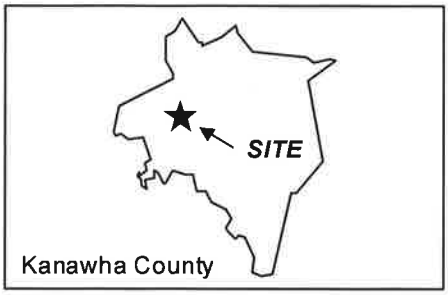
www.dep.wv.gov/daq

Table of Contents

Attachment A

SITE LOCATION MAP

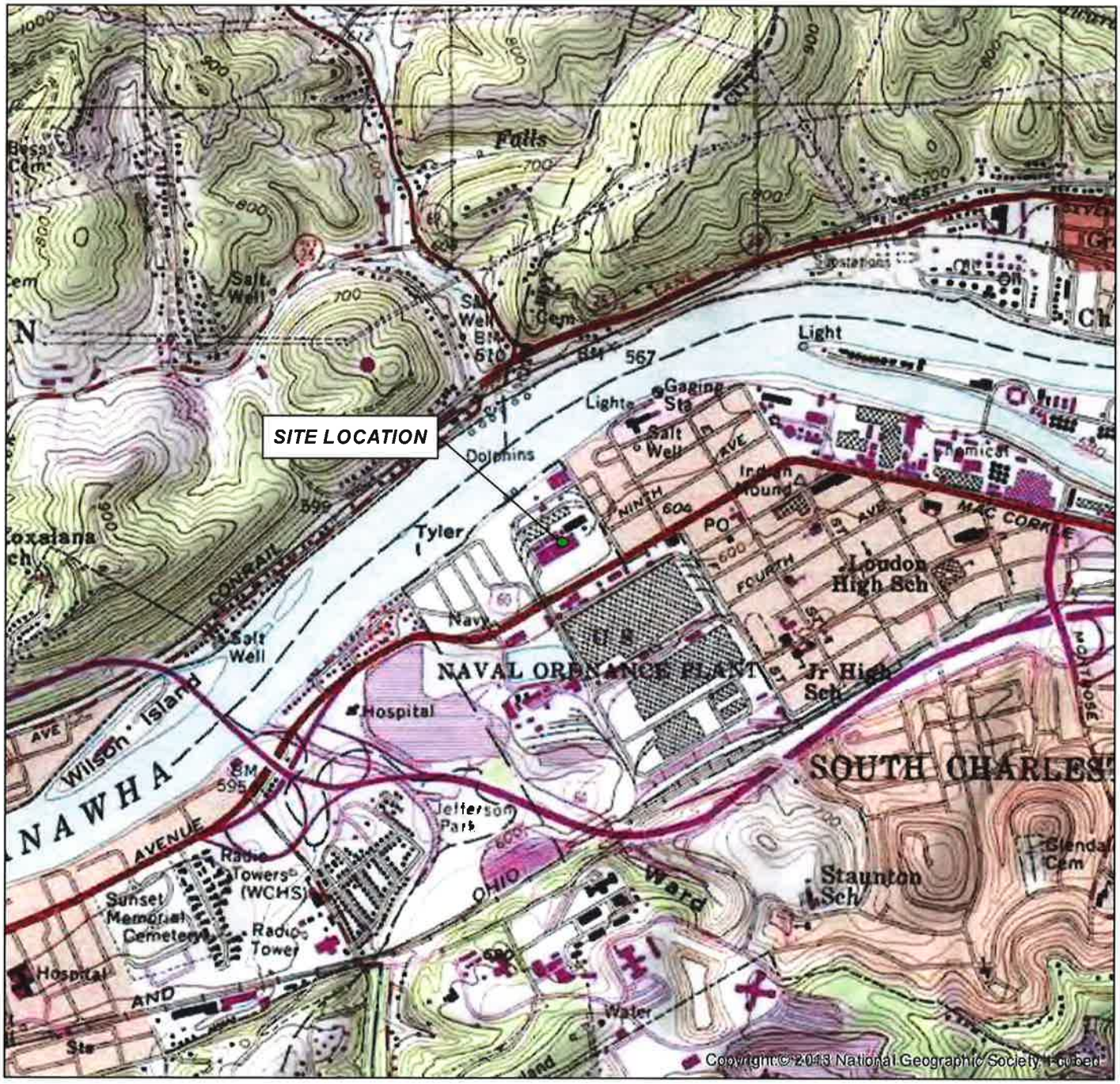
West Virginia



0 1,000 2,000 4,000 Feet

N

LAT. 38.367 LON. -81.706
KANAWHA COUNTY
WEST VIRGINIA



USGS 1:24K 7.5' Quadrangle:
Charleston West, WV

SITE LOCATION MAP

ERM	**South Charleston Facility** Clearon Corporation Kanawha County, West Virginia	GIS Review: CHK'D: 0307688
Drawn By: SRV-8/24/15	**Environmental Resources Management**	ATTACHMENT A

J:\GIS\Projects\SiteLocationMaps\Clearon Corporation\MXD\Site_Location_Map.mxd - 8/24/2015 SRV

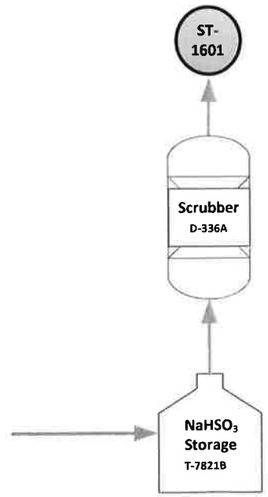
Attachment B

PROCESS FLOW DIAGRAM

Attachment B

Clearon Corporation

Process Flow Diagram



Emission Point

Product Flow

Vent Streams

Attachment C

PROCESS DESCRIPTION

PROCESS DESCRIPTION

Clearon Corporation's (Clearon) primary products are purified cyanuric acid and chlorinated isocyanurates also known as CDB. The facility operates on a year-round basis, 24 hours per day, and 365 days per year.

Cyanuric acid is produced from the pyrolysis of urea. The cyanuric acid is used as the feed stock to produce various types of CDB's at the South Charleston Plant. CDB's are produced by chlorinating the cyanuric acid. Cyanuric acid is also sold to other manufacturers for the production of their chlorinated dry bleaches or as CDB stabilizers.

Cyanuric acid and chlorinated dry bleaches are used in production of swimming pool treatment chemicals, cleansers, dishwashing detergents and various other products whose primary functions are cleaning, disinfecting, and sanitizing.

The sodium bisulfite tank (T-7821B) serves as a storage tank for sodium bisulfite. Sodium bisulfite is utilized in the back end waste process as an anti-chlor, a reducing agent for removing oxidizing bleaches.

With this tank replacement project, there will be no change to emissions since the amount of sodium bisulfite used in the process will remain constant and the storage tank is considered de minimis under 45 CSR 13 Table 1-B, Item 50.

A process flow diagram is included as Attachment B.

Attachment D

SAFETY DATA SHEETS

Material Safety Data Sheet
MSDS Revision Date: April 9, 2010

PRODUCT: Sodium Hydrogen Sulfite Solution

BRENNTAG

1. Product and Company Identification

Product Identity: Sodium Hydrogen Sulfite Solution	Chemical Formula: $NaHSO_3$ (aqueous) Molecular Weight: 103
Synonyms: Sodium Bisulfite Solution 15% - 43%, Sodium Bisulfite 40% PPG	

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

Technical Information: 270-830-1222
Emergency Number: 800-424-9300 (CHEMTREC)
Emergency Number: 703-5273887 (International)

2. Hazards Identification

Emergency Overview A yellow liquid with a pungent sulfur dioxide gas odor. May irritate the skin. May cause irritation and/or burns to the eyes. Harmful if swallowed or inhaled. May cause severe and possible fatal allergic reactions if inhaled or swallowed by some asthmatics and other 'sulfite-sensitive' individuals. Reacts with acids to form toxic and irritating sulfur dioxide gas.

Potential Health Effects

Inhalation: May cause irritation of the respiratory tract. Contact with acids will liberate toxic and irritating sulfur dioxide gas.

Ingestion: Moderately toxic. May irritate gastrointestinal tract. Large doses may cause violent colic and diarrhea, circulatory disturbances, central nervous system depression and even death.

Skin Contact: Prolonged or repeated skin contact may cause severe injury.

Eye Contact: May cause severe eye injury.

Chronic Exposure: May cause severe allergic reaction in some asthmatics and sulfite-sensitive individuals.

3. Composition/Information on Ingredients

CAS#	Chemical Name	Percent by Weight
7631-90-5	Sodium Bisulfite	14 – 43
7757-83-7	Sodium sulfite	<1
7757-82-6	Sodium Sulfate	<2
7732-18-5	Water	Balance

Material Safety Data Sheet
MSDS Revision Date: April 9, 2010

PRODUCT: Sodium Hydrogen Sulfite Solution

BRENNTAG

4. First Aid Measures

Inhalation: Remove victim to fresh air. Give artificial respiration if not breathing. Get medical attention.

Ingestion: Get immediate medical attention. Give plenty of water.

Skin Contact: Flush skin with plenty of water while removing contaminated clothing. If irritation persists, get immediate medical attention.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

5. Fire Fighting Measures

Go to Section 9 for Flammable Properties.

Fire: Wear full protective clothing including self-contained breathing apparatus.

Explosion: Releases sulfur dioxide when heated or upon contact with acids.

Fire Extinguishing Media: Will not burn; use water or carbon dioxide for surrounding materials.

Special Information: Wash thoroughly after handling. Persons suffering from asthma or other respiratory problems should avoid contact or exposure to sodium bisulfite. Avoid breathing vapors.

6. Accidental Release Measures

Personnel with proper protective equipment should contain spill. Dilute spill with plenty of water and neutralize with soda ash or sodium hydroxide (caustic). Sulfur dioxide and carbon dioxide may be released during neutralization. Provide ventilation to clear sulfur dioxide and carbon dioxide fumes. Collect material for disposal.

7. Handling and Storage

Store in a dry, well-ventilated area away from oxidizing agents. Store above 65° F for 43% Solution, above 45° F for 41% Solution, and above 38° F for 40% Solution. Releases sulfur dioxide gas slowly at ambient temperatures.

8. Exposure Controls/Personal Protection

OSHA Permissible Exposure Limit (PEL): Sodium Bisulfite: 5 mg/m^3

Ventilation System: Local exhaust preferred. Mechanical (general) as required to control vapor concentration.

Skin Protection: Clothing to prevent repeated or prolonged skin contact. Safety shower and eye wash fountain. Rubber gloves.

Eye Protection: Splash-proof chemical goggles.

Material Safety Data Sheet
MSDS Revision Date: April 9, 2010

PRODUCT: Sodium Hydrogen Sulfite Solution

BRENNTAG

9. Physical and Chemical Properties

Appearance:	Clear, light yellow-color
Odor:	sharp pungent odor
Physical State:	Liquid
pH:	4.0 – 4.8
Boiling Point:	Decomposes.
Auto-ignition Temperature:	No Information Found
Flash Point:	Not applicable
Upper Explosive Limit:	No Information Found
Lower Explosive Limit:	No Information Found
Vapor Pressure:	68° F/20° C 10.5 mmHg
Vapor Density (AIR =1):	Water Vapor Only
Specific Gravity:	1.11 – 1.39
Solubility in Water:	Complete
Evaporation Rate (Butyl Acetate = 1):	0.2

10. Stability and Reactivity

Chemical Stability: Stable
Conditions to Avoid: High temperatures or heating of product will increase the evolution of sulfur dioxide gas. Cooling of product will cause crystallization to occur. Sodium bisulfite 43% solution crystallizes at 65° F; a 41% solution crystallizes at 45° F; a 40% solution crystallizes at 38° F.
Incompatible Materials: Oxidizing agents, acids.
Hazardous Decomposition Products: Sulfur dioxide.
Polymerization: Will not occur

11. Toxicological Information

TOXICITY DATA:
Immediate (Acute) effects:
Sodium metabisulfite – LD_{50} (oral, rat) = 424 mg/kg
Sodium bisulfite – LD_{50} (oral, mouse) = 820 mg/kg

DELAYED (SUBCHRONIC AND CHRONIC) **EFFECTS**: Sodium sulfite has been demonstrated to be mutagenic in microbial systems; however, it is not mutagenic in studies involving insects and is not considered to present a mutagenic threat to multi-cell organisms.

Material Safety Data Sheet
MSDS Revision Date: April 9, 2010

PRODUCT: Sodium Hydrogen Sulfite Solution

BRENNTAG

12. Ecological Information

ECOTOXICITY: For sodium sulfite: 2600 ppm/24, 48 & 96 hr/mosquito fish/tl_m/fresh water

Biological oxygen demand (BOS): 0.12 lb/lb, instantaneous

13. Disposal Considerations

Disposal is to be in accordance with federal, state, and local regulations.

14. Transport Information

PROPER SHIPPING NAME: Bisulfites, aqueous solutions, n.o.s. (Sodium bisulfite)

HAZARD CLASS: 8 (Corrosive) UN/NA: UN2693 PACKING GROUP: III

D.O.T. LABEL REQUIRED: Corrosive REPORTABLE QUANTITY OF PRODUCT: 5000 lbs*

*on the dry weight basis for sodium bisulfite.

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center and to you local Emergency Planning Committee.

15. Regulatory Information

TSCA (Toxic Substance Control Act): All components of this product are listed on the TSCA inventory.

SARA TITLE III: HAZARD CLASSIFICATIONS: Acute: yes Chronic: no Fire: no Pressure: no Reactivity: no

WHMIS CLASSIFICATION (CANADA): D2B, E

FOREIGN CHEMICAL CONTROL INVENTORY STATUS: Listed on Canadian DSL and EU EINECS.

16. Other Information

HMIS HAZARD RATING: Health 1 Flammability 0 Reactivity 1

This MSDS is provided as an information resource only. It should not be taken as a warranty or representation for which Brenntag assumes legal liability. While Brenntag believes the information contained herein is accurate and compiled from sources believed to be reliable, it is the responsibility of the user to investigate and verify its identity. The buyer assumes all responsibility for using and handling the product in accordance with applicable international, federal, state, and local regulations.

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

PREPARED BY: APPROVED BY:

C:\RD1\WORDMSDS\SBS 15-43

Attachment E

CALCULATIONS

Clearon Corporation
T- 7821B Replacement

Supporting calculations including in this attachment shows no increase in emissions that will trigger the permit modification threshold of 6 lbs/hr and 10 tpy.

45 CSR 7 - To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

Sodium bisulfite is not a mineral acid and does not emit particulate matter. Therefore, 45 CSR 7 does not apply.

40 CFR Part 60 Subpart Kb - Standards Of Performance For Volatile Organic Liquid Storage Vessel

Sodium bisulfite is not a volatile organic liquid. Therefore, 40 CFR 60 Subpart Kb does not apply.

The amount of sodium bisulfite that will be emitted from the proposed tank installation has been determined using EPA Tanks. When modeling inorganic compounds, the EPA TANKS software states "Although the equations used in the model were developed to estimate evaporative losses from storage of organic liquids, it is possible to use the model if the inorganic liquid has a measurable vapor pressure and data are available for one of the vapor pressure options in the chemical database."Based upon the information presented by the US EPA, the use of EPA TANKS as the estimation method has been evaluated as the best available estimation method to determine sodium bisulfite emissions from T-7821B. Clearon has a Safety Data Sheet (SDS) for 40% Sodium bisulfite ($NaHSO_3$) that provides a vapor pressure and molecular weight of the material used in the TANKS simulation model.

Inputs From EPA TANKS	
Tank Working Volume (gallons)	11,000
Total Tank Losses (lbs / yr)	185.95

Tank T-7821B does not have the potential to emit a regulated air pollutant. Furthermore, the tank replacement project does not qualify as requiring permit modification.

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification		
User Identification:	T-7821B	
City:	Charleston	
State:	West Virginia	
Company:	Clearon	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	Clearon - Sodium Bisulfite Tank	
Tank Dimensions		
Shell Height (ft):		29.00
Diameter (ft):		12.00
Liquid Height (ft) :		14.00
Avg. Liquid Height (ft):		14.00
Volume (gallons):		11,000.00
Turnovers:		7.36
Net Throughput(gal/yr):		81,000.00
Is Tank Heated (y/n):	N	
Paint Characteristics		
Shell Color/Shade:	Gray/Light	
Shell Condition	Good	
Roof Color/Shade:	Gray/Light	
Roof Condition:	Good	
Roof Characteristics		
Type:	Dome	
Height (ft)		0.00
Radius (ft) (Dome Roof)		12.00
Breather Vent Settings		
Vacuum Settings (psig):		-0.03
Pressure Settings (psig)		0.03

Meterological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T-7821B - Vertical Fixed Roof Tank
Charleston, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Sodium Bisulfite	All	61.57	52.97	70.18	57.22	0.2030	0.0900	0.2030	103.0000			103.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T-7821B - Vertical Fixed Roof Tank
Charleston, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	145.6207
Vapor Space Volume (cu ft):	1,789.5488
Vapor Density (lb/cu ft):	0.0037
Vapor Space Expansion Factor:	0.0698
Vented Vapor Saturation Factor:	0.8545
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,789.5488
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	15.8231
Tank Shell Height (ft):	29.0000
Average Liquid Height (ft):	14.0000
Roof Outage (ft):	0.8231
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.8231
Dome Radius (ft):	12.0000
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0037
Vapor Molecular Weight (lb/lb-mole):	103.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2030
Daily Avg. Liquid Surface Temp. (deg. R):	521.2427
Daily Average Ambient Temp. (deg. F):	54.9833
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	516.8933
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250.5726
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0698
Daily Vapor Temperature Range (deg. R):	34.4127
Daily Vapor Pressure Range (psia):	0.1130
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2030
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0900
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.2030
Daily Avg. Liquid Surface Temp. (deg R):	521.2427
Daily Min. Liquid Surface Temp. (deg R):	512.8395
Daily Max. Liquid Surface Temp. (deg R):	529.8458
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8545
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.2030
Vapor Space Outage (ft):	15.8231
Working Losses (lb):	40.3245
Vapor Molecular Weight (lb/lb-mole):	103.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.2030
Annual Net Throughput (gal/yr.):	81,000.0000
Annual Turnovers:	7.3600
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	11,000.0000
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	185.9452

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T-7821B - Vertical Fixed Roof Tank
Charleston, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Sodium Bisulfite	40.32	145.62	185.95