



SILICON PROCESSORS, INC.
400 Buckeye St.
Parkersburg, WV 26101
Telephone: 740-236-0306
Fax: 740-373-6359

Beverly.D.Mckeone
West Virginia Dept of environmental Protection
Beverly.D.Mckeone@wv.gov

November 2, 2016

Ms. Mckeone,

Re: Permit Determination

SPI would like to add a storage bay to the existing storage building in Parkersburg . This will not cause an exceedance of the total amount of material stored, nor will it increase the amount of material processed per year; but we will add four augers inside the building.

In the current permit, there is no emission limit for the augers, because they are totally enclosed. However, I created calculation sheets that show proposed calculations for the emissions after adding the augers using the same annual tonnage as in the permit.

We believe that this may be exempt from requirement for a Modification, because there is no calculation of PTE based upon the number of augers inside the building, and because of the daily emission calcs..

However, if the addition of the augers does require a permit change, we believe that this qualifies for a Class I Admin Mod, because **IF** there was an emission limit in the original permit, the new additions would not increase the emissions by 10 tons per year.

Please see the attached Permit Determination info, and call me for clarification.

Thanks in advance. Trent Elliott 740-236-0306





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)**

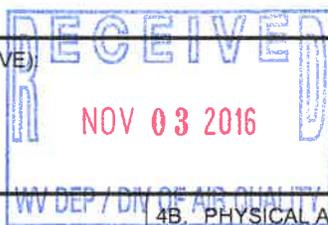
FOR AGENCY USE ONLY: PLANT I.D. # _____
PDF # _____ PERMIT WRITER: _____

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

Silicon Processors, Inc.

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

Same



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

327992

4A. MAILING ADDRESS:

400 Buckeye St Parkersburg WV 26101

4B. PHYSICAL ADDRESS:

400 Buckeye St Parkersburg WV 26101

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A): See Attachment A

5B. NEAREST ROAD:

WV St Rt 95

5C. NEAREST CITY OR TOWN:

Parkersburg

5D. COUNTY:

Wood

5E. UTM NORTHING (KM):

39⁰ 15' 15.43" W

5F. UTM EASTING (KM):

81⁰ 32' 04.27"W

5G. UTM ZONE:

17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:

Trent Elliott

6B. TITLE:

President

6C. TELEPHONE:

740-236-0306

6D. FAX:

6E. E-MAIL:

telliott@siliconprocessors.co

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

R13-2559A

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

R13-2559 R13-1073B

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?

X YES NO

9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED?

X YES NO

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

12/10/2016

10B. DATE OF ANTICIPATED START-UP:

January/2/2017

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 PROCESSES, 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	4.5	19.7
PM ₁₀		
VOCs		
CO		
NO _x		
SO ₂		
Pb		
HAPs (AGGREGATE AMOUNT)		
TAPs (INDIVIDUALLY)*		
OTHER (INDIVIDUALLY)*		

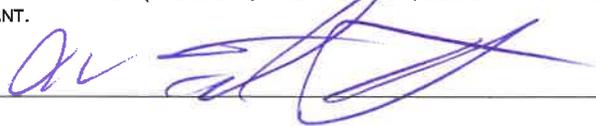
* ATTACH ADDITIONAL PAGES AS NEEDED

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, W. Trent Elliott (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: President

DATE: 10 / 31 / 16

** 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-1

Elite Sports center

Scott Field Purchase Area 336 feet

200 x 200 bldg 257 feet

Barge Dock

Silos

Warehouse

50 feet

Rail Spurs

Caci Production

U.S. Rt. 50

Buckeye Street

St Rt 95

U.S. Rt 50 to Clarksburg

Rt 95 to I-77

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Go

Attachment A-2

Site

Barge Dock

Silos

Warehouse

50 feet

Rail Spurs

CaCl₂ Production

U.S.

U.S. Rt. 50

Buckeye Street

SI Rt 95

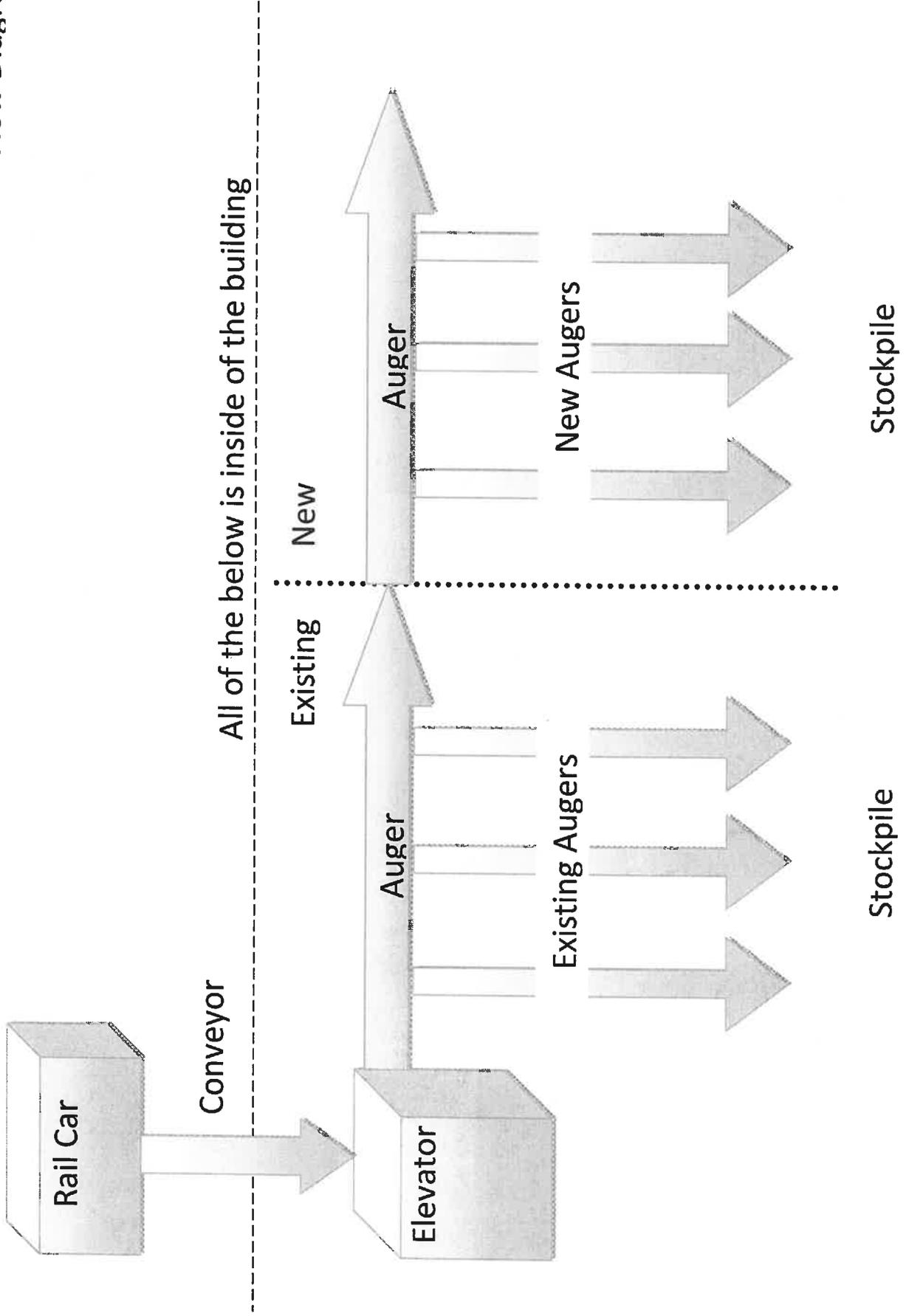
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Go

Imagery Date: 10/4/2015 39°15'18.41" N 81°32'20.87" W elev

Attachment B

Flow Diagram



Attachment C

Silicon Processors, Inc

Trona is delivered to the facility in bottom discharge covered Hopper cars. The cars are positioned over a discharge pit, which is equipped with pneumatic seals to prevent fugitive emissions. The Trona enters the pit, and is transferred by auger (inside the warehouse) to a vertical bucket elevator. The balance of the operation takes place inside the enclosed warehouse building.

The elevator transfers the Trona to an enclosed auger. The enclosed auger travels the width of the building, and transfers the Trona to open augers at three locations inside the building. The Trona cascades from the open augers down the face of the Trona storage pile to fill the building.

The modification we are proposing will change none of this operation, but will add approximately 50 feet of enclosed auger to the existing enclosed auger. There will be three additional transfer points where the enclosed auger will transfer Trona to the open augers for distribution within the warehouse. As with the existing operation, all transfers will take place within the fully enclosed building.

No changes in the existing operation are proposed, only the additional building and equipment to increase the storage capacity. SPI will not store more Trona than is currently permitted.



Product Safety Summary

Sodium Sesquicarbonate (Trona)

CAS No. 533-96-0

This Product Safety Summary is intended to provide a general overview of the chemical substance. The information on the summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found on the Safety Data Sheet (SDS) for the chemical substance.

Names

- Trisodium hydrogendicarbonate dihydrate
- Hydrated sodium bicarbonate
- Trona
- Sodium sesquicarbonate
- Sodium sesquicarbonate dihydrate

Product Overview

Solvay Chemicals, Inc. does not sell sodium sesquicarbonate (trona) directly to consumers. Consumers will not generally be exposed to sodium sesquicarbonate.

Sodium sesquicarbonate is a naturally occurring mineral which is mined as a raw material used to manufacture sodium carbonate (soda ash). Trona is an off-white to tan colored crystalline solid, usually sold as granules or powder. There are a number of applications for trona and products derived from it. For example, in a minimally purified state, trona is used as a rumen buffer (digestive aid) in cattle feed. It has also been used to reduce acid gas stack emissions in industries ranging from the electric power generation to cement manufacturing for over twenty years.

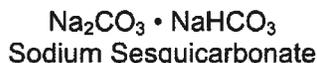
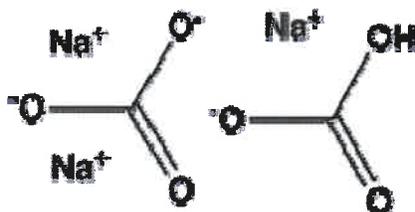
Exposure to trona, especially the powder, can cause irritation to the skin, eyes, and respiratory tract.





Manufacture of Product

- Solvay Chemicals, Inc. manufactures trona products by extracting trona ore (natural trisodium hydrogendicarbonate dihydrate) from deep underground. It is then mechanically refined and dried into its final form.



Trona is the dihydrate (sodium sesquicarbonate with two waters of crystallization ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$)).

Product Description

Trona ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$) is manufactured and sold as an off-white to tan powder. Typical physical properties are provided in Table 1.

Table 1: Typical physical properties of Trona

Bulk Density	68-82 lbs./ft ³ (1089-1315 kg/m ³)
Solubility in Water	120 g/L @ 32°F (0°C) 157 g/L @ 68°F (20°C)
pH	9.8 2 g/L in water
Flash Point	Non- flammable

Trona is primarily made up of three chemicals, sodium bicarbonate (baking soda), sodium carbonate (soda ash) and water. Both sodium bicarbonate and sodium carbonate are food additives that are generally recognized as safe (GRAS) by the United States Food and Drug Administration (FDA). Trona has been tested in animals and found to be safe. It is not a sensitizer and is not acutely toxic.



Product Uses

Trona is used in a variety of applications ranging from rumen buffer (digestive aid) for cattle to reduction of acid gas in stack emissions for industries such as electric power generation.

Exposure Potential

- **Workplace Exposure** - Exposures can occur at a trona manufacturing facility or a manufacturing, packaging or storage facility that handles trona. Exposure may also occur in the event of a transportation incident. Persons involved in maintenance, sampling and testing activities, or in the loading and unloading of trona containers are at greater risk of exposure. Following good industrial hygiene practices will minimize the likelihood of trona exposure; however, persons involved in higher risk activities should always wear proper personal protective equipment such as protective gloves, goggles and a hard hat. In instances where the potential for dusting is high, proper respiratory protection should also be worn.
- **Consumer Exposure to Products Containing Trona** - Although Solvay Chemicals, Inc. does not sell trona directly to consumers, it is possible to find trona in commercially available cattle feeds or supplements. The user should always use these products in strict compliance with the manufacturer's use and/or label instructions.
- **Environmental Releases** - Spills of trona should be contained and isolated from waterways and sewers or drains. Spills should be swept up and placed in a compatible container. Any residue that cannot be swept up should be diluted with large amounts of water. Dispose of waste or residues in accordance with applicable local, state or federal regulations. Persons attempting to clean up trona spills should wear proper personal protective equipment (see guidelines in Workplace Exposure section of this document or [Safety Data Sheet](#)).
- **Fires** - Trona is not flammable. Fires that occur in the presence of trona should be extinguished using means appropriate to the surroundings.

For additional information concerning trona emergency response procedures, please consult the [Safety Data Sheet](#).

Health Information

Trona products may pose a risk of symptoms due to skin or inhalation exposure. Trona can produce the following adverse health affects:

- **Contact** - Skin exposures can cause symptoms ranging from slight skin irritation or in severe or repeated exposures, dermatitis. Eye exposure to trona may result in redness, tearing or severe eye irritation. Irritation of any type is not normally the case in exposures to low concentrations of trona,



- **Inhalation** - The inhalation of trona dusts can cause nose and throat irritation or coughing. Repeated or prolonged exposures may cause sore throat or nosebleeds. See other effects.
- **Ingestion** - The ingestion of trona may cause irritation of the mouth and throat, nausea, vomiting, abdominal irritation and diarrhea.
- **Other Effects** - The International Agency for Research on Cancer (IARC) has not classified trona as a carcinogen (cancer causing). Trona does have small amounts of silica quartz (generally less than 2%). Particles of silica quartz (the common component of beach sand) are found in most naturally occurring ores. Workers inhaling respirable particles of silica quartz at relatively high concentrations, generally over a period of many years, are at risk of developing silicosis, a progressive lung disease. Crystalline silica quartz has been linked to cancer by the International Agency on Research for Cancer (IARC) and the National Toxicology Program (NTP). Other groups, however, have maintained that there is not enough evidence to prove that silica is a potential human carcinogen.

For more information on health effects and routes of exposure, or for information concerning proper first aid measures, please consult the [Safety Data Sheet](#).

Environmental Information

Trona occurs naturally as an ore. It is not considered to be environmentally hazardous or toxic.

For more ecological and environmental information concerning this product, please consult the [Safety Data Sheet](#).

Physical Hazard Information

For more information concerning the physical hazards of this product, please consult the [Safety Data Sheet](#).

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use and/or disposal of this chemical. These regulations can vary by city, state, country or geographic region. Information may be found by consulting the relevant [Safety Data Sheet](#) specific to your country or region.



Additional Information

- Solvay America, Inc. www.solvaynorthamerica.com
- Solvay Chemicals, Inc. www.solvaychemicals.us
- Solvay Chemicals, Inc. Safety Data Sheets
www.solvaychemicals.us/EN/Literature/LiteratureDocuments.aspx
- Contact Solvay Chemicals, Inc. solvaychemicals.us@solvay.com
- This summary was prepared in November, 2010
This summary was revised in September, 2013

NOTICE

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither Solvay America, Inc. nor any of its affiliates makes any warranty, express or implied, or accepts any liability in connection with this information or its use. This information is for use by persons at their own discretion and risk and does not relate to use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. This information gives typical properties only and is not to be used for specification purposes. Solvay America, Inc. reserves the right to make additions, deletions or modifications to the information at any time without prior notification. Trademarks and/or other products of the company referenced herein are either trademarks or registered trademarks of the company mentioned or its affiliates, unless otherwise indicated.

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

- Trade name Trona T-50

1.2 Relevant identified uses of the substance or mixture and uses advised against**Uses of the Substance / Mixture**

- Chemical industry
- Food/ feedstuff additives
- pH-regulating agents
- Purifying flue gas

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

SOLVAY CHEMICALS, INC.
3333 RICHMOND AVENUE
77098-3099, HOUSTON
USA
Tel: +1-800-7658292; +1-713-5256800
Fax: +1-713-5257804

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

SECTION 2: Hazards identification

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

2.1 Classification of the substance or mixture**HCS 2012 (29 CFR 1910.1200)**

Eye irritation, Category 2B

H320: Causes eye irritation.

2.2 Label elements**HCS 2012 (29 CFR 1910.1200)****Signal Word**

- Warning

Hazard Statements

- H320 Causes eye irritation.

Precautionary Statements**Prevention**

- P264 Wash skin thoroughly after handling.

Response

- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.

Additional Labeling

- The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 98 %

2.3 Other hazards which do not result in classification

- H402: Harmful to aquatic life.

SECTION 3: Composition/information on ingredients**3.1 Substance**

- Not applicable, this product is a mixture.

3.2 Mixture**Hazardous Ingredients and Impurities**

Chemical Name	Identification number CAS-No.	Concentration [%]
Trisodium hydrogencarbonate	533-96-0	>= 90
Synthetic amorphous silica	112926-00-8	<= 0.5

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: First aid measures**4.1 Description of first-aid measures****In case of inhalation**

- Move to fresh air.
- If symptoms persist, call a physician.

In case of skin contact

- Wash off with soap and water.
- If symptoms persist, call a physician.
- Remove and wash contaminated clothing before re-use.

In case of eye contact

- If eye irritation persists, consult a specialist.
- In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

In case of ingestion

- If symptoms persist, call a physician or Poison Control Center immediately.
- If victim is conscious:
 - Do NOT induce vomiting.
- If victim is conscious:
 - Rinse mouth with water.
- If victim is unconscious:
 - Not applicable

4.2 Most important symptoms and effects, both acute and delayed**In case of inhalation****Effects**

- May cause nose, throat, and lung irritation.
- Repeated or prolonged exposure***
- Risk of sore throat, nose bleeds

In case of skin contact**Effects**

- Prolonged skin contact may cause skin irritation.

In case of eye contact**Symptoms**

- Lachrymation
- Redness

Effects

- Severe eye irritation

In case of ingestion**Effects**

- Irritation of the mouth and throat.
- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

4.3 Indication of any immediate medical attention and special treatment needed

- no data available

SECTION 5: Firefighting measures**Flash point**

Not applicable

Autoignition temperature

no data available

Flammability / Explosive limit

Lower flammability/explosion limit : The product is not flammable.

5.1 Extinguishing media**Suitable extinguishing media**

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

- None.

5.2 Special hazards arising from the substance or mixture**Specific hazards during fire fighting**

- Not combustible.

Hazardous combustion products:

- none

5.3 Advice for firefighters

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Special protective equipment for fire-fighters

- No special precautions required.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures****Advice for non-emergency personnel**

- Avoid dust formation.

Advice for emergency responders

- Sweep up to prevent slipping hazard.

6.2 Environmental precautions

- Prevent any mixture with an acid into the sewer/drain (gas formations).
- Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up

- Sweep up and shovel into suitable containers for disposal.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

- no data available

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

- Keep away from incompatible products
- Ensure adequate ventilation.

Hygiene measures

- Eye wash bottles or eye wash stations in compliance with applicable standards.
- When using do not eat or drink.
- When using do not smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures/Storage conditions**

- Keep in a dry place.
- Store in original container.
- Keep in properly labeled containers.
- Keep container closed.
- Keep away from incompatible products

Packaging material**Suitable material**

- Paper + PE coating.

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SAFETY DATA SHEET

Trona T-50

Revision Date 05/27/2015

7.3 Specific end use(s)

- no data available

SECTION 8: Exposure controls/personal protection

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control parameters

Components with workplace occupational exposure limits

Ingredients	Value type	Value	Basis
Trisodium hydrogencarbonate	TWA	10 mg/m ³	Solvay Acceptable Exposure Limit
Quartz (SiO ₂)	TWA	30mg/m ³ / %SiO ₂ +2	Occupational Safety and Health Administration - Table Z-3 Mineral Dusts
	Form of exposure : total dust		
Quartz (SiO ₂)	TWA	10mg/m ³ / %SiO ₂ +2	Occupational Safety and Health Administration - Table Z-3 Mineral Dusts
	Form of exposure : respirable Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics: Aerodynamic diameter (unit density sphere): 2; Percent passing selector: 90 Aerodynamic diameter (unit density sphere): 2,5; Percent passing selector: 75 Aerodynamic diameter (unit density sphere): 3,5; Percent passing selector: 50 Aerodynamic diameter (unit density sphere): 5,0; Percent passing selector: 25 Aerodynamic diameter (unit density sphere): 10; Percent passing selector: 0 The measurements under this note refer to the use of an AEC (now NRC) instrument. The respirable fraction of coal dust is determined with an MRE; the figure corresponding to that of 2.4 mg/m ³ in the table for coal dust is 4.5 mg/m ³ .		
Quartz (SiO ₂)	TWA	250mppcf / %SiO ₂ +5	Occupational Safety and Health Administration - Table Z-3 Mineral Dusts
	Form of exposure : respirable Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques., The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable., mppcf X 35.3 = million particles per cubic meter = particles per c.c		
Quartz (SiO ₂)			Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
	See table Z-3		

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8.2 Exposure controls**Control measures****Engineering measures**

- Ensure adequate ventilation.
- Provide appropriate exhaust ventilation at machinery.

Individual protection measures**Respiratory protection**

- Effective dust mask
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.

Hand protection

- Wear suitable gloves.

Eye protection

- Chemical resistant goggles must be worn.

Skin and body protection

- none
- Dust impervious protective suit

Hygiene measures

- Eye wash bottles or eye wash stations in compliance with applicable standards.
- When using do not eat or drink.
- When using do not smoke.
- Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: Physical and chemical properties

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

9.1 Information on basic physical and chemical properties

<u>Appearance</u>	<u>Form:</u>	fine powder
	<u>Physical state:</u>	solid
	<u>Color:</u>	off-white
		tan
		tan
<u>Odor</u>		odorless musty
<u>Odor Threshold</u>		no data available
<u>pH</u>		9.8 (2 g/l)
<u>Boiling point/boiling range</u>		no data available

<u>Flash point</u>	Not applicable
<u>Evaporation rate (Butylacetate = 1)</u>	no data available
<u>Flammability (solid, gas)</u>	no data available
<u>Flammability (liquids)</u>	no data available
<u>Flammability / Explosive limit</u>	<u>Lower flammability/explosion limit:</u> Type: Lower explosion limit The product is not flammable. <u>Explosiveness:</u> Not explosive
<u>Autoignition temperature</u>	no data available
<u>Vapor pressure</u>	no data available
<u>Vapor density</u>	no data available
<u>Density</u>	<u>Bulk density:</u> 1,000 kg/m ³ <u>Relative density:</u> 2.11
<u>Solubility</u>	no data available
<u>Partition coefficient: n-octanol/water</u>	Not applicable
<u>Thermal decomposition</u>	no data available
<u>Viscosity</u>	no data available
<u>Explosive properties</u>	no data available
<u>Oxidizing properties</u>	Not considered as oxidizing.

9.2 Other information

no data available

SECTION 10: Stability and reactivity**10.1 Reactivity**

- no data available

10.2 Chemical stability

- Decomposes by reaction with strong acids.
- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- no data available

10.4 Conditions to avoid

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- none

10.5 Incompatible materials

- Acids
- Finely divided aluminum

10.6 Hazardous decomposition products

- none

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity****Acute oral toxicity**

Carbonic acid sodium salt (1:2)

LD50 : 2,800 mg/kg - Rat , male and female
The product has a low acute toxicity
Unpublished reports

Acute inhalation toxicity

no data available

Acute dermal toxicity

Carbonic acid sodium salt (1:2)

LD50 : > 2,000 mg/kg - Rabbit
Method: according to a standardized method
Not classified as hazardous for acute dermal toxicity according to GHS.
No mortality observed at this concentration.
Unpublished reports

Acute toxicity (other routes of administration)

no data available

Skin corrosion/irritation

Mild skin irritation

Serious eye damage/eye irritation

Mild eye irritation

Respiratory or skin sensitization

no data available

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Mutagenicity**Genotoxicity in vitro**

Carbonic acid sodium salt (1:2)

By analogy

Ames test
with metabolic activation
Product is not considered to be genotoxic
Published data

Strain: Escherichia coli
without metabolic activation

negative
Product is not considered to be genotoxic
Published data

Genotoxicity in vivo

no data available

Carcinogenicity

no data available

Ingredients	CAS-No.	Rating	Basis
Quartz (SiO ₂)	14808-60-7	Known to be human carcinogen	NTP
Quartz (SiO ₂)	14808-60-7	Group 1: Carcinogenic to humans	IARC

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP
IARC
OSHA
OSHA
ACGIH
ACGIH

Toxicity for reproduction and development**Toxicity to reproduction / fertility**

no data available

Developmental Toxicity/Teratogenicity

Carbonic acid sodium salt (1:2)

Mouse , female
Application Route: Oral
NOAEL teratogenicity: >= 580 mg/kg
NOAEL maternal: >= 580 mg/kg
Method: according to a standardized method
no embryotoxic or teratogenic effects have been observed
Unpublished reports

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STOT**STOT-single exposure**

Carbonic acid sodium salt (1:2)

The substance or mixture is not classified as specific target organ toxicant, single exposure.
internal evaluation

STOT-repeated exposure

Carbonic acid sodium salt (1:2)

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

Aspiration toxicity

no data available

Further information

no data available

Information given is based on data obtained from similar substances.

Irritating to eyes.

SECTION 12: Ecological information**12.1 Toxicity****Aquatic Compartment****Acute toxicity to fish**

LC50 - 96 h : 30 - 1,200 mg/l - Fishes, various species
Test substance: Sodium carbonate

LC50 - 96 h : 7,550 mg/l - Gambusia affinis (Mosquito fish)
Test substance: Sodium bicarbonate

Acute toxicity to daphnia and other aquatic invertebrates.

LC50 - 48 h : 115 - 150 mg/l - Crustaceans, Daphnia sp.
Test substance: Sodium carbonate

LC50 - 48 h : 2,350 mg/l - Daphnia magna (Water flea)
Test substance: Sodium bicarbonate

12.2 Persistence and degradability**Abiotic degradation****Stability in water**

Hydrolysis
Medium, Water, Degradation products:, carbonic acid/bicarbonate/carbonate, acid/base equilibrium as a function of pH
Medium, Soil, Hydrolysis as a function of pH

Photodegradation

Not applicable
Medium
Air

Biodegradation

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Biodegradability

aerobic
Not applicable

anaerobic
Not applicable

12.3 Bioaccumulative potential

Bioconcentration factor (BCF) Not applicable

12.4 Mobility in soil

Adsorption potential (Koc)

Water
considerable solubility and mobility

Soil/sediments
non-significant adsorption

Air
Not applicable

Known distribution to environmental compartments

Synthetic amorphous silica Ultimate destination of the product: Soil

Sediment

12.5 Results of PBT and vPvB assessment no data available

12.6 Other adverse effects no data available

Ecotoxicity assessment**Acute aquatic toxicity**

Synthetic amorphous silica The product does not have any known adverse effects on the aquatic organisms tested

Remarks alkaline, Ecological injuries are not known or expected under normal use.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product Disposal**

- In accordance with local and national regulations.
- For unused and uncontaminated product, the preferred options include sending to a licensed, permitted: recycler, reclaimer.
- or
- Dissolve in water.
- Neutralize with acid.

Waste Code

- Environmental Protection Agency

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- Hazardous Waste – NO
- RCRA Hazardous Waste (40 CFR 302)
- Hazardous Waste – NO

Advice on cleaning and disposal of packaging

- To avoid treatments, as far as possible, use dedicated containers.
- Clean container with water.
- Dispose of rinse water in accordance with local and national regulations.
- or
- Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.
- The empty and clean containers are to be reused in conformity with regulations.

SECTION 14: Transport information**DOT**

not regulated

TDG

not regulated

NOM

not regulated

IMDG

not regulated

IATA

not regulated

Note The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

SECTION 15: Regulatory information**15.1 Notification status**

Inventory Information	Status
United States TSCA Inventory	- In compliance with the inventory
United States TSCA Inventory	- In compliance with the inventory
New Zealand. Inventory of Chemical Substances	- All components on composite list considered for transfer
Canadian Domestic Substances List (DSL)	- Listed on Inventory
Canadian Domestic Substances List (DSL)	- In compliance with the inventory
Australia Inventory of Chemical Substances (AICS)	- Listed on Inventory
Australia Inventory of Chemical Substances (AICS)	- In compliance with the inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- Listed on Inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- In compliance with the inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- Listed on Inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- In compliance with the inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- Listed on Inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- In compliance with the inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on Inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- In compliance with the inventory

15.2 Federal Regulations**US. EPA EPCRA SARA Title III****SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)**

Fire Hazard	no
Reactivity Hazard	no
Sudden Release of Pressure Hazard	no
Acute Health Hazard	yes
Chronic Health Hazard	yes

Section 313 Toxic Chemicals (40 CFR 372.65)

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Section 302 Emergency Planning Extremely Hazardous Substance Threshold Planning Quantity (40 CFR 355)

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

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

Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)**Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)**

This material does not contain any components with a SARA 302 RQ.

This material does not contain any components with a SARA 302 RQ.

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)**Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)**

This material does not contain any components with a section 304 EHS RQ.

This material does not contain any components with a section 304 EHS RQ.

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

This material does not contain any components with a CERCLA RQ.

This material does not contain any components with a CERCLA RQ.

15.3 State Regulations**US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)**

WARNING! This product contains a chemical known in the State of California to cause cancer.

WARNING! This product contains a chemical known in the State of California to cause cancer.

Ingredients	CAS-No.
Quartz (SiO ₂)	14808-60-7

SECTION 16: Other information**NFPA (National Fire Protection Association) - Classification**

Health	1 slight
Flammability	0 minimal
Instability or Reactivity	0 minimal
Special Notices	None

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

Health	1 slight
Flammability	0 minimal
Reactivity	0 minimal
PPE	Determined by User; dependent on local conditions

Further information

- Product evaluated under the US GHS format.

Date Prepared: 05/27/2015

Key or legend to abbreviations and acronyms used in the safety data sheet

- TWA 8-hour time weighted average

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- | | |
|---------|---|
| - SAEL | Solvay Acceptable Exposure Limit |
| - ACGIH | American Conference of Governmental Industrial Hygienists |
| - OSHA | Occupational Safety and Health Administration |
| - NTP | National Toxicology Program |
| - IARC | International Agency for Research on Cancer |
| - NIOSH | National Institute for Occupational Safety and Health |

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in any other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

Attachment E

DAILY EMISSION CALCULATIONS 4 new augers

50	tons per hour processed	9	Auger Transfers
1200	tons per day processed	0.01	from AP-42 Table 11.24-2 (Material handling and transfer - all minerals)
		0.0058	AP - 42 section 13.2.4.3
Emissions = Material processed x 9 emissions sources x 0.01 lb/ton			
		108	Emissions = Material processed x 9 emissions sources x 0.0058 lb/ton
		62.64	19.7
			4.5 lb/hr
			2.61 lb/hr

All of the material will be handled inside. If we assume 50% reduction due to building enclosure

Total controlled emissions:	54	lb/day	2.25 lb/hr
Alternate Emissions Factor	0.027	TPD	
	0.01566	TPD	

For the sake of being conservative, we prefer to use the AP-42 Table 11.24-2 (Material handling and transfer - all minerals)

ANNUAL EMISSION CALCULATIONS

16,667	tons per month processed	9	Endloader to hopper, conveyor to truck (could be only (1) Endloader direct to truck)
200,000	tons per year processed	0.01	from AP-42 Table 11.24-2 (Material handling and transfer - all minerals)
Emissions = Material processed x 3 emissions sources x 0.01 lb/ton			
		18,000.0	lb/yr

All of the material will be handled inside. If we assume 50% reduction due to building enclosure

Total controlled emissions:	9,000	lb/yr	Increase of 2 tpy
	4.5	TPY	

Modeling is not required because the Delta is less than the threshold
 From AP 42 11.19.2-2 Portion of PM that is PM2.5 is non detect

DAILY EMISSION CALCULATIONS 4 new augers

50 tons per hour processed
 1200 tons per day processed

Number of emissions sources 9 Auger Transfers
 Emission Factor 0.01 from AP-42 Table 11.24-2 (Material handling and transfer - all minerals)
 Alternate Emissions Factor 0.0058 lb/ton AP - 42 section 13.2.4.3
 Emissions = Material processed x 9 emissions sources x 0.01 lb/ton
 Alternate Emissions Factor Emissions = Material processed x 9 emissions sources x 0.0058 lb/ton
 Total uncontrolled emissions: 108 lb/day 4.5 lb/hr
 Alternate Emissions Factor 62.64 lb/day 2.61 lb/hr

All of the material will be handled inside. If we assume 50% reduction due to building enclosure

Total controlled emissions: 54 lb/day 2.25 lb/hr
 0.027 TPD
 Alternate Emissions Factor 0.01566 TPD

For the sake of being conservative, we prefer to use the AP-42 Table 11.24-2 (Material handling and transfer - all minerals)

ANNUAL EMISSION CALCULATIONS

16,667 tons per month processed
 200,000 tons per year processed

Number of emission sources 9 Endloader to hopper, conveyor to truck (could be only (1) Endloader direct to truck)
 Emission Factor 0.01 lb/ton from AP-42 Table 11.24-2 (Material handling and transfer - all minerals)

Emissions = Material processed x 3 emissions sources x 0.01 lb/ton

Total uncontrolled emissions: 18,000.0 lb/yr

All of the material will be handled inside. If we assume 50% reduction due to building enclosure

Total controlled emissions: 9,000 lb/yr
 4.5 TPY **Increase of 2.5x**

From AP 42 11.19.2-2 Portion of PM that is PM2.5 is non detect
 Modeling is not required because the Delta is less than the threshold