

Industrial and Sanitary Outfalls 2019 NPDES Permit Re-Application Outfall 13S Fact Sheet

Utilities and Infrastructure (U&I)
Sanitary Wastewater System (SWWS) Facility



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- Sources for Discharges to Outfall 13S
- Wastewater Treatment Codes Assigned to Outfall 13S
- List of Treatment Chemicals used in the Operations that Contribute to Outfall 13S
- Flow Rates and Frequencies for Discharges to Outfall 13S
- Potential Pollutants by Source for Outfall 13S
- List of Independent Laboratories Used for NPDES Water Analysis

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INDUSTRIAL AND SANITARY OUTFALLS **2019 NPDES PERMIT RE-APPLICATION** **OUTFALL 13S FACT SHEET**

1.0 OUTFALL LOCATION [Section I]

Outfall ID No.:	13S	Outfall Location:	Technical Area 46
Category:	Sanitary Wastewater Discharges	Originating Structure for the Discharge:	TA-46-333, 334, 336, 335, 337, 338, 340, 347, 375, 431, and 477; Sanitary Wastewater System (SWWS) Treatment Facility
Flow Type:	Intermittent	Receiving Stream:	Canada del Buey, Ephemeral Reach in Water Quality Segment 20.6.4.128 NMAC
Longitude:	106° 16' 33" W	Latitude:	35° 51' 08" N

2.0 FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES [Section II]

Outfall 13S is located at TA-46 and discharges to Canada del Buey, an ephemeral reach in Water Quality Segment 20.6.4.128 NMAC. The outfall is capable of discharging treated sanitary wastewater effluent from the Sanitary Wastewater System (SWWS) Facility. Attachment A provides a location map. Table 1 identifies the discharge source, source location, and source composition.

TA	Building	Source Type	Transportation Mode (Piping, Truck etc.)	Discharge Source	Source Composition
46	333, 334, 336, 335, 337, 338, 340, 347, 375, 431, 477	Sanitary	Piping	SWWS Facility	Treated SWWS Effluent

SWWS = Sanitary Wastewater System

2.1 Process Schematic and Water Balance [II.A]

A process schematic line drawing that shows the outfall source and route taken by water is provided in Attachment B. This drawing includes all operations that contribute process water, sanitary water, and cooling water to the SWWS Facility and subsequently the discharge at Outfall 13S. It also includes a water balance based upon data collected from operations personnel.

2.2 Water Treatment Processes [II.B]

Sanitary Wastewater System (SWWS): The SWWS Facility treats sanitary wastewater, process water (i.e., laboratory rinse water, reverse osmosis concentrate, industrial water) and cooling water (i.e., once through cooling water, cooling tower blowdown) discharged to the sanitary sewer and/or collected in storage containers/tanks from all technical areas at the Laboratory. All wastewater discharged to the SWWS Facility for treatment must comply with the facility's Waste Acceptance Criteria and, if it is something other than sanitary waste (i.e., cooling water, process water), must have a completed/approved Waste Stream Profile Form. The following bullets summarize the treatment process at the SWWS Facility.

1. Wastewater flows to the SWWS Facility by gravity through the collection system and into a mechanical Bar Screen that is used to remove large inert solids (i.e., gloves, mop strings, paper towels, sand, asphalt, gravel) from the wastewater prior to treatment. This protects the pumps, valves, pipelines, and other downstream appurtenances from damage and/or clogging.
2. The screened wastewater from the mechanical bar screen is routed through a Grit Chamber to remove heavy suspended solids such as sand, gravel, seeds, and coffee grounds from the wastewater. Wastewater from the grit chamber is routed to a splitter box where glycerin and soda ash are added. The glycerin is used to provide a carbon food source to the microorganisms and the soda ash is used to adjust the alkalinity. The wastewater from the splitter box is routed to the Equalization Basins (2) to stabilize the flow of wastewater being treated through the facility.

3. Wastewater from the Equalization Basins (2) is routed to the Aeration Basins (4) and sparged/mixed with air at different rates to mix the water with microorganisms and promote biological growth. Dog food is added to the Aeration Basis to promote microorganism health and growth as needed. From the Aerations Basins the wastewater is routed to the Secondary Clarifiers. At this time, one clarifier is being used as a Digester (for waste microorganisms) and the second is used as a Clarifier.
4. Clarified water is routed to the Chlorine Contact Chamber to be disinfected. The chlorine is generated by a mixed oxidant (MIOX) treatment unit that uses brine water and electrophoresis to create a mixed oxidant solution that is used for disinfection.
5. Disinfected water is discharged from the chlorine contact chamber to the Effluent Holding Pond for storage until it can be pumped to the Reuse Tank at the Power Plant or discharged to Outfall 13S.
6. Disinfected water that is discharged to an outfall is disinfected as follows:
 - Disinfected water pumped to the Reuse Tank is dechlorinated at the Power Plant Manhole A as it is discharged to Outfall 001.
 - Disinfected water is de-chlorinated at SWWS as it is discharged to Outfall 13S. This ONLY takes place if it is discharged to the outfall.
7. Secondary wastewater, sludge, debris, and solids generated due to treatment at the SWWS Facility are managed as follows:
 - Solids from the bar screen and grit chamber are removed and disposed of at an approved landfill.
 - Waste sludge (from the clarifier and/or digester) is mixed with a polymer to help flocculate the sludge into large pieces, and discharged to the sludge drying beds. Decanted water from the digester and/or sludge drying beds is recycled to the head works for treatment. Dried sludge is either composted and land applied or packaged into roll off bins and shipped to an approved landfill.

NOTE: The land application of compost (biosolids) at LANL is subject to 40 CFR Part 503 Subpart B and Part IV of LANL's NPDES Industrial Outfall Permit NM0028355 – Sewage Sludge Requirements. Biosolids applied to land must meet risk-based pollutant limits specified in Part 503. Operational standards to control disease-causing organisms (pathogens) and reduce the attraction of vectors (e.g., flies and mosquitoes) to biosolids must also be met. The SWWS Compost Facility is registered pursuant to the requirements in 20.9.3.27 NMAC under Certificate No. 0215151C.

Photographs for the operations at the SWWS Facility are provided in Attachment C.

Source	Treatment Code	Description	Justification
SWWS Facility	1-M	Grit Removal	Grit Chamber
	1-O	Mixing	Grit Chamber with Splinter Box
	1-T	Screening	Use of Bar Screen to Remove Solids
	1-U	Sedimentation (settling)	Sludge is Settled in Clarifier and Digester
	2-E	Dechlorination	Dechlorination chemical (SO ₂) used at SWWS if effluent is discharged to Outfall 13S
	2-F	Disinfection (chlorine)	Chlorine is Added Using a MIOX system
	3-A	Activated Sludge	Activated Sludge is Used to Treat Water
	3-E	Pre-Aeration	Aeration Basins
	5-G	Composting	Composting of Sludge
	5-H	Drying Beds	Sludge Drying Beds on Site
	5-Q	Landfill	Sludge is disposed of at an Approved Landfill or Land Applied. Screened solids are disposed of at an approved Landfill.

MIOX = mixed oxide; SWWS = Sanitary Wastewater System

The water treatment processes identified in Table 2 utilize chemicals to treat the sanitary wastewater prior to discharge. Table 3 provides a list of chemicals to treat the water.

Source	Chemical Name	Reason for Use	Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4	
SWWS Facility	Clarifloc C-6265	Polymer Flocculation Agent	NA	NA
	Dog Food	Food Source for Micro-organisms	NA	NA
	Glycerin	Carbon Source for Microorganisms	NA	NA
	Sodium Bisulfite	De-chlorination	Sodium Bisulfite	2C-4
	Soda Ash	Add Alkalinity	NA	NA
	Sodium Chloride	Chlorine Source for Disinfection Using the MIOX System	Chlorine	2C-4
	Sulfur Dioxide	Dechlorination	NA	NA
	Bright Dyes FLT Yellow/Green Liquid	Water Line & Drain Tracing Dye	NA	NA
	Bright Dyes FLT Yellow/Green Tablet	Water Line & Drain Tracing Dye	NA	NA

MIOX = mixed oxide; NA = not applicable; SWWS = Sanitary Wastewater System

2.3 Discharge Rate and Frequency [II.C]

The discharge rates and frequencies for Outfall 13S are provided in Table 4.

Source.	Frequency		Flow Rates and Volumes				
	Days/Week	Months	Average (MGD)	Maximum (MGD)	Average Volume (GPD)	Maximum Volume (GPD)	Duration (days)
SWWS Facility ^{a, b}	7.0	12	0.229	0.418	228,808	418,000	365

a. Calculated between October 2017 and September 2018.

b. Assumes that no effluent will be routed to the Reuse Tank at TA-3 for recycling to the SERF.

GPD = gallons per day; MGD = million gallons per day; SWWS = Sanitary Wastewater System

3.0 PRODUCTION [Section III]

Section III is not applicable to Outfall 13S.

4.0 IMPROVEMENTS [Section IV]

Section IV is not applicable to Outfall 13S.

5.0 INTAKE AND EFFLUENT CHARACTERISTICS [Section V]

5.1 Analytical Data [V.A, B, and C]

The analytical results provided for the Outfall 13S Permit Reapplication on the Form 2C were provided from the following sources:

- Operational Samples collected on September 19 – 20, 2018 and shipped to an independent laboratory for analysis.
- Field samples collected and analyzed on September 19 – 20, 2018 for residual chlorine and pH.
- Field samples collected and analyzed on February 22, 2019 for sulfite.
- Hardness = 73.6 mg/L (CaCO₃)

A discharge monitoring report summary is not provided for Outfall13S because the effluent from SWWS Facility was not discharged to Canada de Buey between October 2014 and September 2018. Effluent from the SWWS Facility is routed to the Reuse Tank at the power plant.

5.2 Potential Pollutants [V.D]

The treatment chemicals associated with the SWWS Facility constitutes the pollutant load of the discharge to Outfall 13S. Table 5 identifies the Table 2C-3 and 2C-4 pollutants associated with the SWWS Facility effluent. It also identifies those pollutants (if any) that were detected in the analytical results from the samples collected for the 2019 Permit Renewal Application. The safety data sheets associated with the chemicals used to treat water at the SWWS Facility are provided in Attachment F.

Source	POTENTIAL Toxic Pollutant and/or Hazardous Substances Table 2C-3 or 2C-4		Analytical Data Results from Operational Samples Collected for Outfall 13S ^a
SWWS Facility Treatment Chemicals	Chlorine	2C-4	Residual chlorine = 1.62 mg/L
	Sodium Bisulfite	2C-4	Sulfite was not detected.
SWWS Facility chemicals identified on Influent Waste Stream Profile Forms	Acetic Acid	2C-4	pH = 7.5 to 7.7 S.U.
	Acetone	2C-4	Not Analyzed ^c
	Ammonia	2C-4	0.215 mg/L
	Aniline	2C-3 & 2C-4	Not Analyzed ^c
	Benzene	2C-4	0.68 ug/L
	Benzoic Acid	2C-4	pH = 7.5 to 7.7 S.U.
	Calcium Hypochlorite	2C-4	Chloride = 45.5 mg/L
	Carbon Disulfide	2C-3 & 2C-4	Not Analyzed ^c
	Chlorine	2C-4	Residual Chlorine = 0
	Chloroform	2C-4	20.2 ug/L
	Cresol	2C-3 & 2C-4	Not Analyzed ^c
	Ethylbenzene	2C-4	Not Detected (VOC)
	Polychlorinated Biphenyls ^b	2C-4	Not Detected
	Phenol	2C-4	2.21 ug/L
	Phosphoric Acid	2C-4	pH = 7.5 to 7.7 S.U. Total Phosphorus = 3.12 mg/L
	Potassium Hydroxide	2C-4	pH = 7.5 to 7.7 S.U.
	Sodium	2C-4	Not Analyzed ^c
	Sodium Bisulfite	2C-4	Sulfite was not detected.
	Sodium Hydroxide	2C-4	pH = 7.5 to 7.7 S.U.
	Sodium Hypochlorite	2C-4	Chloride = 45.5 mg/L
Sodium Nitrite	2C-4	Nitrate/Nitrite = 0.991 mg/L	
Strontium	2C-3	Not Analyzed ^c	
Styrene	2C-3 & 2C-4	Not Analyzed ^c	
Toluene	2C-4	Not Detected (VOC)	
Uranium	2C-3	Not Analyzed ^c	
Vanadium	2C-3	Not Analyzed ^c	

- Results are from operational samples collected at the chlorine contact chamber at the SWWS Facility. These samples are representative of the SWWS effluent after final treatment and the potential discharge to Outfall 13S. Currently the effluent from SWWS Facility is routed to the Reuse Tank at the Power Plant for either treatment at SERF and use at the SCC or discharge to Outfall 001.
- Results were obtained using the EPA Aroclor Method 608.3 as required by the Form 2C. Low concentrations of PCBs have been detected in the waters discharged for treatment at SWWS Facility and in the discharged to Outfall 001 using the Congener Method.
- The potential pollutant was not analyzed because it is not specifically called out on the Form 2C.

PCB = polychlorinated biphenyls; SCC = Strategic Computing Center; SERF = Sanitary Effluent Reclamation Facility; SVOC = semi-volatile organic compounds; S.U. = Standard Units; SWWS = Sanitary Wastewater System; VOC = Volatile Organic Compound

6.0 POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS [Section VI]

Section VI is not applicable to Outfall 13S.

7.0 BIOLOGICAL TOXICITY TESTING DATA [Section VII]

Section VII is not currently applicable to Outfall 13S.

8.0 CONTRACT ANALYSIS INFORMATION [Section VIII]

Operational samples (not for use to demonstrate compliance to the existing permit) of the SWWS effluent were collected at the Chlorine Contact Chamber on September 19 – 20, 2018 for the Form 2C constituents required by the permit application forms. These samples were submitted to independent laboratories identified in Table 6 as discussed in Section 5.1.

Table 6		
List of Independent Laboratories Used for NPDES Water Analysis		
Laboratory Name	Address and Contact Info	Analytical Parameters
GEL Laboratories LLC	2040 Savage Road Charleston SC 29407 (843) 556-8171	Biological Oxygen Demand, General Chemistry, Pesticides, Polychlorinated Biphenyls, Radiochemistry, Semi-Volatile Organic Compounds, Total Metals, Total Suspended Solids, Volatile Organic Compounds
New Mexico Water Testing Laboratory, Inc.	401 North Coronado Ave Española, NM 87532 (505) 929-4545	E.coli
Cape Fear Analytical LLC	3306 Kitty Hawk Road Suite 120 Wilmington, NC 28405 (910) 795-0421	TCDD (Dioxin)















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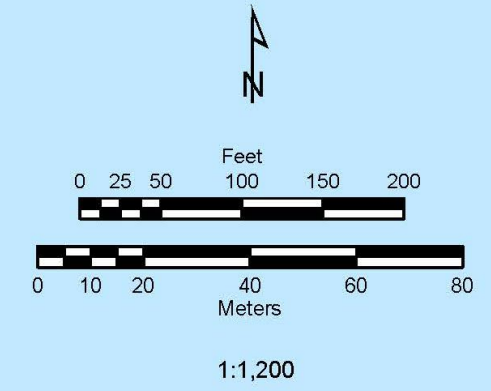
ATTACHMENT A: Location Map for Outfall 13S



NPDES Permit Re-Application Project
TA-46 Building 333, 334, 335, 336, 337,
338, 340, 375, 431, 477
Outfall #13S

Legend

 NPDES Outfall	 Paved Roads
 Springs	 Source Structures
 Drainages	 Building Served by Source
 100ft Contours	 Structures
 20ft Contours	 LANL Boundary
 10ft Contours	 Technical Areas
 Fences	
 Dirt Roads	



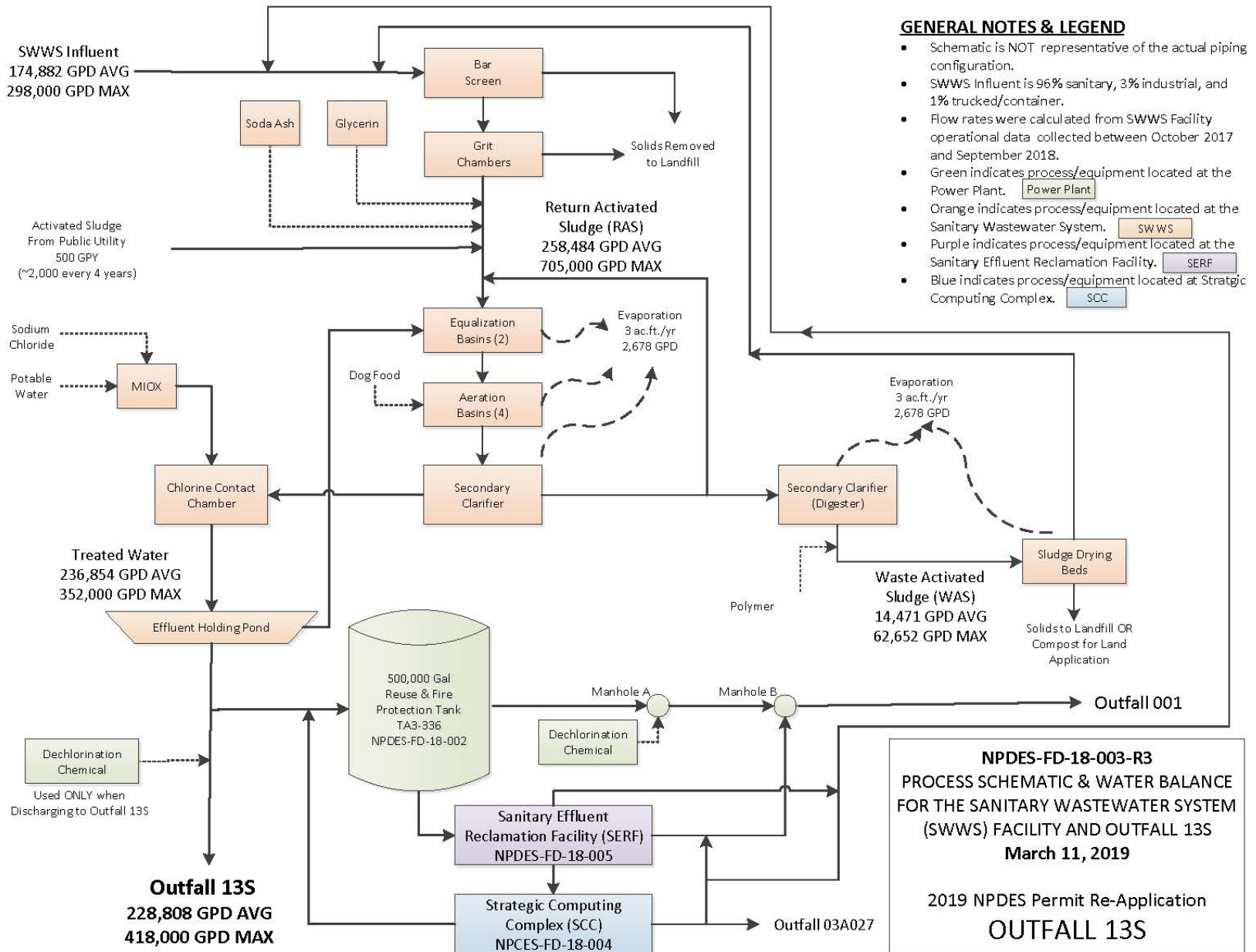
State Plane Coordinate System
 New Mexico, Central Zone, US Feet
 NAD 1983 Datum, NGVD 1929

Map Updated By: Bethann McVicker, IF-PROG
 Map #18-129-12 21 February 2019

Disclaimer: This map was created for work processes associated with the Water Quality & RCRA. All other uses for this map should be confirmed with LANL EPC-RCRA staff.

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ATTACHMENT B: Process Schematic and Water Balance for Outfall 13S



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ATTACHMENT C: Photographs

Photograph ID No.	Photograph Title
NPDES-13S-18-001	Outfall 13S Location in Canada del Buey
NPDES-13S-18-002	Outfall 13S Condition
NPDES-13S-18-003	Outfall 13S Receiving Stream Canada Del Buey, Water Quality Segment Number 20.6.4.128 NMAC
NPDES-13S-18-004	Outfall 13S Ability to Collect Representative Operational Samples at the Chlorine Contact Chamber
NPDES-13S-18-005	Outfall 13S Ability to Collect Representative Compliance Samples at the Outfall
NPDES-13S-18-006	Sanitary Wastewater System (SWWS) Facility
NPDES-13S-18-007	SWWS Bar Screen at the Headworks
NPDES-13S-18-008	SWWS Grit Chamber
NPDES-13S-18-009	SWWS Glycerin Feed System
NPDES-13S-18-010	SWWS Soda Ash Feed System
NPDES-13S-18-011	SWWS Equalization Basins
NPDES-13S-18-012	SWWS Aeration Basins
NPDES-13S-18-013	SWWS Clarifier
NPDES-13S-18-023	SWWS Digester
NPDES-13S-18-014	SWWS Chlorine Contact Chamber
NPDES-13S-18-015	SWWS MIOX System Tank
NPDES-13S-18-016	SWWS Sludge Polymer Feed
NPDES-13S-18-017	SWWS Effluent Holding Pond
NPDES-13S-18-018	SWWS Reuse Pumps and Chlorine Analyzer
NPDES-13S-18-019	SWWS Sludge Drying Bed Winrow Composting
NPDES-13S-18-020	SWWS Sludge Drying Beds
NPDES-13S-18-021	SWWS Sludge Composting Structure
NPDES-13S-18-022	SWWS Finished Compost

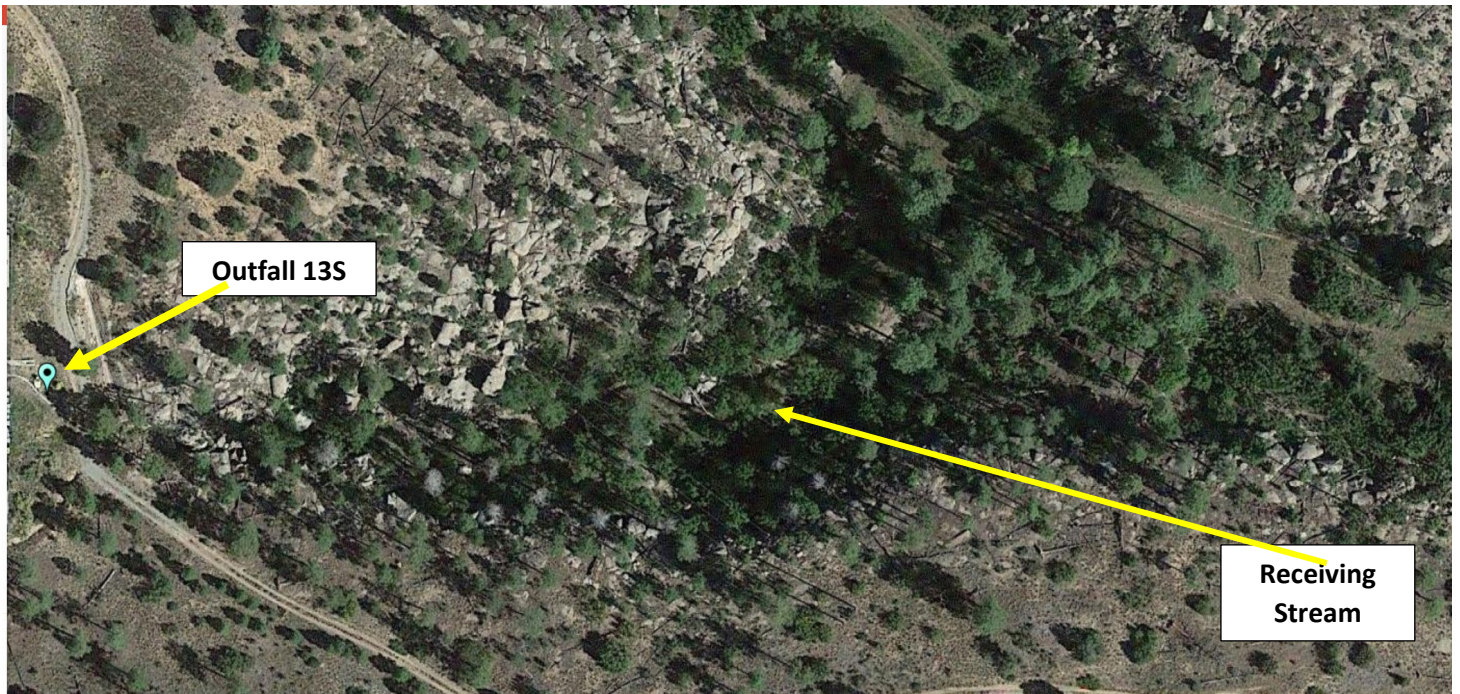
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Photograph - NPDES-13S-18-001
Outfall 13S Location in Canada del Buey



Photograph - NPDES-13S-18-002
Outfall 13S Condition



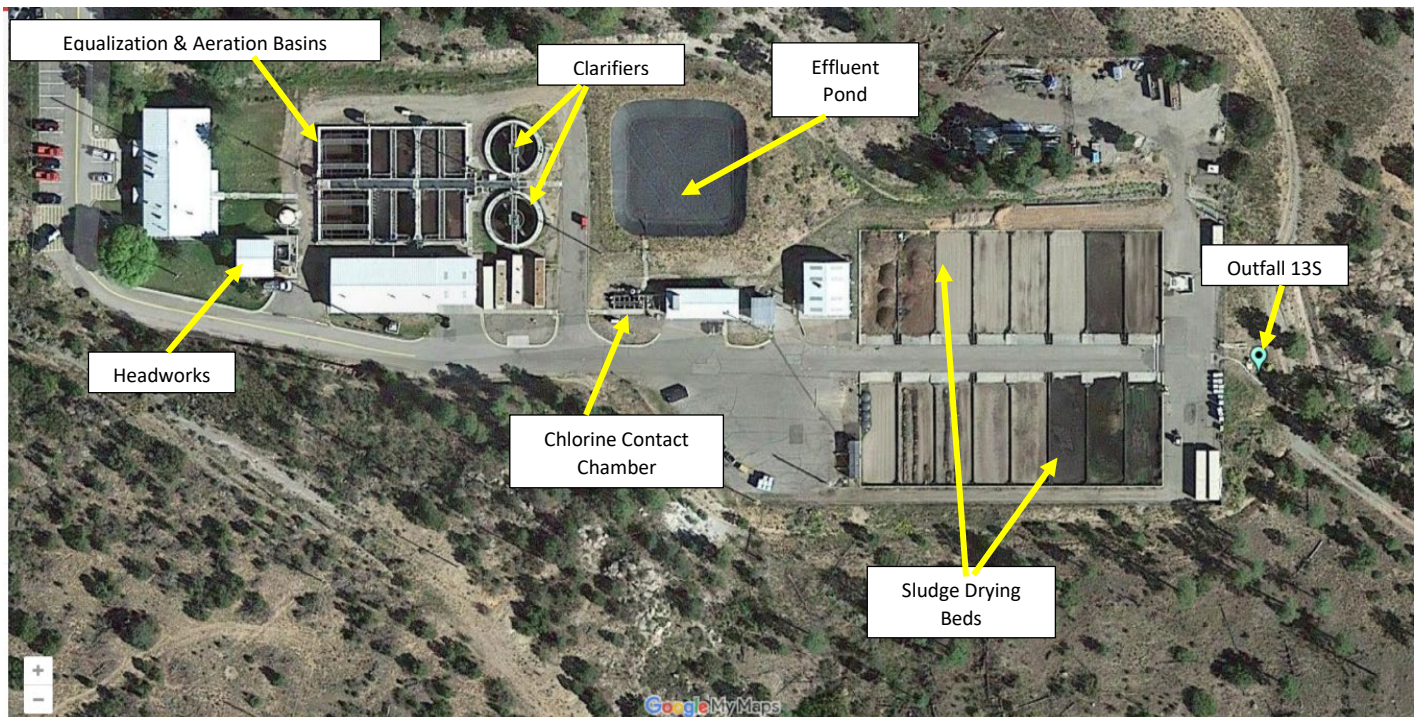
Photograph - NPDES-13S-18-003
Outfall 13S Receiving Stream Canada Del Buey, Water Quality Segment Number 20.6.4.128 NMAC



Photograph - NPDES-13S-18-004
Outfall 13S Ability to Collect Representative Operational Samples at the Chlorine Contact Chamber



Photograph - NPDES-13S-18-005
Outfall 13S Ability to Collect Representative Compliance Samples at the Outfall



Photograph - NPDES-13S-18-006
Sanitary Wastewater System (SWWS) Facility



Photograph - NPDES-13S-18-007
SWWS Bar Screen at the Headworks



Photograph - NPDES-13S-18-008
SWWS Grit Chamber



**Photograph - NPDES-13S-18-009
SWWS Glycerin Feed System**



**Photograph - NPDES-13S-18-0010
SWWS Soda Ash Feed System**



Photograph - NPDES-13S-18-0011
SWWS Equalization Basins



Photograph - NPDES-13S-18-0012
SWWS Aeration Basins



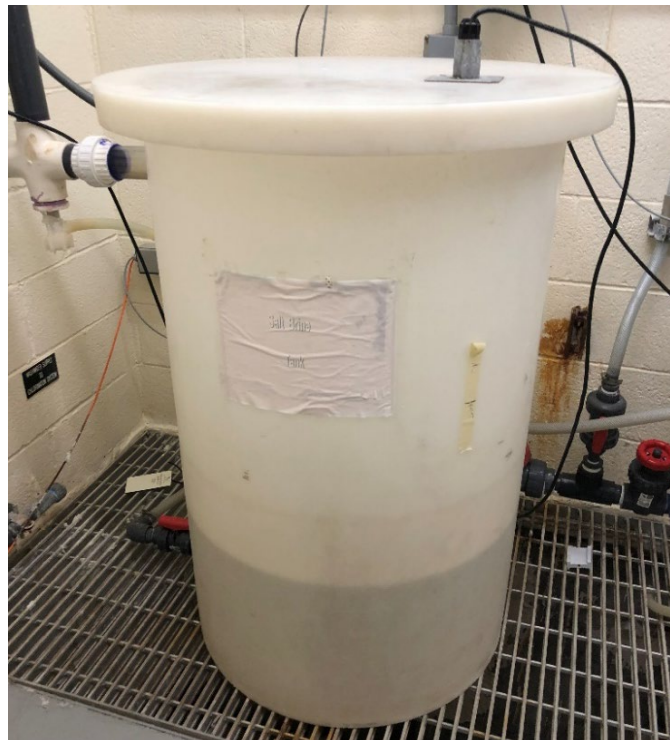
Photograph - NPDES-13S-18-013
SWWS Clarifier



Photograph - NPDES-13S-18-023
SWWS Digester



Photograph - NPDES-13S-18-014
SWWS Chlorine Contact Chamber



Photograph - NPDES-13S-18-015
SWWS MIOX System Tank



**Photograph - NPDES-13S-18-016
SWWS Sludge Polymer Feed Tank**



**Photograph - NPDES-13S-18-017
SWWS Effluent Holding Pond**



**Photograph - NPDES-13S-18-018
SWWS Reuse Pumps and Chlorine Analyzer**



**Photographs - NPDES-13S-18-019
SWWS Sludge Drying Bed Winrow Composting**



Photograph - NPDES-13S-18-020
SWWS Sludge Drying Beds



Photograph - NPDES-13S-18-021
SWWS Sludge Composting Structure



Photograph - NPDES-13S-18-022
SWWS Finished Compost

ATTACHMENT D: Safety Data Sheets

SANILIST OF SAFETY DATA SHEETS
Clarifloc C-6265
Dog Food
Glycerin
Sodium Bisulfite
Soda Ash [Na ₂ CO ₃]
Sodium Chloride
Sulfur Dioxide
Bright Dyes FLT Yellow/Green Liquid
Bright Dyes FLT Yellow/Green Tablet

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CLARIFLOC C-6265

SAFETY DATA SHEET

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Hazard symbol(s): None.

Signal word: None.

Hazard statement(s): None.

Precautionary statement(s): None.

2.3. Other hazards

Spills produce extremely slippery surfaces.

For explanation of abbreviations see Section 16.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable, this product is a mixture.

3.2. Mixtures

This product is a mixture.

Hazardous components

Distillates (petroleum), hydrotreated light

Concentration/ -range: 20 - 30%

CAS Number: 64742-47-8

Classification according to paragraph (d)
of 29 CFR 1910.1200: Asp. Tox. 1;H304

Notes

Does not result in classification of the mixture if the kinematic viscosity is greater than 20.5 mm²/s measured at 40°C.

Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched

Concentration/ -range: < 5%

CAS Number: 69011-36-5

Classification according to paragraph (d)
of 29 CFR 1910.1200: Acute Tox. 4;H302, Eye Dam. 1;H318

For explanation of abbreviations see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

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Personal precautions:

Do not touch or walk through spilled material. Spills produce extremely slippery surfaces.

Protective equipment:

Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:

Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

As with all chemical products, do not flush into surface water.

6.3. Methods and material for containment and cleaning up

Small spills:

Do not flush with water. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

Large spills:

Do not flush with water. Dam up. Clean up promptly by scoop or vacuum.

Residues:

Soak up with inert absorbent material. After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Renders surfaces extremely slippery when spilled. When using, do not eat, drink or smoke.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Freezing will affect the physical condition and may damage the material. Incompatible with oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:

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- | | |
|--|---|
| j) Upper/lower flammability or explosive limits: | Not expected to create explosive atmospheres. |
| k) Vapour pressure: | 2.3 kPa @ 20°C |
| l) Vapour density: | 0.804 g/litre @ 20°C |
| m) Relative density: | 1.0 - 1.2 |
| n) Solubility(ies): | Completely miscible. |
| o) Partition coefficient: | Not applicable. |
| p) Autoignition temperature: | Not applicable. |
| q) Decomposition temperature: | > 150°C |
| r) Viscosity: | > 20.5 mm ² /s @ 40°C |
| s) Explosive properties: | Not expected to be explosive based on the chemical structure. |
| t) Oxidizing properties: | Not expected to be oxidising based on the chemical structure. |

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Oxidizing agents may cause exothermic reactions.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NO_x), carbon oxides (CO_x). Ammonia. Hydrogen cyanide (hydrocyanic acid).

SECTION 11: Toxicological information

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CLARIFLOC™ C-6265

STOT - Single exposure: No known effects.

STOT - Repeated exposure: NOAEL/oral/rat/90 days \geq 3000 mg/kg/day (OECD 408) (Based on results obtained from tests on analogous products)

Aspiration hazard: May be fatal if swallowed and enters airways.

Poly(oxy-1,2-ethanediyl), α -tridecyl-w-hydroxy-, branched

Acute oral toxicity: LD50/oral/rat = 500 - 2000 mg/kg

Acute dermal toxicity: LD50/dermal/rabbit > 2000 mg/kg.

Acute inhalation toxicity: No data available.

Skin corrosion/irritation: Not irritating. (OECD 404)

Serious eye damage/eye irritation: Causes serious eye irritation. (OECD 405)

Respiratory/skin sensitisation: The results of testing on guinea pigs showed this material to be non-sensitizing.

Mutagenicity: Not mutagenic.

Carcinogenicity: Not carcinogenic.

Reproductive toxicity: Two-Generation Reproduction Toxicity (OECD 416)

 - NOAEL/rat > 250 mg/kg/day

 Prenatal Development Toxicity Study (OECD 414)

 - NOAEL/Maternal toxicity/rat > 50 mg/kg/day

 - NOAEL/Developmental toxicity/rat > 50 mg/kg/day

STOT - Single exposure: No known effects.

STOT - Repeated exposure: NOAEL/oral/rat/600 days = 50 mg/kg/day

Aspiration hazard: No known effects.

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish: LC50/Fish/96 hours = 10 - 100 mg/L (Estimated)

Acute toxicity to invertebrates: EC50/Daphnia magna/48 hours = 10 - 100 mg/L. (Estimated)

Acute toxicity to algae: Algal inhibition tests are not appropriate. The flocculation characteristics of the product interfere directly in the test medium preventing homogenous distribution which invalidates the test.

Chronic toxicity to fish: No data available.

SAFETY DATA SHEET

CLARIFLOC™ C-6265

Degradation: Readily biodegradable.
Hydrolysis: At natural pHs (>6) the polymer degrades due to hydrolysis to more than 70% in 28 days. The hydrolysis products are not harmful to aquatic organisms.
Photolysis: No data available.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

Degradation: Readily biodegradable. 67.6% / 28 days (OECD 301 F) ; 68.8% / 28 days (OECD 306) ; 61.2% / 61 days (OECD 304 A)
Hydrolysis: Does not hydrolyse.
Photolysis: No data available.

Poly(oxy-1,2-ethanediyl), *n*-tridecyl-w-hydroxy-, branched

Degradation: Readily biodegradable. > 60% / 28 days (OECD 301 B)
Hydrolysis: Does not hydrolyse.
Photolysis: No data available.

12.3. Bioaccumulative potential

Information on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow): Not applicable.
Bioconcentration factor (BCF): No data available.

Relevant information on the hazardous components:

Distillates (petroleum), hydrotreated light

Partition co-efficient (Log Pow): 3 - 6
Bioconcentration factor (BCF): No data available.

Poly(oxy-1,2-ethanediyl), *n*-tridecyl-w-hydroxy-, branched

Partition co-efficient (Log Pow): > 3
Bioconcentration factor (BCF): No data available.

SAFETY DATA SHEET

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SECTION 15: Regulatory information

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

Information on the product as supplied:

TSCA Chemical Substances Inventory:

All components of this product are either listed on the inventory or are exempt from listing.

US SARA Reporting Requirements:

SARA (Section 311/312) hazard class:
Not concerned.

SARA Title III Sections:

Section 302 (TPQ) - Reportable Quantity:
Not concerned.

Section 304 - Reportable Quantity:
Not concerned.

Section 313 (De minimis concentration):
Not concerned.

Clean Water Act

Section 311 Hazardous Substances (40 CFR 117.3) - Reportable Quantity:
Not concerned.

Clean Air Act

Section 112(r) Accidental release prevention requirements (40 CFR 68) - Reportable Quantity:
Not concerned.

CERCLA

Hazardous Substances List (40 CFR 302.4) - Reportable Quantity:
Not concerned.

RCRA status:

Not RCRA hazardous.

California Proposition 65 Information:

WARNING! This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm, Acrylamide

SAFETY DATA SHEET

CLARIFLOC™ C-6265

U.S. Code of Federal Regulations 29 CFR 1910.1200

Version: 17.01.a

ENCC046

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. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Print Date: 12/07/2018

Revision date: 06/14/2018

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GLYCERIN/GLYCEROL



SAFETY DATA SHEET

Creation Date 07-Jan-2010

Revision Date 23-Jan-2018

Revision Number 11

1. Identification

Product Name Glycerol
Cat No. : AC410980000; AC410980025; AC410980100; AC410985000
CAS-No 56-81-5
Synonyms Glycerine
Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number

For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99
CHEMTREC Tel. No **US**:001-800-424-9300 / **Europe**:001-703-527-3887

2. Hazard(s) Identification

Classification

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Based on available data, the classification criteria are not met

Label Elements

None required

Hazards not otherwise classified (HNOC)

None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Glycerin	56-81-5	>95

4. First-aid measures

Glycerol

Revision Date 23-Jan-2018

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	Move to fresh air. Get medical attention immediately if symptoms occur.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media	No information available
Flash Point	160 °C / 320 °F
Method -	No information available
Autoignition Temperature	400 °C / 752 °F
Explosion Limits	
Upper	No data available
Lower	1.1 vol %
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
 Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
 Thermal decomposition can lead to release of irritating gases and vapors

Protective Equipment and Precautions for Firefighters
 As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA				
	Health	Flammability	Instability	Physical hazards
	1	1	1	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Sweep up or vacuum up spillage and collect in suitable container for disposal.

7. Handling and storage

Handling	Wear personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Avoid ingestion and inhalation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. To maintain product quality, do not store in heat or direct sunlight. Protect from moisture. Do not freeze.

Glycerol

Revision Date 23-Jan-2018

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Glycerin		(Vacated) TWA: 10 mg/m ³ (Vacated) TWA: 5 mg/m ³ TWA: 15 mg/m ³ TWA: 5 mg/m ³		TWA: 10 mg/m ³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eyeface Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Very viscous Liquid
Appearance	Clear
Odor	Slight
Odor Threshold	No information available
pH	5 - 100 g/L aq.sol
Melting Point/Range	18 °C / 64.4 °F
Boiling Point/Range	290 °C / 554 °F
Flash Point	160 °C / 320 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	1.1 vol %
Vapor Pressure	0.003 mbar @ 50 °C
Vapor Density	3.17
Specific Gravity	1.261
Solubility	Miscible with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	400 °C / 752 °F
Decomposition Temperature	> 290°C
Viscosity	1069 mPa.s at 20 °C
Molecular Formula	C3 H8 O3
Molecular Weight	92.09

10. Stability and reactivity

Reactive Hazard None known, based on information available

Glycerol

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Stability Hygroscopic.
Conditions to Avoid Incompatible products. Excess heat.
Incompatible Materials Strong oxidizing agents
Hazardous Decomposition Products Thermal decomposition can lead to release of irritating gases and vapors
Hazardous Polymerization Hazardous polymerization does not occur.
Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Glycerin	12600 mg/kg (Rat)	> 10 g/kg (Rabbit)	> 2.75 mg/L/4h (Rat)(mist)

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Glycerin	56-81-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Glycerin	Not listed	LC50: 51 - 57 mL/L, 96h static (Oncorhynchus)	Not listed	EC50: > 500 mg/L, 24h (Daphnia magna)

Glycerol

Revision Date 23-Jan-2018

	mykiss)		
Persistence and Degradability	Persistence is unlikely		
Bioaccumulation/ Accumulation	No information available.		
Mobility	. Will likely be mobile in the environment due to its water solubility.		
Component	log Pow		
Glycerin	-1.76		

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated
TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Glycerin	X	X	-	200-289-5	-		X	X	X	X	X

Legend:

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable
SARA 313 Not applicable
SARA 311/312 Hazard Categories See section 2 for more information
CWA (Clean Water Act) Not applicable
Clean Air Act Not applicable
OSHA Occupational Safety and Health Administration
 Not applicable

Glycerol

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CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Glycerin	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
 DOT Marine Pollutant N
 DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade Slight risk, Grade 1

16. Other information

Prepared By Regulatory Affairs
 Thermo Fisher Scientific
 Email: EMSDS.RA@thermofisher.com

Creation Date 07-Jan-2010
Revision Date 23-Jan-2018
Print Date 23-Jan-2018

Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). SDS sections updated. 2, 7, 10.

Disclaimer

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End of SDS

SODIUM BISULFITE

SIGMA-ALDRICH

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SAFETY DATA SHEET

Version 5.9
Revision Date 05/17/2018
Print Date 07/01/2018

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Sodium bisulfite
Product Number : 243973
Brand : Sigma-Aldrich
CAS-No. : 7631-90-5

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302
Serious eye damage (Category 1), H318
Acute aquatic toxicity (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed.
H318 Causes serious eye damage.
H402 Harmful to aquatic life.

Precautionary statement(s)

P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear eye protection/ face protection.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
Rinse mouth.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately

P501 call a POISON CENTER/doctor.
 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonyms : Sodium hydrogensulfite

Hazardous components

Component	Classification	Concentration
Sodium hydrogensulphite		
CAS-No. 7631-90-5 EC-No. 231-548-0 Index-No. 016-064-00-8	Acute Tox. 4; H302	90 - 100 %
Sodium metabisulphite		
CAS-No. 7681-57-4 EC-No. 231-673-0 Index-No. 016-063-00-2	Acute Tox. 4; Eye Dam. 1; Aquatic Acute 3; H302, H318, H402	90 - 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Dry powder

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures**
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.
- 6.2 Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- 6.3 Methods and materials for containment and cleaning up**
Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.
- 6.4 Reference to other sections**
For disposal see section 13.

7. HANDLING AND STORAGE

- 7.1 Precautions for safe handling**
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Keep container tightly closed in a dry and well-ventilated place.
Never allow product to get in contact with water during storage. Do not store near acids.

Air and moisture sensitive.
Storage class (TRGS 510): 13: Non Combustible Solids
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Sodium hydrogensulphite	7631-90-5	TWA	5 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation Skin irritation Not classifiable as a human carcinogen		
		TWA	5 mg/m ³	USA. NIOSH Recommended Exposure Limits
		PEL	5 mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
Sodium metabisulphite	7681-57-4	TWA	5 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Not classifiable as a human carcinogen		

		TWA	5 mg/m3	USA. NIOSH Recommended Exposure Limits
		PEL	5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- a) Appearance Form: solid
- b) Odour No data available
- c) Odour Threshold No data available
- d) pH No data available
- e) Melting point/freezing point Melting point/range: 300 °C (572 °F)

- | | |
|---|-------------------|
| f) Initial boiling point and boiling range | No data available |
| g) Flash point | No data available |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapour pressure | No data available |
| l) Vapour density | No data available |
| m) Relative density | No data available |
| n) Water solubility | No data available |
| o) Partition coefficient: n-octanol/water | No data available |
| p) Auto-ignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Strong oxidizing agents, Strong acids

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Sodium oxides

Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

No data available

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: Not available

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, chest pain

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3077 Class: 9 Packing group: III
 Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Sodium metabisulphite)
 Reportable Quantity (RQ): 5000 lbs
 Poison Inhalation Hazard: No

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

SARA 302 Components

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

SARA 313 Components

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.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Sodium hydrogensulphite	7631-90-5	2007-03-01
Sodium metabisulphite	7681-57-4	2007-03-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Sodium hydrogensulphite	7631-90-5	2007-03-01
Sodium metabisulphite	7681-57-4	2007-03-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Sodium hydrogensulphite	7631-90-5	2007-03-01
Sodium metabisulphite	7681-57-4	2007-03-01

California Prop. 65 Components

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

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Eye Dam.	Serious eye damage
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H402	Harmful to aquatic life.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard: 2
Fire Hazard: 0
Reactivity Hazard: 0

Further information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.9

Revision Date: 05/17/2018

Print Date: 07/01/2018

SODA ASH [Na₂CO₃]

UNIVAR CANADA LTD.
ISSUE DATE: 2017-05-15
Annotation:

MSDS NO: LA1109
VERSION: 009 2017-05-15



SAFETY DATA SHEET

LA1109
Soda Ash 58% Dense

Preparation Date: 12/May/2017

Version: 1

1. IDENTIFICATION

Product identifier

Product Name Soda Ash 58% Dense

Other means of identification

Product Code(s) LA1109

Synonyms Sodium carbonate, anhydrous. Carbonic acid, disodium salt; Disodium carbonate; Soda ash

Recommended use of the chemical and restrictions on use

Recommended Use Soda salts. Manufacture of glass. Soap Cleaners and water softeners. Pulp and paper. Photographical agent. Water treatment. pH adjustment

Restricted Uses No information available

Initial Supplier Identifier

Univar Canada Ltd.
9800 Van Horne Way
Richmond, BC V6X 1W5
Telephone: 1-866-686-4827

Emergency telephone number

24 Hour Emergency Phone Number (CANUTEC): 1-888-226-8832 (1-888-CAN-UTE C)

2. HAZARD IDENTIFICATION

Hazardous Classification of the substance or mixture

Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3

Label elements

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ISSUE DATE: 2017-05-15
Annotation:

MSDS NO: LA1109
VERSION: 009 2017-05-15

LA1109 - Soda Ash 58% Dense

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Hazard pictograms



Signal Word: Danger

Hazard statements

Causes serious eye damage
May cause respiratory irritation

Precautionary Statements

Prevention

Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection

Response

Immediately call a POISON CENTER or doctor
Specific treatment (see first aid instructions on label)
Immediately call a POISON CENTER or doctor
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Immediately call a POISON CENTER or doctor
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Disposal

Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations

Other Information

Direct skin contact may cause slight or mild, transient irritation. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Unknown acute toxicity No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Chemical Name	CAS No	Weight-%	Synonyms
Sodium Carbonate	497-19-8	90 - 100%	Sodium Carbonate

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4. FIRST AID

Description of first aid measures

General advice

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Inhalation

Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention.

Ingestion

Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

Self-protection of the first aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed:

May cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause severe eye irritation. Symptoms include redness, swelling, itching and pain. Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing. Effects may include pain, marked redness and swelling.

Indication of any immediate medical attention and special treatment needed:

Note to physicians

Treatment based on sound judgment of physician and individual reactions of patient.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing media appropriate for surrounding fire. Does not burn.

Specific hazards arising from the substance or mixture

Not flammable.

Hazardous combustion products

Carbon dioxide. Decomposition temperature: >400°C / 752 °F.

Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection

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equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

Methods and materials for containment and cleaning up

Prevent further leakage or spillage if safe to do so.

Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Use good personal hygiene. Avoid prolonged contact with eyes or prolonged skin contact. Avoid breathing in dust. When dissolving, add to water cautiously while stirring; solutions can get hot.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area. Prolonged storage may cause product to cake and become damp from atmospheric moisture. Store away from acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical Name	Alberta OEL	British Columbia OEL	Ontario	Quebec OEL	Exposure Limit - ACGIH	Immediately Dangerous to Life or Health - IDLH
Sodium Carbonate 497-19-8	Not available	Not available	Not available	Not available	Not available	Not available

Consult local authorities for recommended exposure limits

Appropriate engineering controls

Engineering controls

Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Individual protection measures, such as personal protective equipment

Eye/face protection

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Safety glasses with side shields or chemical goggles.

Hand protection

Cotton gloves permitted for dry product, impervious gloves when handling solutions.

Skin and body protection

As a minimum, wear long-sleeve shirts, trousers, and gloves for routine product use.

Respiratory protection

For dusty or misty conditions, wear NIOSH-approved dust or mist respirator.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Physical state	Solid
Color	White
Odor	Odorless
Odor threshold	No information available

PROPERTIES

PROPERTIES	Values	Remarks • Method
pH	11.3-11.4 (1% solution), 11.6 (5% solution), 11.7 (10% solution) @ 20°C	
Melting point / freezing point	854 °C / 1569 °F	
Initial boiling point/boiling range	No data available	none known
Flash point	No data available	none known
Evaporation rate	No data available	none known
Flammability (solid, gas)	No data available	none known
Flammability Limit in Air		none known
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor pressure	No data available	none known
Relative vapor density	No data available	none known
Relative density	2.533 @ 20°C	
Water solubility	Soluble in water	
Solubility in other solvents	No data available	
Partition coefficient	No data available	none known
Autoignition temperature	No data available	none known
Decomposition temperature	>400°C/752°F	none known
Kinematic viscosity	No data available	none known
Dynamic viscosity	No data available	none known
Explosive properties	No information available.	
Oxidizing properties	No information available.	
Molecular weight	105.99	
VOC Percentage Volatility	No information available	
Liquid Density	No information available	
Bulk density	No information available	

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10. STABILITY AND REACTIVITY

Reactivity/Chemical Stability

Stable

Possibility of hazardous reactions

Contact with acids will release carbon dioxide gas. Can react violently with red hot aluminum metal; fluorine gas; lithium; and 2,4,6-trinitrotoluene.

Hazardous polymerization

Will not occur.

Conditions to avoid

Hygroscopic (absorbs moisture from the air). Simultaneous exposure to soda ash and lime dusts (CaO). In the presence of moisture (i.e. perspiration) the two materials combine to form corrosive caustic soda (NaOH) which may cause burns.

Incompatible materials

Acids. Soda Ash is corrosive to aluminum, lead, and zinc and zinc brasses when in solution and to aluminum when high humidity is present.

Hazardous decomposition products

Carbon dioxide. Decomposition temperature: >400°C / 752 °F.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation

Material is irritating to mucous membrane and upper respiratory tract. Exposure can cause coughing, chest pains and difficulty in breathing.

Eye contact

Causes serious eye damage. Effects may include pain, marked redness and swelling.

Skin contact

Symptoms include redness, swelling, itching and pain.

Ingestion

May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Information on toxicological effects

Symptoms

Excessive contact may produce "soda ulcers" on hands and perforation of the nasal septum. Sensitivity reactions may occur from prolonged and repeated exposure.

Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 4,098.00 mg/kg

Unknown acute toxicity No information available

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Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sodium Carbonate 497-19-8	= 4090 mg/kg (Rat)	Not available	= 2300 mg/m ³ (Rat) 2 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation

Symptoms include redness, swelling, itching and pain.

Serious eye damage/eye irritation

Causes serious eye damage. Effects may include pain, marked redness and swelling.

Respiratory or skin sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sodium Carbonate 497-19-8	Not available	Not available	Not available	Not available

Reproductive toxicity

No information available.

Specific target organ systemic toxicity - single exposure

No information available.

Specific target organ systemic toxicity - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Ecotoxicity - Freshwater Algae Data	Ecotoxicity - Fish Species Data	Toxicity to microorganisms	Crustacea
Sodium Carbonate 497-19-8	Not available	310 - 1220 mg/L LC50 (Pimephales promelas) 96 h static 300 mg/L LC50 (Lepomis macrochirus) 96 h static	Not available	EC50: =265mg/L (48h, Daphnia magna)

Persistence and degradability No information available.

Bioaccumulation No information available.

Chemical Name	Partition coefficient
Sodium Carbonate 497-19-8	Not available

Other adverse effects No information available.

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13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

Do not reuse empty containers.

14. TRANSPORT INFORMATION

TDG (Canada):

UN Number	Not applicable
Shipping name	Not regulated
Class	Not applicable
Packing Group	Not applicable
Marine pollutant	Not available.

DOT (U.S.):

UN Number	Not applicable
Shipping name	Not regulated
Class	Not applicable
Packing Group	Not applicable
Reportable Quantity (RQ)	No information available
Marine pollutant	Not available

15. REGULATORY INFORMATION

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

Chemical Name	Ozone depletion potential (ODP)	Ozone-depleting substances (ODS)
Sodium Carbonate - 497-19-8	Not available	Not available

The Stockholm Convention on Persistent Organic Pollutants Not applicable

Chemical Name	Annex
Sodium Carbonate - 497-19-8	Not available

The Rotterdam Convention Not applicable

Chemical Name	Chemicals Subject to Prior Informed Consent (PIC)
Sodium Carbonate - 497-19-8	Not available

NSF International



Certified to NSF/ANSI 60

Additional information

Only products bearing the NSF Mark on the product, product packaging, and/or documentation shipped with the product are Certified. Maximum use of potable water 100 mg/L.

U.S. Regulatory Rules

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International Inventories

TSCA Complies

DSL/NDSL Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

NFPA:	Health hazards 3	Flammability 0	Instability 0	Physical and chemical properties -
HMIS Health Rating:	Health hazards 3	Flammability 0	Physical hazards 0	Personal protection X

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Prepared By: The Environment, Health and Safety Department of Univar Canada Ltd.

Preparation Date: 29/Mar/2017

Revision Date: 12/May/2017

Disclaimer

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Do not use ingredient information and/or ingredient percentages in this SDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar Sales Office.

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End of Safety Data Sheet

SODIUM CHLORIDE



SAFETY DATA SHEET

Creation Date 22-Jun-2009

Revision Date 11-Apr-2018

Revision Number 5

1. Identification

Product Name Sodium chloride

Cat No. : S640-3; S640-10; S640-10LC; S640-50; S640-350LB; S640-500; S640SAM-1; S640SAM-2; S640SAM-3; XXBA160; XXBA161

CAS-No 7647-14-5
Synonyms NaCl; Salt (Crystalline/Granular/USP/FCC/EP/BP/JP/ Certified ACS/Biological, Certified)

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) Identification

Classification

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Based on available data, the classification criteria are not met

Label Elements

None required

Hazards not otherwise classified (HNOC)

None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Sodium chloride	7647-14-5	>95

4. First-aid measures

Sodium chloride

Revision Date 11-Apr-2018

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	Move to fresh air. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration.
Ingestion	Do not induce vomiting. Obtain medical attention.
Most important symptoms and effects	No information available.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Hydrogen chloride gas Sodium oxides

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
1	0	1	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional ecological information.
Methods for Containment and Clean Up	Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment. Ensure adequate ventilation. Avoid dust formation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

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

Revision Date 11-Apr-2018

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	5.0-8.0 @ 20°C; 5% aq.sol
Melting Point/Range	801 °C / 1473.8 °F
Boiling Point/Range	1461 °C / 2661.8 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 865 °C
Vapor Density	Not applicable
Specific Gravity	2.165
Solubility	Partly soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Cl Na
Molecular Weight	58.44

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Hygroscopic.
Conditions to Avoid	Incompatible products. Excess heat. Avoid dust formation. Exposure to moist air or water.
Incompatible Materials	Strong oxidizing agents, Metals, Strong acids
Hazardous Decomposition Products	Hydrogen chloride gas, Sodium oxides
Hazardous Polymerization	Hazardous polymerization does not occur.

Sodium chloride

Revision Date 11-Apr-2018

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information See actual entry in RTECS for complete information.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium chloride	LD50 = 3 g/kg (Rat)	LD50 > 10 g/kg (Rabbit)	LC50 > 42 g/m ³ (Rat) 1 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Sodium chloride	7647-14-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Not mutagenic in AMES Test

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium chloride	Not listed	Pimephals prome: LC50: 7650 mg/L/96h	Not listed	EC50: 1000 mg/L/48h

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Sodium chloride

Revision Date 11-Apr-2018

14. Transport information

DOT Not regulated
 TDG Not regulated
 IATA Not regulated
 IMDG/IMO Not regulated

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Sodium chloride	X	X	-	231-598-3	-		X	X	X	X	X

Legend:

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable
 SARA 313 Not applicable
 SARA 311/312 Hazard Categories See section 2 for more information
 CWA (Clean Water Act) Not applicable
 Clean Air Act Not applicable
 OSHA Occupational Safety and Health Administration
 Not applicable
 CERCLA Not applicable
 California Proposition 65 This product does not contain any Proposition 65 chemicals
 U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ): N
 DOT Marine Pollutant N
 DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Sodium chloride

Revision Date 11-Apr-2018

Mexico - Grade Severe risk, Grade 4

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 22-Jun-2009

Revision Date 11-Apr-2018

Print Date 11-Apr-2018

Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

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. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

SULFUR DIOXIDE



MATHESON

ask. . .The Gas Professionals™

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

SULFUR DIOXIDE

Synonyms

MTG MSDS 80; SULFUROUS ACID ANHYDRIDE; SULFUROUS OXIDE; SULPHUR DIOXIDE;
SULFUROUS ANHYDRIDE; FERMENTICIDE LIQUID; SULFUR DIOXIDE(SO₂); SULFUR OXIDE;
SULFUR OXIDE(SO₂)

Chemical Family

inorganic, gas

Product Description

Classification determined in accordance with Compressed Gas Association standards.

Product Use

Industrial and Specialty Gas Applications.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.
150 Allen Road, Suite 302
Basking Ridge, NJ 07920
General Information: 1-800-416-2505
Emergency #: 1-800-424-9300 (CHEMTREC)
Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Gases Under Pressure - Liquefied gas

Acute Toxicity - Inhalation - Gas - Category 3

Skin Corrosion/Irritation - Category 1B

Serious Eye Damage/Eye Irritation - Category 1

Respiratory Sensitization - Category 1A

Reproductive Toxicity - Category 2

Specific Target Organ Toxicity - Single Exposure - Category 1 (respiratory system)

Specific Target Organ Toxicity - Repeated Exposure - Category 1 (respiratory system , lungs)

Simple Asphyxiant

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Contains gas under pressure; may explode if heated.

Toxic if inhaled.



Causes severe skin burns and eye damage.
 May displace oxygen and cause rapid suffocation.

Precautionary Statement(s)

Prevention

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves/protective clothing/eye protection/face protection.
 Do not breathe dust/fume/gas/mist/vapors/spray.
 Wear respiratory protection.
 Wash thoroughly after handling.
 Do not eat, drink or smoke when using this product.

Response

If exposed: Call a POISON CENTER or doctor/physician.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 Immediately call a POISON CENTER or doctor.
 Specific treatment (see label).

Storage

Store in a well-ventilated place. Keep container tightly closed.
 Store locked up.
 Protect from sunlight. Store in a well-ventilated place.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

Contact with liquified gas may cause frostbite.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7446-09-5	Sulfur dioxide	100.0

Section 4 - FIRST AID MEASURES

Inhalation

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician.

Skin

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Wash contaminated clothing before reuse.

Eyes

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

Ingestion

If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

Most Important Symptoms/Effects



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Acute

Frostbite, respiratory tract burns, skin burns, eye burns

Delayed

No information on significant adverse effects.

Note to Physicians

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

carbon dioxide, regular dry chemical, Large fires: Use regular foam or flood with fine water spray.

Unsuitable Extinguishing Media

None known.

Special Hazards Arising from the Chemical

Negligible fire hazard.

Hazardous Combustion Products

sulfur oxides

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

Ventilate closed spaces before entering. Evacuation radius: 150 feet. Stop leak if possible without personal risk.

Reduce vapors with water spray. Do not get water directly on material.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Do not get in eyes, on skin, or on clothing. Do not breathe gas, fumes, vapor, or spray. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Keep only in original container. Avoid release to the environment.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Keep separated from incompatible substances.

Incompatible Materials

bases, combustible materials, halogens, metal carbide, metal oxides, metals, oxidizing materials, peroxides, reducing agents



Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Sulfur dioxide	7446-09-5
ACGIH:	0.25 ppm STEL
NIOSH:	2 ppm TWA ; 5 mg/m3 TWA
	5 ppm STEL ; 13 mg/m3 STEL
	100 ppm IDLH
OSHA (US):	5 ppm TWA ; 13 mg/m3 TWA
Mexico:	2 ppm TWA VLE-PPT ; 5 mg/m3 TWA VLE-PPT
	5 ppm STEL [PPT-CT] ; 10 mg/m3 STEL [PPT-CT]

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEL)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear splash resistant safety goggles with a faceshield. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate chemical resistant clothing. Wear chemical resistant clothing to prevent skin contact.

Respiratory Protection

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	irritating odor	Color	colorless
Odor Threshold	3 - 5 ppm	pH	(Acidic in solution)
Melting Point	-73 °C (-99 °F)	Boiling Point	-10 °C (14 °F)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	>1 (Butyl acetate = 1)	Flammability (solid, gas)	Not available



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Autoignition Temperature	Not available	Flash Point	(Not flammable)
Lower Explosive Limit	Not available	Decomposition temperature	Not available
Upper Explosive Limit	Not available	Vapor Pressure	2432 mmHg @ 20 °C
Vapor Density (air=1)	2.26	Specific Gravity (water=1)	1.462 at -10 °C
Water Solubility	22.8 % (@ 0 °C)	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	Not available
Physical Form	liquified gas	Molecular Formula	S-O2
Molecular Weight	64.06		

Solvent Solubility

Soluble

alcohol, acetic acid, sulfuric acid, ether, chloroform, Benzene, sulfuryl chloride, nitrobenzenes, Toluene, acetone

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Minimize contact with material. Containers may rupture or explode if exposed to heat.

Incompatible Materials

bases, combustible materials, halogens, metal carbide, metal oxides, metals, oxidizing materials, peroxides, reducing agents

Hazardous decomposition products

oxides of sulfur

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

Toxic if inhaled. Causes damage to respiratory system, burns, difficulty breathing

Skin Contact

Causes severe skin burns

Eye Contact

Causes serious eye damage

Ingestion

burns, nausea, vomiting, diarrhea, stomach pain



Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Sulfur dioxide (7446-09-5)

Inhalation LC50 Rat 2500 ppm 1 h

Product Toxicity Data

Acute Toxicity Estimate

No data available.

Immediate Effects

respiratory tract burns, skin burns, eye burns

Delayed Effects

No information on significant adverse effects.

Irritation/Corrosivity Data

respiratory tract burns, skin burns, eye burns.

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

Sulfur dioxide	7446-09-5
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
IARC:	Monograph 54 [1992] (Group 3 (not classifiable))

Germ Cell Mutagenicity

No data available.

Tumorigenic Data

No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

No target organs identified.

Specific Target Organ Toxicity - Repeated Exposure

No target organs identified.

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

respiratory disorders

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOEL ecotoxicity data are available for this product's components.

Persistence and Degradability

No data available.

Bioaccumulative Potential

No data available.

Mobility



No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: SULFUR DIOXIDE

Hazard Class: 2.3

UN/NA #: UN1079

Required Label(s): 2.3

IMDG Information:

Shipping Name: SULPHUR DIOXIDE

Hazard Class: 2.3

UN#: UN1079

Required Label(s): 2.3

TDG Information:

Shipping Name: SULFUR DIOXIDE

Hazard Class: 2.3

UN#: UN1079

Required Label(s): 2.3

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Sulfur dioxide	7446-09-5
SARA 302:	500 lb TPQ
OSHA (safety):	1000 lb TQ (Liquid)
SARA 304:	500 lb EPCRA RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Gas Under Pressure; Acute toxicity; Reproductive Toxicity; Skin Corrosion/Irritation; Respiratory/Skin Sensitization; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity; Simple Asphyxiant

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
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Sulfur dioxide	7446-09-5	Yes	Yes	Yes	Yes	Yes
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The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects

Sulfur dioxide	7446-09-5
Repro/Dev. Tox	developmental toxicity , 7/29/2011

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Sulfur dioxide	7446-09-5
	1 %

WHMIS Classification

ADI

Component Analysis - Inventory

Sulfur dioxide (7446-09-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 3 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

SDS update: 02/10/2016

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA -



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Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

Matheson Tri-Gas, Inc. makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Matheson Tri-Gas, Inc. shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.

BRIGHT DYES FLT YELLOW/GREEN LIQUID

Kingscote CHEMICALS

Safety Data Sheet

Issue Date: 04-Oct-2013

Revision Date: 06-Feb-2017

Version Number: 1.1

1. Identification

Product Identifiers

Product Name: Bright Dyes® FLT Yellow/Green Liquid

Product Number: 106001

Recommended Use & Restrictions on Use

Water tracing & leak detection dye

Manufacturer/Supplier

Kingscote Chemicals, Inc.
3334 South Tech Blvd.
Miamisburg, OH 45342
U.S.A.

Emergency Telephone Number

Company Telephone Number: (937) 886-9100

Emergency Telephone (24 hr): INFOTRAC (800) 535-5053 (North America)
+1-352-323-3500 (International)

2. Hazards Identification

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

4. First-Aid Measures

First-Aid Measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Ingestion Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

Most Important Symptoms and Effects

Symptoms Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician Treat symptomatically.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Water spray (fog). Carbon dioxide (CO₂). Dry chemical. Regular foam.

Unsuitable Extinguishing Media

Not determined

Specific Hazards Arising from the Chemical

Product is not flammable. Burning/combustion may produce oxides of carbon and nitrogen (NO_x).

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protective equipment as recommended in Section 8.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Sweep up and collect into suitable containers for disposal. Flush area with water.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should be thoroughly washed before reuse.

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Conditions for Safe Storage, Including Incompatibilities

Storage Conditions	Keep container tightly closed and store in a cool, dry, and well-ventilated area. Keep from freezing.
Incompatible Materials	Acids.

8. Exposure Controls / Personal Protection

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Controls

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual Protection Measures, Such as Personal Protective Equipment:

Eye/Face Protection	Goggles.
Skin & Body Protection	Rubber gloves. Suitable protective clothing.
Respiratory Protection	No protection is ordinarily required under normal conditions of use.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Liquid	Odor	None apparent
Appearance	Yellow/green liquid	Odor Threshold	Not determined
Color	Yellow/green		

<u>Property</u>	<u>Values</u>
pH	>8.0
Melting/Freezing Point	~32° F
Boiling Point/Range	~212° F
Flash Point	Not applicable
Evaporation Rate	1.8
Flammability (solid, gas)	Liquid – not applicable
Upper Flammability Limits	Not applicable
Lower Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	0.6
Relative Density	Not applicable
Specific Gravity	Not determined
Solubility	Highly soluble in water
Partition Coefficient	Not determined
Auto-ignition Temperature	Not determined
Decomposition Temperature	Not determined
Viscosity	Not determined

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

10. Stability and Reactivity

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep separated from incompatible substances. Keep out of reach of children.

Incompatible Materials

Acids. Strong oxidizing agents.

Hazardous Decomposition Products

Oxides of carbon and nitrogen (NOx).

11: Toxicological Information

Information on Likely Routes of Exposure

Inhalation	Avoid breathing vapors or mists.
Ingestion	Do not ingest.
Skin Contact	May cause an allergic skin reaction.
Eye Contact	Avoid contact with eyes.

Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure

May cause an allergic skin reaction.

Numerical Measures of Toxicity

Not determined

Symptoms Associated with Exposure

See Section 4 of this SDS for symptoms.

Carcinogenicity

NTP	None
IARC	None
OSHA	None

Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

12. Ecological Information

Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Not available

Persistence/Degradability

Not determined

Bioaccumulation

Not determined

Mobility

Not determined

Other Adverse Effects

Not determined

13. Disposal Considerations

Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

14. Transport Information

Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

DOT	Not regulated
IATA	Not regulated
OMDG	Not regulated

15: Regulatory Information

International Inventories

TASCA	This product is not subject to TSCA 12(b) reporting requirements.
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U.S. Federal Regulations

CERCLA	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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Bright Dyes® FLT Yellow/Green Liquid

Revision Date: 06-Feb-2017

Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313

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

CWA (Clean Water Act)

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

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know

This product does not contain any substances regulated under applicable state right-to-know regulations.

16: Other Information

HMIS

Health Hazards
1

Flammability
0

Instability
0

Special Hazards
Not determined

NFPA

Health Hazards
1

Flammability
0

Physical Hazards
0

Personal Protection
B

Issue Date

04-Oct-2013

Revision Date

06-Feb-2017

Revision Note

Content Review

Disclaimer

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. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

BRIGHT DYES FLT YELLOW/GREEN TABLETS

Kingscote

CHEMICALS

Safety Data Sheet

Issue Date: 09-Nov-2013

Revision Date: 06-Feb-2017

Version Number: 2.1

1. Identification

Product Identifiers

Product Name: Bright Dyes® FLT Yellow/Green Tablet

Product Number: 101101

Recommended Use & Restrictions on Use

Water tracing & leak detection dye

Manufacturer/Supplier

Kingscote Chemicals, Inc.
3334 South Tech Blvd.
Miamisburg, OH 45342
U.S.A.

Emergency Telephone Number

Company Telephone Number: (937) 886-9100
Emergency Telephone (24 hr): INFOTRAC (800) 535-5053 (North America)
+1-352-323-3500 (International)

2. Hazards Identification

Classification

This chemical does not meet the hazardous criteria set forth by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

3. Composition/Information on Ingredients

This product is not hazardous according to OSHA 29 CFR 1910.1200. Components not listed are not hazardous or are below reportable limits.

4. First-Aid Measures

First-Aid Measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash thoroughly with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing is difficult, administer oxygen; seek medical attention immediately.

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

Ingestion Rinse mouth. DO NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention if large quantities were ingested or if nausea occurs.

Most Important Symptoms and Effects

Symptoms Will cause staining of the skin on contact. May cause eye irritation. Inhalation of dust may cause respiratory irritation. Ingestion may cause urine to be a yellow/green color until the dye has been washed through the system.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Notes to Physician Treat symptomatically.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Water spray (fog). Carbon dioxide (CO₂). Dry chemical.

Unsuitable Extinguishing Media

Not determined

Specific Hazards Arising from the Chemical

Remote possibility of dust explosion. Burning may produce oxides of carbon and nitrogen (NO_x).

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protective equipment as recommended in Section 8.

Environmental Precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12 and Section 13.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Sweep up and collect into suitable containers for disposal. Flush area with water.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practices. Use personal protection recommended in Section 8. Avoid contact with skin, eyes, or clothing. Avoid breathing dusts. Contaminated clothing should not be allowed out of the workplace.

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

Conditions for Safe Storage, Including Incompatibilities

- Storage Conditions** Keep container tightly closed and store in a cool, dry, and well-ventilated area. Store away from heat, sparks, open flame or any other ignition source.
- Incompatible Materials** Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

8. Exposure Controls / Personal Protection

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Controls

Ensure adequate ventilation, especially in confined areas. Eyewash stations. Showers.

Individual Protection Measures, Such as Personal Protective Equipment:

- Eye/Face Protection** Avoid contact with eyes.
- Skin & Body Protection** Rubber gloves. Suitable protective clothing.
- Respiratory Protection** Use NIOSH-approved dust mask if dusty conditions exist.
- Hygiene Measures** Handle in accordance with good industrial hygiene and safety practices.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Solid	Odor	None apparent
Appearance	Orange tablet	Odor Threshold	Not determined
Color	Orange		

<u>Property</u>	<u>Values</u>
pH	Not applicable
Melting/Freezing Point	Not applicable
Boiling Point/Range	Not applicable
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability (solid, gas)	Not flammable
Upper Flammability Limits	Not applicable
Lower Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Relative Density	Not applicable
Specific Gravity	Not applicable
Solubility	Highly soluble in water with small amounts of insoluble residue
Partition Coefficient	Not determined
Auto-ignition Temperature	Not determined
Decomposition Temperature	Not determined
Viscosity	Not determined

Bright Dyes® FLT Yellow/Green Tablet

Revision Date: 06-Feb-2017

10. Stability and Reactivity

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep separated from incompatible substances. Keep out of reach of children.

Incompatible Materials

Bromine trifluoride. Lithium. Strong acids, bases, and oxidizing agents.

Hazardous Decomposition Products

Oxides of carbon and nitrogen (NO_x).

11: Toxicological Information

Information on Likely Routes of Exposure

Inhalation	Avoid inhalation of dust.
Ingestion	Do not ingest.
Skin Contact	May cause an allergic skin reaction.
Eye Contact	Avoid contact with eyes.

Delayed, Immediate, and Chronic Effects from Short- and Long-Term Exposure

May cause an allergic skin reaction.

Numerical Measures of Toxicity

Not determined

Symptoms Associated with Exposure

See Section 4 of this SDS for symptoms.

Carcinogenicity

NTP	None
IARC	None
OSHA	None

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12. Ecological Information

Ecotoxicity

This product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Component Information

Not available

Persistence/Degradability

This product is biodegradable.

Bioaccumulation

Not determined

Mobility

Not determined

Other Adverse Effects

Not determined

13. Disposal Considerations

Waste Disposal Methods

Dispose of in accordance with federal, state, and local regulations.

Contaminated Packaging

Do not re-use empty containers. Dispose of containers in accordance with federal, state, and local regulations.

14. Transport Information

Note

See current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

DOT	Not regulated
IATA	Not regulated
OMDG	Not regulated

15: Regulatory Information

International Inventories

Not determined

U.S. Federal Regulations

CERCLA	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund
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Amendments and Reauthorization Act (SARA) (40 CFR 355).

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

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

U.S. State Regulations

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know This product does not contain any substances regulated under applicable state right-to-know regulations.

16: Other Information

HMIS

Health Hazards	Flammability	Instability	Special Hazards
1	0	0	Not determined

NFPA

Health Hazards	Flammability	Physical Hazards	Personal Protection
1	0	0	B

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Disclaimer

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. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet