

REPORT NUMBER: 703

UNIVAR USA INC.

PAGE: 001

MSDS NO: MZS5230

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 03/30/05

VERSION: 004

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
7079 HWY 83 N.
BOX 89
CONDON ,MT 59826

UNIVAR USA INC.
6100 CARILLON POINT

, KIRKLAND

(425)889-3400
, WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME: SODIUM THIOSULFATE
MSDS NUMBER: MZS5230
DATE ISSUED: 3/21/2005
SUPERSEDES: 5/22/2002
ISSUED BY: 008614

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SODIUM THIOSULFATE

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1. PRODUCT IDENTIFICATION

SYNONYMS: SODIUM THIOSULFATE, PENTAHYDRATE; THIOSULFURIC ACID,
DISODIUM SALT, PENTAHYDRATE

CAS NO: 7772-98-7 (ANHYDROUS) 10102-17-7 (PENTAHYDRATE)

MOLECULAR WEIGHT: 248.17

CHEMICAL FORMULA: NA2S2O3.5H2O

Distributed by:

Univar USA Inc.

6100 Carillon Point

Kirkland, WA 98033

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

425-889-3400

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS
SODIUM THIOSULFATE	7772-98-7	100%	YES

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

POTENTIAL HEALTH EFFECTS

INHALATION:

MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT. SYMPTOMS MAY INCLUDE COUGHING AND SHORTNESS OF BREATH.

INGESTION:

LOW LEVEL OF TOXICITY BY INGESTION. DIARRHEA MAY OCCUR BY INGESTION OF LARGE QUANTITIES.

SKIN CONTACT:

IRRITATION MAY OCCUR FROM PROLONGED SKIN CONTACT.

EYE CONTACT:

CONTACT MAY CAUSE MECHANICAL IRRITATION.

CHRONIC EXPOSURE:

CHRONIC EXPOSURE MAY CAUSE SKIN EFFECTS.

AGGRAVATION OF PRE-EXISTING CONDITIONS:

NO INFORMATION FOUND.

4. FIRST AID MEASURES

INHALATION:

REMOVE TO FRESH AIR. GET MEDICAL ATTENTION FOR ANY BREATHING DIFFICULTY.

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

INGESTION:

INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION.

SKIN CONTACT:

WASH EXPOSED AREA WITH SOAP AND WATER. GET MEDICAL ADVICE IF IRRITATION DEVELOPS.

EYE CONTACT:

WASH THOROUGHLY WITH RUNNING WATER. GET MEDICAL ADVICE IF IRRITATION DEVELOPS.

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5. FIRE FIGHTING MEASURES

FIRE:

NOT CONSIDERED TO BE A FIRE HAZARD.

EXPLOSION:

NOT CONSIDERED TO BE AN EXPLOSION HAZARD.

FIRE EXTINGUISHING MEDIA:

USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL INFORMATION:

USE PROTECTIVE CLOTHING AND BREATHING EQUIPMENT APPROPRIATE FOR THE SURROUNDING FIRE.

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6. ACCIDENTAL RELEASE MEASURES

VENTILATE AREA OF LEAK OR SPILL. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED IN SECTION 8. SPILLS: SWEEP UP AND CONTAINERIZE FOR RECLAMATION OR DISPOSAL. VACUUMING OR WET SWEEPING MAY BE USED TO AVOID DUST DISPERSAL.

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7. HANDLING AND STORAGE

KEEP IN A TIGHTLY CLOSED CONTAINER, STORED IN A COOL, DRY, VENTILATED AREA. PROTECT AGAINST PHYSICAL DAMAGE. ISOLATE FROM INCOMPATIBLE SUBSTANCES. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES (DUST, SOLIDS); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THE PRODUCT.

REPORT NUMBER: 703

UNIVAR USA INC.

PAGE: 004

MSDS NO: MZ95230

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 03/30/05

VERSION: 004

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS:

NONE ESTABLISHED.

VENTILATION SYSTEM:

IN GENERAL, DILUTION VENTILATION IS A SATISFACTORY HEALTH HAZARD CONTROL FOR THIS SUBSTANCE. HOWEVER, IF CONDITIONS OF USE CREATE DISCOMFORT TO THE WORKER, A LOCAL EXHAUST SYSTEM SHOULD BE CONSIDERED.

PERSONAL RESPIRATORS (NIOSH APPROVED):

FOR CONDITIONS OF USE WHERE EXPOSURE TO DUST OR MIST IS APPARENT AND ENGINEERING CONTROLS ARE NOT FEASIBLE, A PARTICULATE RESPIRATOR (NIOSH TYPE N95 OR BETTER FILTERS) MAY BE WORN. IF DIL PARTICLES (E.G. LUBRICANTS, CUTTING FLUIDS, GLYCERINE, ETC.) ARE PRESENT, USE A NIOSH TYPE R OR P FILTER. FOR EMERGENCIES OR INSTANCES WHERE THE EXPOSURE LEVELS ARE NOT KNOWN, USE A FULL-FACE POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR.

WARNING: AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERES.

SKIN PROTECTION:

WEAR PROTECTIVE GLOVES AND CLEAN BODY-COVERING CLOTHING.

EYE PROTECTION:

SAFETY GLASSES. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH FACILITIES IN WORK AREA.

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

MONOCLINIC, COLORLESS CRYSTALS.

BOILING POINT:

> 100C (> 212F)

ODOR:

ODORLESS.

MELTING POINT:

48C (118F) LOSES WATER @ 100C (212F)

SOLUBILITY:

79G/100 ML WATER @ 4C (39F)

VAPOR DENSITY (AIR=1):

NO INFORMATION FOUND.

DENSITY:

1.75

VAPOR PRESSURE (MM HG):

NO INFORMATION FOUND.

PH:

NO INFORMATION FOUND.

EVAPORATION RATE (BUAC=1):

NO INFORMATION FOUND.

REPORT NUMBER: 703

UNIVAR USA INC.

PAGE: 005

MSDS NO: MZS5230

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 03/30/05

VERSION: 004

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

% VOLATILES BY VOLUME @ 21C (70F):
0

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10. STABILITY AND REACTIVITY

STABILITY:

STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE. STABILITY LIMITED IN SOLUTION.

HAZARDOUS DECOMPOSITION PRODUCTS:

OXIDES OF SULFUR AND HYDROGEN SULFIDE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

INCOMPATIBILITIES:

SODIUM NITRATE, HALOGENS, AND OXIDIZING AGENTS. REACTS WITH ACIDS TO RELEASE SULFUR DIOXIDE.

CONDITIONS TO AVOID:

INCOMPATIBLES.

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11. TOXICOLOGICAL INFORMATION

NO LD50/LC50 INFORMATION FOUND RELATING TO NORMAL ROUTES OF OCCUPATIONAL EXPOSURE.

-----\CANCER LISTS\-----

INGREDIENT	---NTP CARCINOGEN---		IARC CATEGORY
	KNOWN	ANTICIPATED	
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NONE

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12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:

NO INFORMATION FOUND.

ENVIRONMENTAL TOXICITY:

NO INFORMATION FOUND.

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

13. DISPOSAL CONSIDERATIONS

WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE MANAGED IN AN APPROPRIATE AND APPROVED WASTE DISPOSAL FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS.

DISPOSE OF CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.

14. TRANSPORT INFORMATION

NOT REGULATED.

15. REGULATORY INFORMATION

-----\CHEMICAL INVENTORY STATUS - PART 1\-----

INGREDIENT	TSCA	EC	JAPAN	AUSTRALIA
SODIUM THIOSULFATE (7772-98-7)	YES	YES	YES	YES

-----\CHEMICAL INVENTORY STATUS - PART 2\-----

INGREDIENT	--CANADA--			
	KOREA	DSL	NSL	PHIL.
SODIUM THIOSULFATE (7772-98-7)	YES	YES	NO	YES

-----\FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 1\-----

INGREDIENT	-SARA 302-		-----SARA 313-----	
	RQ	TFQ	LIST	CHEMICAL CATG
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NO	NO

-----\FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 2\-----

INGREDIENT	CERCLA	-RCRA-	-TSCA-
		261.33	8(D)
SODIUM THIOSULFATE (7772-98-7)	NO	NO	NO

CHEMICAL WEAPONS CONVENTION: NO TSCA 12(B): NO CDTA: NO

REPORT NUMBER: 703

UNIVAR USA INC.

PAGE: 007

MSDS NO: MZS5230

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 03/30/05

VERSION: 004

PRODUCT: SODIUM THIOSULFATE

ORDER NO: 231068

PROD NO : 503233

SARA 311/312: ACUTE: YES CHRONIC: NO FIRE: NO PRESSURE: NO
REACTIVITY: NO (PURE / SOLID)

AUSTRALIAN HAZCHEM CODE: NONE ALLOCATED.
POISON SCHEDULE: NONE ALLOCATED.

WHMIS: THIS MSDS HAS BEEN PREPARED ACCORDING TO THE HAZARD CRITERIA OF
THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS
ALL OF THE INFORMATION REQUIRED BY THE CPR.

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16. OTHER INFORMATION

NFPA RATINGS:

HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

11/01
REPORT NUMBER: 703
MSDS NO: FM000049
MAINFRAME UPLOAD DATE: 04/09/01

VOPAK USA INC.
MATERIAL SAFETY DATA SHEET

PAGE: 001
VERSION: 012

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571
PROD NO : 502443

PHOTOGRAPHERS FORMULARY
CALL IN ADVANCE TO MEET
HC-31
BOX 89
CONDON ,MT 59806

VOPAK USA INC.
6100 CARILLON POINT , KIRKLAND

(425)889-3400
, WA 98033

----- EMERGENCY ASSISTANCE -----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC
(800)424-9300

PRODUCT NAME: POTASSIUM PERSULFATE
MSDS NUMBER: FM000049
EFFECTIVE DATE: 2/8/2001
SUPERSEDES: 12/7/1998
ISSUED BY: 008418

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Potassium Persulfate

SYNONYM(S): Potassium Peroxydisulfate; Dipotassium Peroxydisulfate

ALTERNATE TRADE NAME(S): Potassium Persulfate C/Orange, Potassium Persulfate Screen/Y

GENERAL USE: Initiator for emulsion polymerization reactions, in the preparation of acrylic, vinyl, styrene, neoprene, styrene-butadiene and other resins. It is also used in depolymerization in modification of starch. Booster in hair bleaching formulations in cosmetics.

MANUFACTURER

FMC Corporation
Active Oxidant Division
1735 Market Street
Philadelphia, PA 19103
General Information: (215) 299-6000

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

Emergency Telephone Numbers:

CHEMTREC (U.S.): (800) 424-9300

Emergency Phone (303) 595-9048 (Medical) Call Collect

Emergency Phone (716) 879-0400 (Plant/Other) Call Collect

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %
Potassium Persulfate	7727-21-1	99

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: Oxidizer; Decomposes in storage under conditions of moisture (water/water vapor) and/or excessive heat causing release of oxides of sulfur, nitrogen and oxygen that supports combustion. Decomposition could form a high temperature melt.

POTENTIAL HEALTH EFFECTS: Airborne persulfate dust may be irritating to eyes, nose, lungs, throat and skin upon contact. Exposure to high levels of persulfate dust may cause difficulty in breathing in sensitive persons.

4. FIRST AID MEASURES

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: This product has low oral and dermal toxicity and is not irritating to the skin. It is minimally irritating to the eyes. Flooding of exposed areas with water is suggested, but gastric lavage or emesis induction for ingestions must consider possible aggravation of esophageal injury and the expected absence of system effects. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

FLAMMABLE LIMITS: Non-combustible

EXTINGUISHING MEDIA: Deluge with water.

FIRE / EXPLOSION HAZARDS: Product is non-combustible. On decomposition releases oxygen which may intensify fire.

Presence of water accelerates decomposition.

FIRE FIGHTING PROCEDURES: Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates. Wear full protective clothing and self contained breathing apparatus.

AUTOIGNITION TEMPERATURE: Not applicable. No evidence of combustion up to 800 deg C. Decomposition will occur upon heating.

FLASH POINT: Non-combustible

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

SENSITIVITY TO STATIC DISCHARGE: Not available

SENSITIVITY TO IMPACT: Not available

HAZARDOUS DECOMPOSITION PRODUCTS: Oxygen that supports combustion and oxides of sulfur and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to regulatory agencies procedures.

7. HANDLING AND STORAGE

HANDLING: Use adequate ventilation when transferring product from bags or drums. Wear respiratory protection if ventilation is inadequate or not available. Use eye and skin protection. Use clean plastic or stainless steel scoops only.

STORAGE: Store (unopened) in a cool, clean, dry place away from point sources of heat, e.g. radiant heaters or steam pipes. Use first in, first out storage system. Avoid contamination of opened product. In case of fire or decomposition (fuming/smoking) deluge with plenty of water to control decomposition. For storage, refer to NFPA Bulletin 430 on storage of liquid and solid oxidizing materials.

COMMENTS: VENTILATION:

Provide mechanical general and/or local exhaust ventilation to prevent release of dust into work environment. Spills should be collected into suitable containers to prevent dispersion into the air.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**EXPOSURE LIMITS**

Chemical Name	TWA (ACGIH)	STEL/Ceiling (ACGIH)	PEL (OSHA)	STEL/Ceiling (OSHA)
Potassium Persulfate	0.1 mg/m3			

ENGINEERING CONTROLS: Provide mechanical local general room ventilation to prevent release of dust into the work environment. Remove contaminated clothing immediately and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Use cup type chemical goggles. Full face shield may be used.

RESPIRATORY: Use approved dust respirator when airborne dust is expected.

PROTECTIVE CLOTHING: Rubber or neoprene gloves. Normal work clothes. Rubber or neoprene footwear.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: None

APPEARANCE: White crystals

pH: (1% solution) @ 25 deg C = typically 5.0-8.0

PERCENT VOLATILE: Not applicable

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

VAPOR PRESSURE: Not applicable
VAPOR DENSITY: (Air = 1): Not applicable
BOILING POINT: Not applicable
MELTING POINT: Decomposes
SOLUBILITY IN WATER: % by wt. @ 25 deg C (77 deg F): 6.0
EVAPORATION RATE: (Butyl Acetate = 1): Not applicable
DENSITY: Not available
SPECIFIC GRAVITY: (H2O=1): 2.48
COEFF. OIL/WATER: Not available
ODOR THRESHOLD: Not available
OXIDIZING PROPERTIES: Oxidizer

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Heat and moisture.

STABILITY: Stable (becomes unstable in presence of heat, moisture and contamination).

POLYMERIZATION: Will not occur

HAZARDOUS DECOMPOSITION PRODUCTS: Oxygen that supports combustion and oxides of sulfur and nitrogen.

INCOMPATIBLE MATERIALS: Acids, alkalis, halides (fluorides, chlorides, bromides), combustible materials, heavy metals, oxidizable materials, reducing agents and organic compounds.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Minimally irritating (rabbit) (FMC Study ICG/T-79.024)

SKIN EFFECTS: Non-irritating (rabbit); May be sensitizer to allergic persons. (FMC Study ICG/T-79.024)

DERMAL LD50: >10 g/kg (rabbit) (FMC Study ICG/T-79.024)

ORAL LD50: 1130 mg/kg (rat) (FMC Study ICG/T-79.024)

INHALATION LC50: >42.9 mg/L, aerosol (rat) (FMC Study ICG/T-79.024)

TARGET ORGANS: Eyes, skin, nose, throat, lungs

ACUTE EFFECTS FROM OVEREXPOSURE: Dust may be harmful and irritating. May be harmful if swallowed.

CHRONIC EFFECTS FROM OVEREXPOSURE: Sensitive persons may develop dermatitis and asthma (Respiration 38:144, 1979).

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: ACGIH: Not listed

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: No data available for the product. Data below are for sodium persulfate.

Bluegill sunfish, 96-hour LC50 = 771 mg/L (FMC Study I92-1250)

Rainbow trout, 96-hour LC50 = 163 mg/L (FMC Study I92-1251)

Daphnia, 48-hour LC50 = 133 mg/L (FMC Study I92-1252)

Grass shrimp, 96-hour LC50 = 519 mg/L (FMC Study I92-1253)

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

CHEMICAL FATE INFORMATION: Biodegradability does not apply to inorganic substances.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose as a hazardous waste in accordance with local, state and federal regulatory agencies.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PROPER SHIPPING NAME: Potassium Persulfate

PRIMARY HAZARD CLASS/DIVISION: 5.1 (Oxidizer)

UN/NA NUMBER: UN 1492

PACKING GROUP: III

PLACARDS: 5.1 (Oxidizer)

LABEL: 5.1 (Oxidizer)

OTHER SHIPPING INFORMATION:

DOT Marking: Potassium Persulfate, UN 1492

Hazardous Substance/RQ: Not applicable

49 STCC Number: 4918733

This material is shipped in 225 lb. fiber drums , 55 lb. poly bags and 1000 - 2000 lb. IBC's (supersacks)

SPECIAL SHIPPING NOTES:

IMDG: Sodium Persulphate

IATA: Sodium Persulphate

Protect from physical damage. Do not store near acids, moisture or heat.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Not listed

SECTION 311 HAZARD CATEGORY (40 CFR 370): Fire Hazard, Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): 10000 lbs.

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): Not listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA REGULATORY (40 CFR 302.4): (unlisted) RQ = 100 lbs., Ignitability

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS (40 CFR 710): Listed

RCRA STATUS: Waste No. D001

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM): Product

Identification No.: 1492

Hazard Classification: Class C (Oxidizer), Class D, Div. 2, Subdiv. B, (Toxic)

Ingredient Disclosure List: Listed

EUROPEAN COMMUNITY

EUROPEAN COMMUNITY REGULATORY:

REPORT NUMBER: 703

WOPAK USA INC.

PAGE: 006

MSDS NO: FK000049

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 04/09/01

VERSION: 012

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

MAJOR ACCIDENTS:

Yes: Oxidizing 10/200 tonnes.

16. OTHER INFORMATION

REVISION SUMMARY Revision #: 4

This MSDS replaces Revision #3, dated December 07, 1998. Any changes in information are as follows: Section(s): 7, 13 & 14

HMS RATINGHEALTH: 1

FLAMMABILITY 0

REACTIVITY: 0

PROTECTION: J

NFPA RATINGHEALTH: 1

FLAMMABILITY 0

REACTIVITY: 0

SPECIAL: OX

Key

4 = Severe

3 = Serious

2 = Moderate

1 = Slight

0 = Minimal

HMS RATINGS NOTES:

Protection = J (Safety goggles, gloves, apron & combination dust & vapor respirator)

The contents and format of this MSDS are in accordance with OSHA Hazard Communication Standard and Canada's Workplace Hazardous Information System (WHMIS).

National Fire Protection Association (NFPA)

SPECIAL = OX (Oxidizer)

Hazardous Materials Identification System (HMIS)

REPORT NUMBER: 703

VOPAK USA INC.

PAGE: 007

MSDS NO: FM000049

MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 04/09/01

VERSION: 012

PRODUCT: POTASSIUM PERSULFATE

ORDER NO: 198571

PROD NO : 502443

----- FOR ADDITIONAL INFORMATION -----

CONTACT: MSDS COORDINATOR VOPAK USA INC.
 DURING BUSINESS HOURS, PACIFIC TIME (425)869-3400

11/27/01 07:15 PRODUCT: 502443 CUST NO: 113365 ORDER NO: 198571

----- NOTICE -----

***** VOPAK USA INC., ("VOPAK"), EXPRESSLY DISCLAIMS

ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

HEREIN, AND SHALL UNDER NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR

CONSEQUENTIAL DAMAGES. **

DO NOT USE INGREDIENT INFORMATION AND/OR PERCENTAGES IN THIS MSDS 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 VOPAK USA SALES OFFICE.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS
BELIEVED TO BE ACCURATE, VOPAK MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR
SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VOPAKS CONTROL AND THEREFORE USERS
ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO
DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION OR USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN.
THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

*** END OF MSDS ***



COLUMBUS CHEMICAL INDUSTRIES INC.

P.O. BOX 8
 COLUMBUS, WISCONSIN 53925-0008
 (920) 623-2140
 FAX (920) 623-2577

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements

U.S. Department of Labor

Occupational Safety and Health Administration
 (Non-Mandatory Form)
 Form Approved
 OMB No. 1218-0072

IDENTITY (as Used on Label and List)

Silver Nitrate

Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.

Section I

Manufacturers /Distributor Address Number Street City State and Zip Code

Columbus Chemical Industries, Inc.

N4335 Temkin Road

Columbus, WI 53925

Emergency Telephone Number

CHEMTREC 1-800-424-9300

Telephone Number for Information

(920) 623-2140

Date Prepared

01/06/2004

Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components

(Specific Chemical Identity, Common Name(s))

CAS #

OSHA PEL

ACGIH TLV

Other Limits Recommended

% (optional)

Silver Nitrate*

7761-88-8

0.01 mg/m³ TWA

0.01 mg/m³ TWA

Not available

>99%

*Subject to the reporting requirements of SARA Title III Section 313.

Section III - Physical/Chemical Characteristics

Boiling Point	Decomposes @	440 °C (824 °F)	Specific Gravity (H ₂ O = 1)	4.35
Vapor Pressure (mm Hg)		Not available	Melting Point	212 °C (413.6 °F)
Vapor Density (AIR = 1)		5.8	Evaporation Rate (Butyl Acetate = 1)	Not available

Solubility in Water

122 g / 100 cc water @ 0 °C (32 °F)

Appearance and Odor

Colorless to white, odorless crystals.

Section IV Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Nonflammable		Not applicable	Not applicable

Extinguishing Media

Use extinguishing media appropriate for surrounding fire.

Special Fire Fighting Procedures

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece

operated in positive pressure mode.

Unusual Fire and Explosion Hazards

Toxic gas of nitrogen oxides and silver oxides may be produced.

Section V Reactivity Data

Stability	Unstable		Conditions to Avoid	Light, incompatibles, heat
	Stable	X		and oxygen gas.

Incompatibility Materials to Avoid

Combustible materials, bromine trifluoride and trichloride, calcium carbide, magnesium, phosphine, strong reducing agents.

Hazardous Decomposition or Byproducts

Oxides of nitrogen, silver oxides.

Hazardous Polymerization			Conditions to Avoid
	May Occur		Not applicable.
	Will Not Occur	X	

Section VI Health Hazard Data

Routes of Entry	Inhalation ?	Skin ?	Ingestion ?
	X	X	X

Health Hazards (Acute and Chronic)

SKIN: May cause irritation and may be harmful if absorbed. EYE: Causes eye irritation. INHALATION: May be harmful if swallowed. Toxic to lungs and mucous membranes. Acute oral toxicity: LD₅₀ (MOUSE): 50 mg/kg.

Carcinogenicity	NTP	IARC Monographs	OSHA REGULATED?
	Not listed	Not listed	Not listed

Signs and Symptoms of Exposure.

EYES: Reddening, tearing, irritation, blindness. SKIN: Skin rash, pain, burns, reddening, dermatitis, ulcerations. INGESTION: Gastrointestinal pain, diarrhea, nausea, vomiting. INHALATION: Coughing, choking, shortness of breath.

Medical Conditions Generally Aggravated by Exposure: Medical conditions that may be aggravated by exposure to this product include:

Conjunctivitis of the eye, dermatitis of the skin, asthma, emphysema and other respiratory diseases.

Emergency and First Aid Procedures: INGESTION: Wash out mouth with water provided person is conscious. DO NOT INDUCE VOMITING. Call a physician immediately. INHALATION: Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. SKIN: Flush with water for at least 15 minutes. Remove contaminated clothing; call a physician. EYES: Flush with large amounts of water for at least 15 minutes, lifting lower and upper eyelids.

Section VII Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: Evacuate area. Wear NIOSH/MSHA-approved respirator, chemical-resistant goggles, rubber boots, apron and rubber gloves. Sweep up, place in a plastic container and hold for waste disposal. Avoid raising dust. Ventilate and wash spill area when complete. Prevent release to environment.

Waste Disposal Method: Dispose in accordance with all applicable Federal, state and local regulations.

Precautions to be Taken in Handling and Storing: Store in a cool, dry, well-ventilated area in tightly-closed, plainly-labelled containers. Store in a corrosion-resistant container. Protect against physical damage, air and light. Maintain adequate ventilation. Wash thoroughly after handling. Do not ingest or breathe dust. Protect exposed tissues.

Other Precautions: Containers, even when empty, will retain residue and vapors. Always obey hazard warnings and handle empty containers as if they were full. Do not store near combustible materials.

Section VII Control Measures

Respiratory Protection (Specify Type): NIOSH/MSHA-approved respirator with dust/mist cartridge.

Ventilation	Local Exhaust	Necessary.	Special	Eyewash nearby.
	Mechanical (General)	Recommended.	other	Safety shower nearby.

Protective Gloves: Appropriate chemical-resistant gloves. Eye Protection: safety goggles

Other Protective Clothing or Equipment: Lab coat or apron, boots.

Work /Hygienic Practices: Contact lenses should not be worn when working with this material. Wash exposed areas thoroughly after handling. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Do not ingest or breathe dust. Wash contaminated clothing before reuse. Wash hands prior to eating or smoking.

Columbus Chemical Industries, Inc. ("Columbus") believes that the information herein is factual but it is not intended to be all inclusive. The information relates only to the specific Material designated and does not relate to its use in combination with other materials or its use as to any particular process. Because safety standards and regulations are subject to change and because Columbus has no continuing control over the Material, those handling, storing or using the Material should satisfy themselves that they have current information regarding the particular way the Material is handled, stored and used and that the same is done in accordance with federal, state and local law. COLUMBUS MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) WARRANTIES WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN OR WITH RESPECT TO FITNESS FOR ANY PARTICULAR USE.



GARDENA, CA
NEW BRUNSWICK, NJ

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table border="1"> <tr> <td>Health Hazard</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Fire Hazard</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: center;">0</td> </tr> </table>	Health Hazard	1	Fire Hazard	0	Reactivity	0	
Health Hazard	1							
Fire Hazard	0							
Reactivity	0							
See Section 15.								

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/ Trade Name	Sodium chloride	Catalog Number(s) S1529, S1240, S1241, S1247, S1249, SO155, SO160, YY879, YY670, YY602
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	CAS# 7647-14-5
Commercial Name(s)	Not available.	RTECS VZ4725000
Synonym	Salt; Sea Salt	TSCA TSCA 8(b) inventory: Sodium chloride
Chemical Name	Sodium chloride	CI# Not applicable.
Chemical Family	Chloride salt. (Salt.)	IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300 CALL (310) 516-8000
Chemical Formula	NaCl	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Sodium chloride	7647-14-5				100

Toxicological Data on Ingredients	Sodium chloride: ORAL (LD50): Acute: 3000 mg/kg [Rat.], 4000 mg/kg [Mouse]. DERMAL (LD50): Acute: >10000 mg/kg [Rabbit]. DUST (LC50): Acute: >42000 mg/m ³ 1 hours [Rat].
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Section 3. Hazards Identification	
Potential Acute Health Effects	Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.
Potential Chronic Health Effects	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
Serious Inhalation	Not available.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	Non-flammable.
Auto-Ignition Temperature	Not applicable.
Flash Points	Not applicable.
Flammable Limits	Not applicable.
Products of Combustion	Not available.
Fire Hazards in Presence of Various Substances	Not applicable.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	Not applicable.
Special Remarks on Fire Hazards	When heated to decomposition it emits toxic fumes.
Special Remarks on Explosion Hazards	Electrolysis of sodium chloride in presence of nitrogenous compounds to produce chlorine may lead to formation of explosive nitrogen trichloride. Potentially explosive reaction with dichloromaleic anhydride + urea.

Section 6. Accidental Release Measures

Small Spill	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
Large Spill	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7. Handling and Storage

Precautions	Keep locked up.. Do not ingest. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Solid crystalline powder.)	Odor	Slight.
Molecular Weight	58.44 g/mole	Taste	Saline.
pH (1% soln/water)	7 [Neutral.]	Color	White.
Boiling Point	1413°C (2575.4°F)		
Melting Point	801°C (1473.8°F)		
Critical Temperature	Not available.		
Specific Gravity	2.165 (Water = 1)		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	Not available.		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water.		
Solubility	Easily soluble in cold water, hot water. Soluble in glycerol, and ammonia. Very slightly soluble in alcohol. Insoluble in Hydrochloric Acid.		

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Incompatible materials, high temperatures.
Incompatibility with various substances	Reactive with oxidizing agents, metals, acids.
Corrosivity	Not considered to be corrosive for metals and glass.
Special Remarks on Reactivity	Hygroscopic. Reacts with most nonnoble metals such as iron or steel, building materials (such as cement) Sodium chloride is rapidly attacked by bromine trifluoride. Violent reaction with lithium.
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Continued on Next Page

Section 11. Toxicological Information

Routes of Entry	Inhalation. Ingestion.
Toxicity to Animals	WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 3000 mg/kg [Rat]. Acute dermal toxicity (LD50): >10000 mg/kg [Rabbit]. Acute toxicity of the dust (LC50): >42000 mg/m ³ 1 hours [Rat].
Chronic Effects on Humans	MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
Other Toxic Effects on Humans	Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.
Special Remarks on Toxicity to Animals	Lowest Published Lethal Dose (LDL) [Man] - Route: Oral; Dose: 1000 mg/kg
Special Remarks on Chronic Effects on Humans	Causes adverse reproductive effects in humans (fetotoxicity, abortion,) by intraplacental route. High intake of sodium chloride, whether from occupational exposure or in the diet, may increase risk of TOXEMIA OF PREGNANCY in susceptible women (Bishop, 1978). Hypertonic sodium chloride solutions have been used to induce abortion in late pregnancy by direct infusion into the uterus (Brown et al, 1972), but this route of administration is not relevant to occupational exposures. May cause adverse reproductive effects and birth defects in animals, particularly rats and mice (fetotoxicity, abortion, musculoskeletal abnormalities, and maternal effects (effects on ovaries, fallopian tubes) by oral, intraperitoneal, intraplacental, intrauterine, parenteral, and subcutaneous routes. While sodium chloride has been used as a negative control in some reproductive studies, it has also been used as an example that almost any chemical can cause birth defects in experimental animals if studied under the right conditions (Nishimura & Miyamoto, 1969). In experimental animals, sodium chloride has caused delayed effects on newborns, has been fetotoxic, and has caused birth defects and abortions in rats and mice (RTECS, 1997). May affect genetic material (mutagenic)
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: May cause skin irritation. Eyes: Causes eye irritation. Ingestion: Ingestion of large quantities can irritate the stomach (as in overuse of salt tablets) with nausea and vomiting. May affect behavior (muscle spasticity/contraction, somnolence), sense organs, metabolism, and cardiovascular system. Continued exposure may produce dehydration, internal organ congestion, and coma. Inhalation: Material is irritating to mucous membranes and upper respiratory tract.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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Section 14. Transport Information

DOT Classification Not a DOT controlled material (United States).

Identification Not applicable.

Special Provisions for Transport Not applicable.

DOT (Pictograms)

**Section 15. Other Regulatory Information and Pictograms**

Federal and State Regulations TSCA 8(b) inventory: Sodium chloride

California Proposition 65 Warnings California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications WHMIS (Canada) Not controlled under WHMIS (Canada).

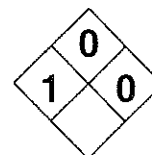
DSCL (EEC) R40- Possible risks of irreversible effects. S24/25- Avoid contact with skin and eyes.

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	0
Reactivity	0
Personal Protection	(E)

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

Health



Flammability

Reactivity

Specific hazard

WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada) (Pictograms)



ADR (Europe) (Pictograms)



Protective Equipment



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent.



Splash goggles.

Section 16. Other Information

MSDS Code S3810

References

- Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.
- SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984.
- The Sigma-Aldrich Library of Chemical Safety Data, Edition II.

Other Special Considerations Not available.

Validated by Sonia Owen on 10/27/2004.

Verified by Sonia Owen.

Printed 11/2/2004.

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.

SIGMA-ALDRICH

MATERIAL SAFETY DATA SHEET

Date Printed: 06/17/2004
Date Updated: 03/10/2004
Version 1.2

Section 1 - Product and Company Information

Product Name GOLD(I) CHLORIDE, 99.9%
Product Number 481130
Brand ALDRICH

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS MO 63103 US
Technical Phone: 314 771 5765
Emergency Phone: 414 273 3850 Ext. 5996
Fax: 800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
GOLD(I) CHLORIDE, 99.9%	10294-29-8	No
Formula AuCl		

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Corrosive.

Causes burns. May cause sensitization by skin contact.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

EYE EXPOSURE

Assure adequate flushing of the eyes by separating the eyelids with fingers.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Dry chemical powder.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Avoid inhalation. Do not get in eyes, on skin, on clothing.

STORAGE

Suitable: Keep tightly closed. Store in a cool dry place.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

PERSONAL PROTECTIVE EQUIPMENT

Other: Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing. Faceshield (8-inch minimum).

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	N/A	
Property	Value	At Temperature or Pressure
Molecular Weight	232.42 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	289 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	7.57 g/cm ³	
Bulk Density	N/A	

Odor Threshold	N/A
Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Surface Tension	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	N/A
Flammability	N/A
Autoignition Temp	N/A
Refractive Index	N/A
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Decomposes on heating to chlorine gas, hydrogen chloride and metallic gold.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Multiple Routes: May be harmful by inhalation, ingestion, or skin absorption.

SENSITIZATION

Skin: May cause allergic skin reaction.

SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause stomatitis, metallic taste, itching, erythema, eczema, erythema multiforme, exfoliative dermatitis, thrombocytopenia, leucopenia, agranulocytosis, and aplastic anemia. Exposure can also cause a gray-to-blue pigmentation (chrysiasis) in the skin and mucous membranes, especially in areas exposed to light. Gold deposits may occur in the eyes causing keratitis and corneal ulceration.

Section 12 - Ecological Information

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Catalysts and expensive metals should be recovered for reuse or recycling. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Corrosive solid, acidic,
inorganic, n.o.s.
UN#: 3260
Class: 8
Packing Group: Packing Group II
Hazard Label: Corrosive
PIH: Not PIH

IATA

Proper Shipping Name: Corrosive solid, acidic,
inorganic, n.o.s.
IATA UN Number: 3260
Hazard Class: 8
Packing Group: II

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: C
Indication of Danger: Corrosive.
R: 34 43
Risk Statements: Causes burns. May cause sensitization by skin contact.
S: 26 27 36/37/39 45
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Take off immediately all contaminated clothing. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Corrosive.
Risk Statements: Causes burns. May cause sensitization by skin contact.
Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Take off immediately all contaminated clothing. Wear suitable protective clothing, gloves, and eye/face protection.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

