Newmont
CRIPPLE CREEK & VICTOR

Permit M-1980-244

Cresson Project Amendment 14

Appendix 10

Safety Data Sheets for Designated Mining Operations Chemicals

SAFETY DATA SHEET

1. Identification

Product identifier	**Caustic Soda-Liq 50%**	
Other means of identification		
Synonyms	CAUSTIC SODA * LYE * SODIUM HYDRATE * CAUSTIC SODA, SOLUTION	
Recommended use	Not available.	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Manufacturer		
Company name	Thatcher Company, Inc.	
Address	1905 Fortune Road Salt Lake City, UT 84104 United States	
Telephone	General Assistance 8-5	(801) 972-4587
E-mail	Not available.	
Emergency phone number	Chemtrec (CCN 22106)	(800) 424-9300

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, dermal	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Harmful in contact with skin. Causes severe skin burns and eye damage. Causes severe skin burns and eye damage. Causes serious eye damage. Harmful to aquatic life.
Precautionary statement	
Prevention	Keep container tightly closed. Do not breathe dust/fume/gas/mist/vapors Wear eye/face protection. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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. Immediately call a poison center/doctor. Take off contaminated clothing and wash before reuse.
Storage	Store locked up.
Disposal	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	50% of the mixture consists of component(s) of unknown acute dermal toxicity.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Sodium Hydroxide		1310-73-2	50
Other components below reportable levels			50

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.

Skin contact
Take off immediately all contaminated clothing. Wash off immediately with plenty of water. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse mouth. Drink plenty of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not give activated charcoal. Do not give chemical antidote.

Most important symptoms/effects, acute and delayed
Corrosive effects. Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media
Foam, water spray or fog. Powder. Dry sand. Dry chemicals.

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire. in case of fire use standards ABC "Type" Extinguisher

Specific hazards arising from the chemical
By heating and fire, harmful vapors/gases may be formed.

Special protective equipment and precautions for firefighters
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Fire fighting equipment/instructions
Use standard firefighting procedures and consider the hazards of other involved materials.

Specific methods
Use water spray to cool unopened containers.

General fire hazards
No unusual fire or explosion hazards noted. Not flammable

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Avoid the generation of dusts during clean-up. Prevent entry into waterways, sewer, basements or confined areas. Clean up in accordance with all applicable regulations. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Pick up wash liquid with additional absorbent and place in a disposable container. Place all material into loosely covered plastic containers for later disposal. Attempt to reclaim the free product, if this is possible.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not ingest. Avoid prolonged exposure. When using, do not eat, drink or smoke. Do not use in areas without adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices. Follow precautions for safe handling described in this safety data sheet.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Keep tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
sodium hydroxide	PEL	2 mg/m3
Components	**Type**	**Value**
Sodium Hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Material	Type	Value
sodium hydroxide	Ceiling	2 mg/m3
Components	**Type**	**Value**
Sodium Hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
sodium hydroxide	Ceiling	2 mg/m3
Components	**Type**	**Value**
Sodium Hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

It is strongly advised that dedicated areas and containment, such as glove boxes, isolators, and enclosed material transfer systems be used to prevent personnel exposure and spread of contamination. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. Ensure adequate ventilation, especially in confined areas. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear eye/face protection. Wear safety glasses with side shields (or goggles) and a face shield. Face shield is recommended. Do not wear contact lenses If splashes are likely to occur, wear: goggles and/or face shield, giving complete protection to eyes
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Do not get in eyes, on skin, on clothing. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Liquid.
Physical state	Liquid.
Form	Liquid.
Color	Colorless
Odor	None.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	44.6 °F (7 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not Flammable
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	12.76 lb/gal estimated
Dust explosion properties	
St class	Not established.
Explosive properties	Not explosive. None known.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	Reacts violently with strong acids. This product may react with oxidizing agents. Violent exothermic reaction with (some) acids. On heating: release of corrosive/vapors. Absorbs the atmospheric CO2.
Chemical stability	Material is stable under normal conditions. Hygroscopic
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	High temperatures. Do not mix with other chemicals. Contact with incompatible materials. Low temperatures
Incompatible materials	Strong acids. Acids. Oxidizing agents. Metals.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns. Harmful in contact with skin.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity	Harmful in contact with skin.
Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not classified.
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects. Dry skin Skin rash/inflammation Possible inflammation of the respiratory tract.

12. Ecological information

Ecotoxicity Not applicable.

Components		Species	Test Results
Sodium Hydroxide (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Fish	LC50	Western mosquitofish (Gambusia affinis)	125 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. After recovery of solvent dispose of residue as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel] The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Dispose of product in accordance with all local, state and federal regulations

14. Transport information

DOT

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution (Sodium Hydroxide RQ = 2000 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, N34, T7, TP2
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

DOT BULK

BULK

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution (Sodium Hydroxide RQ = 2000 LBS)
Transport hazard class(es)	
Class	8
Label(s)	8
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	B2, IB2, N34, T7, TP2
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1824
UN proper shipping name	Sodium hydroxide solution (Sodium Hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1824
UN proper shipping name	SODIUM HYDROXIDE SOLUTION (Sodium Hydroxide)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.

DOT; DOT Bulk packaging type

IATA; IMDG

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium Hydroxide (CAS 1310-73-2) Listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)	Hazardous substance
Safe Drinking Water Act (SDWA)	Not regulated.
Food and Drug Administration (FDA)	Total food additive Direct food additive GRAS food additive

US state regulations

US - New Jersey RTK - Substances: Listed substance

Sodium Hydroxide (CAS 1310-73-2)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Sodium Hydroxide (CAS 1310-73-2)

US. Massachusetts RTK - Substance List

Sodium Hydroxide (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

Not regulated.

US. Pennsylvania RTK - Hazardous Substances

Sodium Hydroxide (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium Hydroxide (CAS 1310-73-2)

US. Rhode Island RTK

Sodium Hydroxide (CAS 1310-73-2)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	05-01-2015
Revision date	05-24-2018
Version #	02
NFPA ratings	Health: 3 Flammability: 0 Instability: 0
NFPA ratings	
Disclaimer	Thatcher Company cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.
Revision Information	Product and Company Identification: Product Codes Physical & Chemical Properties: Multiple Properties

MSDS: 0009514
Date: 03-Mar-2006
Supersedes: 27-May-2004

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: **AERO® 7249 Promoter**
Product Description: Mixture of dithiophosphate salts in water
Intended/Recommended Use: Mining chemical

CYTEC INDUSTRIES B.V., BOTLEKWEG 175, 3197 KA BOTLEK-ROTTERDAM, HAVENS 4501, THE NETHERLANDS
EMERGENCY PHONE: IN THE NETHERLANDS: 0181-295600; OUTSIDE THE NETHERLANDS: 31-181-295600

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2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

Component / CAS No.	% (w/w)	EC-No	Symbol / Risk Phrases
Sodium hydroxide 1310-73-2	0.5 - 1.0	215-185-5	C; R35
Sodium diisobutyl dithiophosphate 53378-51-1	24.4 - 40.6	258-508-5	C; R:41-34-32
Sodium diisobutyl monothiophosphate 53378-52-2	8.4	-	C; R:41-34-31-52/53

See Section 16 for Ingredient Risk Phrase Text

3. HAZARDS IDENTIFICATION

HUMAN AND ENVIRONMENTAL HAZARDS

Causes burns.
Risk of serious damage to eyes.
Contact with acids liberates very toxic gas.

4. FIRST AID MEASURES

Ingestion:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Skin contact:
Take off immediately all contaminated clothing. Wear impermeable gloves. Wash immediately with plenty of water and soap. Pay particular attention to skin crevices, nail folds, etc. Do not reuse contaminated clothing without laundering. Do not reuse contaminated leatherware.

Eye contact:
Rinse immediately with plenty of water for at least 15 minutes. Obtain medical attention immediately.

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

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5. FIRE-FIGHTING MEASURES

Extinguishing Media:
Use water spray or fog, carbon dioxide or dry chemical.

Protective Equipment:
Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:
Sulphur dioxide or hydrogen sulphide may be formed under fire conditions. Do not flush to sewer which may contain acid. This could result in generation of toxic and explosive hydrogen sulphide gas.

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood.

Methods for cleaning up:
Cover spills with some inert absorbent. Sweep up into containers for disposal. Flush spill area with water.

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7. HANDLING AND STORAGE

Handling

This product should not be mixed with acids since evolution of toxic and explosive hydrogen sulphide gas could result. This precaution does not, of course, apply to addition of this reagent to flotation pulps in amounts customarily used in flotation.

Storage
none

Storage Temperature: Room temperature
Reason: Integrity.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS - Limits

Sodium hydroxide 1310-73-2

The Netherlands: MAC (Maximal Aanvaarde Concentratie)	2 mg/m^3 (Ceiling)
Germany: MAK (Maximale Arbeitsplatzkonzentration)	2 mg/m^3 inhalable fraction (TWA)
United Kingdom: MEL (Maximum Exposure Limits)	2 mg/m^3 (OES-STEL)
France: VLEP (Valeur Limites dExposition Professionnelle)	2 mg/m^3 (VME)
Denmark: Graensevaerdier	2 mg/m^3 (Ceiling)
Norway:	2 mg/m^3 (Ceiling)
Sweden: Hygieniska Gransvarden	2 mg/m^3 (Ceiling)
ACGIH (TLV)	2 mg/m^3 (Ceiling)

Engineering measures:
Utilize a closed system process where feasible.
Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

Respiratory protection:
For operations where inhalation exposure can occur, use an approved respirator recommended by an industrial hygienist after an evaluation of the operation. Where inhalation exposure can not occur, no respiratory protection is required.
A full facepiece respirator also provides eye and face protection.

Eye protection:
Prevent eye and skin contact.
Provide eye wash fountain and safety shower in close proximity to points of potential exposure.
Wear eye/face protection such as chemical splash proof goggles or face shield.

Skin Protection:
Prevent contamination of skin or clothing when removing protective equipment.
Wear impermeable gloves and suitable protective clothing.

Additional advice:
Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use.
Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Colour:	amber-brown
Appearance:	liquid
Odour:	sulphur
Boiling Point:	Not available
Melting Point:	Not available
Vapour pressure:	similar to water
Specific Gravity/Density:	1.12 @ 20 °C
Vapour density:	similar to water
Percent Volatile (% by wt.):	~50
pH:	>12
Saturation In Air (% By Vol.):	similar to water
Evaporation rate:	similar to water
Solubility In Water:	Complete
Volatile Organic Content (EU):	Not available
Flash point:	>93 °C Setaflash Closed Cup
Flammable Limits (% By Vol):	Not available
Autoignition temperature:	Not available
Decomposition temperature:	Not available
Partition coefficient (n-octanol/water):	Not available

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10. STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: None known

Polymerization: Will not occur

Conditions To Avoid: None known

Materials to avoid: Avoid contact with strong acids and oxidizing agents.

Hazardous decomposition products: Carbon monoxide
carbon dioxide
oxides of sulphur (includes sulphur di and tri oxides)
oxides of phosphorus

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11. TOXICOLOGICAL INFORMATION

Potential health effects

Causes burns.
Risk of serious damage to eyes.

SUBSTANCE/PREPARATION

ACUTE TOXICITY DATA

Oral	rat	Acute LD50	3760 mg/kg
dermal	rabbit	Acute LD50	>2000 mg/kg
Inhalation	rat	Acute LC50 4 hr	>20 mg/l

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	dermal	corrosive
Acute Irritation	eye	Causes serious damage

ALLERGIC SENSITIZATION

Sensitization	dermal	Not sensitizing
Sensitization	Inhalation	Not sensitizing

GENOTOXICITY

Assays for Gene Mutations

Ames Salmonella Assay	No data

HAZARDOUS INGREDIENT TOXICITY DATA

ACUTE TOXICITY DATA

Sodium diisobutyl dithiophosphate

oral (gavage) rat Acute LD50 (Actual) > 5000 mg/kg
dermal rabbit Acute LD50 (Actual) > 2000 mg/kg

Sodium diisobutyl monothiophosphate

oral (gavage) rat Acute LD50 (Actual) > 5000 mg/kg
dermal rabbit Acute LD50 (Actual) > 2000 mg/kg
Inhalation rat Acute LC50 (actual) > 2500 ppm

Sodium hydroxide

Oral rat Acute LD50 (Actual) 104 - 340 mg/kg
dermal rabbit Acute LD50 (Actual) 1250 mg/kg

LOCAL EFFECTS ON SKIN AND EYE

Sodium diisobutyl dithiophosphate
Acute Dermal Irritation corrosive
Acute Eye Irritation Causes serious damage

Sodium diisobutyl monothiophosphate
Acute Dermal Irritation rabbit corrosive
Acute Eye Irritation rabbit Causes serious damage

Sodium hydroxide
Acute Dermal Irritation corrosive
Acute Eye Irritation Causes serious damage

12. ECOLOGICAL INFORMATION

This material is not classified as dangerous for the environment.
The ecological assessment for this material is based on an evaluation of its components.

13. DISPOSAL CONSIDERATIONS

CYTEC encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, CYTEC recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

ADR/RID

Proper Shipping Name: Caustic alkali liquid, n.o.s.
Class: 8
UN Number: 1719
Packing Group: II
Transport Label Required: corrosive
Technical Name (N.O.S.): Contains dithiophosphate salt

IMO

Proper shipping name: Caustic alkali liquid, n.o.s.
Hazard Class: 8

UN Number: 1719
Packing group: II
Transport Label Required: corrosive
Technical Name (N.O.S.): Contains dithiophosphate salt

ICAO / IATA

Proper shipping name: Caustic alkali liquid, n.o.s.
Hazard Class: 8
Packing group: II
UN Number: 1719
Transport Label Required: corrosive
Packing Instructions/Maximum Net Quantity Per Package:
Passenger Aircraft: 809; 1L
Cargo aircraft: 813; 30L
Technical Name (N.O.S.): Contains dithiophosphate salt

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15. REGULATORY INFORMATION

EU MARKING AND LABELING

Symbol(s): C - Corrosive

Risk Phrases:
R34 - Causes burns.
R41 - Risk of serious damage to eyes.
R32 - Contact with acids liberates very toxic gas.

Safety Phrases:
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
S50A - Do not mix with acids or aqueous solutions of acids since evolution of poisonous and flammable hydrogen sulfide gas could result. This precaution does not, of course, apply to addition of this material to flotation pulps in the amounts normally used in flotation.
S83 - Caution - Substance not yet fully tested. For research and development purposes only.
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

INVENTORY INFORMATION

European Union (EU):
One or more components of this product are NOT included in the European Inventory of Existing Chemical Substances (EINECS). These components can be supplied in quantities of less than 100 kg/yr for research and analysis purposes.

United States (USA):
All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

Canada:
This product contains components not on the Domestic Substances List.
These components have been reported in accordance with Section 81 of the Canadian Environmental Protection Act (1999).

Australia: All components of this product are included in the Australian Inventory of Chemical Substances (AICS).

China: All components of this product are NOT included on the Chinese inventory.

Japan: All components of this product are NOT included on the Japanese (ENCS) inventory.

Korea: All components of this product are NOT included on the Korean (ECL) inventory.

Philippines: All components of this product are NOT included on the Philippine (PICCS) inventory.

16. OTHER INFORMATION

Reasons for Issue: Revised Section 2
Revised Section 11

Component Risk Phrases

Sodium hydroxide

R35 - Causes severe burns.

Sodium diisobutyl dithiophosphate

R41 - Risk of serious damage to eyes.
R34 - Causes burns.
R32 - Contact with acids liberates very toxic gas.

Sodium diisobutyl monothiophosphate

R41 - Risk of serious damage to eyes.
R34 - Causes burns.
R31 - Contact with acids liberates toxic gas.
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Randy Deskin, Ph.D., DABT +1-973-357-3100

This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- Trade name OREPREP® F-501 FROTHER

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

Uses of the Substance / Mixture

- Frother

1.3 Details of the supplier of the safety data sheet

Company

CYTEC INDUSTRIES INC.
504 CARNEGIE CENTER
PRINCETON, NJ 08540 USA
Telephone: +1-973-357-3193

1.4 Emergency telephone

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT, CONTACT CHEMTREC (24-Hour Number): 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

Disclaimer

The ® indicates a Registered Trademark in the United States and the ™ indicates a trademark in the United States. The mark may also be registered, subject of an application for registration, or a trademark in other countries.

SECTION 2: Hazards identification

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

2.1 Classification of the substance or mixture

HCS 2012 (29 CFR 1910.1200)

Flammable liquids, Category 4	H227: Combustible liquid.
Acute toxicity, Category 4	H302: Harmful if swallowed.
Acute toxicity, Category 4	H332: Harmful if inhaled.
Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Reproductive toxicity, Category 2	H361d: Suspected of damaging the unborn child.
Specific target organ systemic toxicity - single exposure, Category 3	H335: May cause respiratory irritation. (Respiratory system)

2.2 Label elements

HCS 2012 (29 CFR 1910.1200)

Pictogram

Signal Word

- Danger

Hazard Statements

- H227	Combustible liquid.
- H302 + H332	Harmful if swallowed or if inhaled.
- H315	Causes skin irritation.
- H317	May cause an allergic skin reaction.
- H318	Causes serious eye damage.
- H335	May cause respiratory irritation.
- H361d	Suspected of damaging the unborn child.

Precautionary Statements

Prevention

- P201	Obtain special instructions before use.
- P202	Do not handle until all safety precautions have been read and understood.
- P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
- P264	Wash skin thoroughly after handling.
- P270	Do not eat, drink or smoke when using this product.
- P271	Use only outdoors or in a well-ventilated area.
- P272	Contaminated work clothing must not be allowed out of the workplace.
- P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

- P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
- P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- 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 call a POISON CENTER/doctor.
- P308 + P313	IF exposed or concerned: Get medical advice/ attention.
- P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
- P362	Take off contaminated clothing and wash before reuse.
- P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage

- P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235	Store in a well-ventilated place. Keep cool.
- P405	Store locked up.

Disposal

- P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

- H401: Toxic to aquatic life.
- H411: Toxic to aquatic life with long lasting effects.

SECTION 3: Composition/information on ingredients

3.1 Substance

- Not applicable, this product is a mixture.

3.2 Mixture

- Chemical nature Mineral processing reagent

Hazardous Ingredients and Impurities

Chemical name	Identification number CAS-No.	Concentration [%]
Aliphatic alcohol mixture	*****	<= 50
Mixed alcohols, aldehydes and esters	*****	30 - 40
1-Hexanol	111-27-3	<= 30
1-Hexanol, 2-ethyl-	104-76-7	<= 20
Hexanal, 2-ethyl-	123-05-7	<= 10
Substituted acrolein	*****	<= 10
1-Butanol	71-36-3	<= 2.5
Diols	*****	<= 2.5
Alkyl alcohol	*****	<= 2.5
2-Methylhexanol	624-22-6	<= 2.5

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

SECTION 4: First aid measures

4.1 Description of first-aid measures

In case of inhalation

- Quickly move the person away from the contaminated area. Make the affected person rest.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- Be prepared to provide first aid or medical support if necessary.

In case of skin contact

- Wash off immediately with plenty of water for at least 15 minutes.
- Use appropriate protective equipment when treating a contaminated person.
- Always obtain medical attention.
- Show this sheet to the doctor.
- Be prepared to provide first aid or medical support if necessary.

In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Keep eye wide open while rinsing.
- Show this sheet to the doctor.

- Always obtain medical advice, even if there are no symptoms.
- Be prepared to provide first aid or medical support if necessary.

In case of ingestion

- Do NOT induce vomiting.
- Immediate medical attention is required.
- Show this sheet to the doctor.
- Do not give anything to drink.
- Be prepared to provide first aid or medical support if necessary.

4.2 Most important symptoms and effects, both acute and delayed

Effects

- Effects on health may appear after exposure.
- The effects will depend on target organs.
- Chronic exposure is suspected of causing effects on fertility or on the unborn child on basis of animal data. Effects on human have not been proven.
- Chronic exposure may cause allergic dermatitis.
- Exposure may cause allergic rhinitis, conjunctivitis, asthma or shock.
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.
- In case of inhalation, irritation/corrosion of the respiratory tract.
- Risk of respiratory disorder
- bronchitis
- Nose bleeding
- Chemical pneumonitis
- pulmonary edema
- May cause irreversible skin damage.
- Chronic exposure may cause dermatitis.
- May cause irreversible eye damage.
- Loss of the eye

Symptoms

- Symptoms will depend on the target organs.
- Inhalation may provoke the following symptoms:
- Cough
- Breathing difficulties
- Irritation
- Redness
- Swelling of tissue
- Ingestion may provoke the following symptoms:
- Nausea
- Diarrhea
- Abdominal pain
- Asphyxia
- Unconsciousness
- May cause respiratory tract irritation.
- allergic rhinitis
- Severe allergic skin reactions, bronchiospasm and anaphylactic shock
- Itching
- Dermatitis
- Causes skin burns.
- Lachrymation
- Conjunctivitis
- Causes eye burns.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

- Be aware to maintain life support if necessary.
- Take victim immediately to hospital.
- Immediate medical attention is required.
- Consult with an ophthalmologist immediately in all cases.
- Burns must be treated by a physician.
- Treat symptomatically.
- Contact a poison control center.
- Keep under medical supervision for at least 48 hours.
- Contact the occupational physician in case of exposure.

SECTION 5: Firefighting measures

Flash point	>=141.1 °F (60.6 °C) Pensky-Martens closed cup Solvent, The product itself has not been tested.
Autoignition temperature	No data available
Flammability / Explosive limit	No data available

5.1 Extinguishing media

Suitable extinguishing media

- Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media

- High volume water jet

5.2 Special hazards arising from the substance or mixture

- Under fire conditions:
- Will burn
- On combustion, toxic gases are released.

5.3 Advice for firefighters

Special protective equipment for fire-fighters

- In the event of fire, wear self-contained breathing apparatus.
- Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
- For further information refer to section 8 "Exposure controls / personal protection."

Specific fire fighting methods

- Cool containers/tanks with water spray.
- Do not use a solid water stream as it may scatter and spread fire.

Further information

- Standard procedure for chemical fires.
- Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
- Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Where exposure level is not known, wear approved, positive pressure, self-contained respirator.
- Where exposure level is known, wear approved respirator suitable for level of exposure.
- In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood.

6.2 Environmental precautions

- Stop the leak. Turn leaking containers leak-side up to prevent the escape of liquid.
- Contain the spilled material by diking.
- Do not let product enter drains.
- Do not allow uncontrolled discharge of product into the environment.

- Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies

6.3 Methods and materials for containment and cleaning up

- Remove all sources of ignition.
- Stop leak if safe to do so.
- Keep in properly labeled containers.
- Keep in suitable, closed containers for disposal.
- Wash nonrecoverable remainder with large amounts of water.
- Soak up with inert absorbent material and dispose of as hazardous waste.
- Decontaminate tools, equipment and personal protective equipment in a segregated area.
- Dispose of in accordance with local regulations.
- Never return spills in original containers for re-use.

6.4 Reference to other sections

- 7. HANDLING AND STORAGE
- 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
- 13. DISPOSAL CONSIDERATIONS

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Containers must be bonded and grounded when pouring or transferring material.
- This material contains a flammable or combustible liquid and vapor.
- Do not release to water.

Hygiene measures

- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions

- Observe the general rules of industrial fire protection.
- Areas containing this material should have fire safe practices and electrical equipment in accordance with applicable regulations and/or guidelines. Standards are primarily based on the material`s flashpoint, but may also take into account properties such as miscibility with water or toxicity. All local and national regulations should be followed. |par In the Americas, National Fire Protection Association (NFPA) 30: Flammable and Combustible Liquids Code, is a widely used standard. NFPA 30 establishes storage conditions for the following classes of materials: Class I Flammable Liquids, Flashpoint <37.8 °C. Class II Combustible Liquids, 37.8 °C < Flashpoint <60 °C. Class IIIa Combustible Liquids, 60 °C < Flashpoint < 93 °C. Class IIIb Combustible Liquids, Flashpoint > 93 °C.
- Keep away from sources of ignition - No smoking.

Requirements for storage rooms and vessels

Recommended storage temperature: 68 °F (20 °C)

- Store away from heat.
- Keep away from sources of ignition - No smoking.
- Normal measures for preventive fire protection.
- Mixture may charge electrostatically: always use grounding leads when transferring from one container to another.
- Keep away from direct sunlight.
- To guarantee the quality and properties of the product keep according to Storage temperature and conditions.

7.3 Specific end use(s)

- no data available

SECTION 8: Exposure controls/personal protection

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

8.1 Control parameters

Components with workplace occupational exposure limits

Components	Value type	Value	Basis
1-Hexanol	WEEL	40 ppm	American Industrial Hygiene Association
	Eye irritation		
1-Butanol	C	50 ppm 150 mg/m3	National Institute for Occupational Safety and Health
	Potential for dermal absorption		
1-Butanol	TWA	20 ppm	American Conference of Governmental Industrial Hygienists
1-Butanol	TWA	100 ppm 300 mg/m3	Occupational Safety and Health Administration - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.		
1-Butanol	C	50 ppm 150 mg/m3	

	Skin

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations)

Components	CAS-No.	Concentration
1-Butanol	71-36-3	1400 ppm

8.2 Exposure controls

Control measures

Engineering measures
- Ensure adequate ventilation.
- Apply technical measures to comply with the occupational exposure limits.

Individual protection measures

Respiratory protection
- Self-contained breathing apparatus in confined spaces/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Respirator with a vapor filter (EN 141)
- Respirator with a full face mask.
- Use the indicated respiratory protection if the occupational exposure limit is exceeded.

Hand protection
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Impervious gloves

Suitable material
- Nitrile or fluorinated rubber gloves.

Eye protection
- Chemical resistant goggles must be worn.
- Tightly fitting safety goggles

Skin and body protection
- Impervious clothing
- Full protective suit
- Change working clothes after each work-shift.
- Contaminated work clothing should not be allowed out of the workplace.

Hygiene measures
- Handle in accordance with good industrial hygiene and safety practice.
- Wash hands before breaks and at the end of workday.
- When using do not eat, drink or smoke.
- Eye wash bottles or eye wash stations in compliance with applicable standards.
- Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9: Physical and chemical properties

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

9.1 Information on basic physical and chemical properties

Appearance	Physical state: liquid Color: Yellow-brown
Odor	strong Alcohol aldehyde-like
Odor Threshold	No data available
Molecular weight	Mixture
pH	Not applicable
Melting point/freezing point	Not applicable
Initial boiling point and boiling range	Boiling point/boiling range: > 257 °F (> 125 °C)
Flash point	>= 141.1 °F (60.6 °C) Pensky-Martens closed cup Solvent, The product itself has not been tested.
Evaporation rate (Butylacetate = 1)	No data available
Flammability (solid, gas)	No data available
Flammability (liquids)	No data available
Flammability / Explosive limit	No data available
Autoignition temperature	No data available
Vapor pressure	No data available
Vapor density	No data available
Density	0.89 - 0.95 g/cm3 (77 °F (25 °C))
Relative density	No data available
Solubility	Water solubility: slightly soluble
Partition coefficient: n-octanol/water	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	Not considered as oxidizing.

9.2 Other information

Corrosion of Metals	Not corrosive to metals.
Peroxides	The substance or mixture is not classified as organic peroxide.

SECTION 10: Stability and reactivity

10.1 Reactivity

- no data available

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- no data available

10.4 Conditions to avoid

- Keep away from heat, sparks and flame.

10.5 Incompatible materials

- Strong bases
- Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products

- Carbon dioxide (CO_2)
- Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity	This product is classified as acute toxicity category 4 According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute inhalation toxicity	The product has a low acute toxicity According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute dermal toxicity	The product has a low acute toxicity According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Acute toxicity (other routes of	Not applicable

administration)

Skin corrosion/irritation	Irritating to skin. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Serious eye damage/eye irritation	Risk of serious damage to eyes. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

Respiratory or skin sensitization

Aliphatic alcohol mixture	Does not cause skin sensitization.
Mixed alcohols, aldehydes and esters	Does not cause skin sensitization.
1-Hexanol	Guinea pig Does not cause skin sensitization. Published data
1-Hexanol, 2-ethyl-	Humans not sensitizing Unpublished reports
Hexanal, 2-ethyl-	Classified as a skin sensitizer sub-category 1B according to GHS criteria By analogy
Substituted acrolein	Guinea pig positive Classified as a skin sensitizer sub-category 1B according to GHS criteria
1-Butanol	By analogy Maximization Test - Guinea pig Does not cause skin sensitization. Method: OECD Test Guideline 406 Published data
Diols	Draize Test - Humans The substance or mixture is not considered to be sensitizing by skin contact. Method: Repeated Insult Patch Test Published data

Mutagenicity

Genotoxicity in vitro	Product is not considered to be genotoxic According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Genotoxicity in vivo	Product is not considered to be genotoxic According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

Carcinogenicity

The product is not considered to be carcinogenic.
According to the available data on the components.
According to the classification criteria for mixtures.
Unpublished reports and/or published data.

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

Toxicity for reproduction and development

Toxicity to reproduction / fertility

1-Butanol

Rat, male and female, Oral
Expert judgment
Published data, Unpublished reports, no impairment of fertility has been observed, No effect observed in male or female reproductive system in repeated dose tox studies .

Rat, male and female, Inhalation
Expert judgment
Published data, Unpublished reports, no impairment of fertility has been observed, No effect observed in male or female reproductive system in repeated dose tox studies .

Two-generation study - Rat, male and female, Oral
Expert judgment
By analogy, Unpublished reports, no impairment of fertility has been observed, No effect observed in male or female reproductive system in repeated dose tox studies .

Developmental Toxicity/Teratogenicity

1-Hexanol

Rat, , Inhalation
General Toxicity Maternal NOAEL: 3,500 mg/m³
Teratogenicity NOAEL:3,500mg/m³
Did not show teratogenic effects in animal experiments., The product is not considered to be embryotoxic / fetotoxic., Published data

1-Hexanol, 2-ethyl-

Rat, , Inhalation
Method: OECD Test Guideline 414
no embryotoxic or teratogenic effects have been observed, Unpublished internal reports, Published data

Rat, , Dermal exposure
Method: OECD Test Guideline 414
no embryotoxic or teratogenic effects have been observed, Unpublished reports, Published data

Rat, , Oral exposure
Method: OECD Test Guideline 414
Developmental toxicity was observed in the presence of maternal toxicity., Unpublished reports, Published data

1-Butanol	Rat, female, Oral General Toxicity Maternal NOAEL: 1,450 mg/kg Teratogenicity NOAEL:5,654mg/kg Method: according to a standardized method Published data, drinking water, Developmental toxicity was observed in the presence of maternal toxicity., no teratogenic effects have been observed Rat, female, Inhalation General Toxicity Maternal NOAEC: 24.7 mg/kg Teratogenicity NOAEC:10.8mg/kg Published data, no teratogenic effects have been observed
Diols	Rat, , Oral General Toxicity Maternal NOAEL: 1,000 mg/kg bw/day Teratogenicity NOAEL:1,000mg/kg bw/day Method: OECD Test Guideline 414 Gavage, Developmental toxicity was observed in the presence of maternal toxicity., Published data

STOT

STOT-single exposure	Target Organs: Respiratory system The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation according to GHS criteria. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
STOT-repeated exposure	The substance or mixture is not considered to cause damage to organs through prolonged or repeated exposure. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data. The product itself has not been tested.

Experience with human exposure

Experience with human exposure : Inhalation

No data is available on the product itself.

Experience with human exposure : Skin contact

No data is available on the product itself.

Experience with human exposure : Eye contact

No data is available on the product itself.

Experience with human exposure : Ingestion

No data is available on the product itself.

Aspiration toxicity	No aspiration toxicity classification, According to the available data on the components, According to the classification criteria for mixtures.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish	The product itself has not been tested.
Acute toxicity to daphnia and other aquatic invertebrates	The product itself has not been tested.
Toxicity to aquatic plants	The product itself has not been tested.
Toxicity to microorganisms	The product itself has not been tested.
Chronic toxicity to fish	The product itself has not been tested.
Chronic toxicity to daphnia and other aquatic invertebrates	The product itself has not been tested.

Sediment compartment

Toxicity to benthic organisms	The product itself has not been tested.

Terrestrial Compartment

Toxicity to soil dwelling organisms	The product itself has not been tested.
Toxicity to terrestrial plants	The product itself has not been tested.
Toxicity to above ground organisms	The product itself has not been tested.

12.2 Persistence and degradability

Abiotic degradation

Stability in water	Conclusion is not possible for a mixture as a whole.
Photodegradation	Conclusion is not possible for a mixture as a whole.
Other Physicochemical reactions	Conclusion is not possible for a mixture as a whole.

Physical- and photo-chemical elimination

Physico-chemical removability	Conclusion is not possible for a mixture as a whole.

Biodegradation

Biodegradability	As (bio)degradability is not relevant for mixtures, all the components of the mixture were assessed individually (rapid degradability assessment available below).
Ratio BOD / COD	Conclusion is not possible for a mixture as a whole.
Ratio BOD / ThOD	Conclusion is not possible for a mixture as a whole.
Biochemical Oxygen Demand (BOD)	Conclusion is not possible for a mixture as a whole.
Dissolved organic carbon (DOC)	Conclusion is not possible for a mixture as a whole.
Chemical Oxygen Demand (COD)	Conclusion is not possible for a mixture as a whole.
Adsorbed organic bound halogens (AOX)	Conclusion is not possible for a mixture as a whole.
Degradability assessment	Conclusion is not possible due to incomplete or heterogeneous data on the components Unpublished reports Published data

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water	Conclusion is not possible for a mixture as a whole.
Bioconcentration factor (BCF)	As bioaccumulation is not relevant for mixtures, all the components of the mixture were assessed individually. Conclusion is not possible due to incomplete or heterogeneous data on the components Unpublished reports Published data

12.4 Mobility in soil

Adsorption potential (Koc)	Conclusion is not possible for a mixture as a whole.
Known distribution to environmental compartments	Conclusion is not possible due to incomplete or heterogeneous data on the components

12.5 Results of PBT and vPvB assessment	According to the available data on the components This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT). This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Ecotoxicity assessment

Short-term (acute) aquatic hazard	Toxic to aquatic life. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.
Long-term (chronic) aquatic hazard	Toxic to aquatic life with long lasting effects. According to the available data on the components. According to the classification criteria for mixtures. Unpublished reports and/or published data.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

- The Company encourages the recycle, recovery and reuse of materials, where permitted. If disposal is necessary, The Company recommends that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

SECTION 14: Transport information

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification.
The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

DOT

14.1 UN number	NA 1993
14.2 Proper shipping name	COMBUSTIBLE LIQUID, N.O.S. (2-Ethylhexanol, 2-Ethylhexanal)
14.3 Transport hazard class	Combustible liquid.
14.4 Packing group	
Packing group	III
ERG No	128
14.5 Environmental hazards	YES
Marine pollutant	Marine Pollutant (mixed alcohols, aldehydes and esters)

14.6 Special precautions for user

Remarks	:	The combustible liquid classification only applies when shipped in package sizes >119 gallons.

TDG

14.1 UN number	UN 3082
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (mixed alcohols, aldehydes and esters)
14.3 Transport hazard class	9
Label(s)	9
14.4 Packing group	
Packing group	III
ERG No	171
14.5 Environmental hazards	YES
Marine pollutant	Marine Pollutant

NOM

14.1 UN number	UN 3082
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (mixed alcohols, aldehydes and esters)
14.3 Transport hazard class	9
Label(s)	9
14.4 Packing group	
Packing group	III
ERG No	171
14.5 Environmental hazards	YES
Marine pollutant	

IMDG

14.1 UN number	UN 3082
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (mixed alcohols, aldehydes and esters)
14.3 Transport hazard class	9
Label(s)	9
14.4 Packing group	
Packing group	III
14.5 Environmental hazards	YES
Marine pollutant	

14.6 Special precautions for user
EmS F-A , S-F

For personal protection see section 8.

IATA

14.1 UN number	UN 3082
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (mixed alcohols, aldehydes and esters)
14.3 Transport hazard class	9
Label(s):	9
14.4 Packing group	
Packing group	III
Packing instruction (cargo aircraft)	964
Max net qty / pkg	450.00 L
Packing instruction (passenger aircraft)	964
Max net qty / pkg	450.00 L
14.5 Environmental hazards	YES

14.6 Special precautions for user
For personal protection see section 8.

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

SECTION 15: Regulatory information

15.1 Notification status

Inventory Information	Status
United States TSCA Inventory	- Listed on Inventory
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- When purchased from a European Solvay legal entity, this product is compliant with the registration provisions of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, and/or registered. When purchased from a legal entity outside of Europe, please contact your local representative for additional information.
Canadian Domestic Substances List (DSL)	- One or more components not listed on inventory
Australia Inventory of Chemical Substances (AICS)	- One or more components not listed on inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	- One or more components not listed on inventory
Korea. Korean Existing Chemicals Inventory (KECI)	- One or more components not listed on inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	- One or more components not listed on inventory
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	- One or more components not listed on inventory
Taiwan Chemical Substance Inventory (TCSI)	- One or more components not listed on inventory
New Zealand. Inventory of Chemical Substances	- One or more components is not listed on the NZIOC inventory. The HSNO status of the product has not been assessed.

15.2 Federal Regulations

US. EPA EPCRA SARA Title III

SARA HAZARD DESIGNATION SECTIONS 311/312 (40 CFR 370)

Flammable (gases, aerosols, liquids, or solids)	Yes
Acute toxicity (any route of exposure)	Yes
Skin corrosion or irritation	Yes
Serious eye damage or eye irritation	Yes
Respiratory or skin sensitization	Yes
Reproductive toxicity	Yes
Specific target organ toxicity (single or repeated exposure)	Yes

The categories not mentioned are not relevant for the product.

Section 313 Toxic Chemicals (40 CFR 372.65)
The following components are subject to reporting levels established by SARA Title III, Section 313:

Components	CAS-No.	Concentration
1-Butanol	71-36-3	<= 2.5%

Section 302 Emergency Planning Extremely Hazardous Substance Threshold Planning Quantity (40 CFR 355)
This material does not contain any components with a section 302 EHS TPQ.
Section 302 Emergency Planning Extremely Hazardous Substance Reportable Quantity (40 CFR 355)
This material does not contain any components with a SARA 302 RQ.

Section 304 Emergency Release Notification Reportable Quantity (40 CFR 355)
This material does not contain any components with a section 304 EHS RQ.

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

Components	CAS-No.	Reportable quantity
1-Butanol	71-36-3	5000 lb

15.3 State Regulations

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product is not sold or intended to be sold as a "consumer product" as defined under California's Proposition 65 statute and regulations. If you require information, please contact your local sales representative.

SECTION 16: Other information

NFPA (National Fire Protection Association) - Classification

Health	3 serious
Flammability	2 moderate
Instability or Reactivity	0 minimal

Date Prepared: 12/21/2018

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

- C — Ceiling limit
- TWA — 8-hr TWA
- ACGIH — American Conference of Governmental Industrial Hygienists
- OSHA — Occupational Safety and Health Administration
- NTP — National Toxicology Program
- IARC — International Agency for Research on Cancer
- NIOSH — National Institute for Occupational Safety and Health

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

SAFETY DATA SHEET

1. Identification

Product identifier **Hydrochloric Acid-20 Baume**

Other means of identification

Synonyms MURIATIC ACID

Recommended use This safety data sheet is written to provide health, safety and environmental information for people handling this formulated product in the workplace. It is not intended to provide information relevant to medicinal use of the product. In this instance patients should consult prescribing information/package insert/product label or consult their pharmacist or physician. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate safety data sheet for each ingredient.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Thatcher Company, Inc.

Address 1905 Fortune Road
Salt Lake City, UT 84104
United States

Telephone General Assistance 8-5 (801) 972-4587

E-mail Not available.

Emergency phone number Chemtrec (CCN 22106) (800) 424-9300

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Acute toxicity, oral	Category 3
Acute toxicity, inhalation	Category 2
Skin corrosion/irritation	Category 1A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May be corrosive to metals. Toxic if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. Toxic if inhaled. May cause respiratory irritation.

Precautionary statement

Prevention Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Immediately call a poison center/doctor. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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. Immediately call a poison center/doctor. Specific treatment (see this label). Wash contaminated clothing before reuse. Absorb spillage to prevent material damage.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.

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

Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Hydrochloric acid		7647-01-0	32
Other components below reportable levels			68

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Wear suitable protective equipment.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Immediately evacuate personnel to safe areas. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

This product is miscible in water. Should not be released into the environment.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water .

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not taste or swallow. Avoid prolonged exposure. Do not get this material on clothing. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in corrosive resistant container with a resistant inner liner. Store in original tightly closed container. Keep only in the original container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Refrigeration recommended. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
hydrochloric acid	Ceiling	7 mg/m3 5 ppm

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3 5 ppm

US. ACGIH Threshold Limit Values

Material	Type	Value
hydrochloric acid	Ceiling	2 ppm

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
hydrochloric acid	Ceiling	7 mg/m3 5 ppm

Components	Type	Value
Hydrochloric acid (CAS 7647-01-0)	Ceiling	7 mg/m3 5 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

Skin protection

Hand protection

Chemical resistant gloves.

Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended. Chemical resistant gloves.
Respiratory protection	Chemical respirator with organic vapor cartridge and full facepiece.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless to light yellow.
Odor	Pungent
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-94 °F (-70 °C)
Initial boiling point and boiling range	-121.09 °F (-85.05 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.0000001 kPa at 25 °C 0.00001 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	9.68 lb/gal estimated
Percent volatile	68 % estimated
Specific gravity	1.15 estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals. Contact with incompatible materials.
Incompatible materials	This product may react with reducing agents. Incompatible with bases. Amines.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation Toxic by inhalation.

Skin contact Causes severe skin burns.

Eye contact Causes serious eye damage.

Ingestion Toxic if swallowed. Causes digestive tract burns.

Symptoms related to the physical, chemical and toxicological characteristics Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Toxic by inhalation. Toxic if swallowed. May cause respiratory irritation.

Product	Species	Test Results
hydrochloric acid		
Acute		
Dermal		
LD50	Mouse	1449 mg/kg
Inhalation		
LC50	Mouse	1108 ppm, 1 Hours
	Rat	3124 ppm, 1 Hours
Oral		
LD50	Rabbit	900 mg/kg

Components	Species	Test Results
Hydrochloric acid (CAS 7647-01-0)		
Acute		
Dermal		
LD50	Mouse	1449 mg/kg
Inhalation		
LC50	Mouse	1108 ppm, 1 Hours
	Rat	3124 ppm, 1 Hours
Oral		
LD50	Rabbit	900 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Hydrochloric acid (CAS 7647-01-0) 3 Not classifiable as to carcinogenicity to humans.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Respiratory tract irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Components		Species	Test Results
Hydrochloric acid (CAS 7647-01-0)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	282 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN1789

UN proper shipping name Hydrochloric acid, solution (Hydrochloric acid RQ = 15625 LBS)

Transport hazard class(es)

Class 8

Subsidiary risk -

Label(s) 8

Packing group III

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions A3, IB3, T4, TP1, TP12

Packaging exceptions 154

Packaging non bulk 203

Packaging bulk 241

DOT BULK

BULK

UN number UN1789

UN proper shipping name Hydrochloric acid, solution (Hydrochloric acid RQ = 15625 LBS)

Transport hazard class(es)

Class 8

Label(s) 8

Packing group III

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions	A3, IB3, T4, TP1, TP12
Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241

IATA

UN number	UN1789
UN proper shipping name	Hydrochloric acid solution (Hydrochloric acid)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1789
UN proper shipping name	HYDROCHLORIC ACID SOLUTION (Hydrochloric acid)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

DOT; DOT Bulk packaging type

IATA; IMDG

15. Regulatory information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydrochloric acid (CAS 7647-01-0) Listed.

SARA 304 Emergency release notification

Hydrochloric acid (CAS 7647-01-0) 5000 LBS

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
Hydrochloric acid	7647-01-0	5000	500 lbs		

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Hydrochloric acid	7647-01-0	32

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hydrochloric acid (CAS 7647-01-0)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrochloric acid (CAS 7647-01-0)

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Hydrochloric acid (CAS 7647-01-0) 20 %WV

DEA Exempt Chemical Mixtures Code Number

Hydrochloric acid (CAS 7647-01-0) 6545

US state regulations

US - New Jersey RTK - Substances: Listed substance

Hydrochloric acid (CAS 7647-01-0)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Hydrochloric acid (CAS 7647-01-0)

US. Massachusetts RTK - Substance List

Hydrochloric acid (CAS 7647-01-0)

US. New Jersey Worker and Community Right-to-Know Act

Hydrochloric acid (CAS 7647-01-0)

US. Pennsylvania RTK - Hazardous Substances

Hydrochloric acid (CAS 7647-01-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Hydrochloric acid (CAS 7647-01-0)

US. Rhode Island RTK

Hydrochloric acid (CAS 7647-01-0)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 02-25-2015

Revision date 11-09-2018

Version # 09

NFPA ratings Health: 4
Flammability: 0
Instability: 0

NFPA ratings

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.

Revision Information Product and Company Identification: Product Codes
Physical & Chemical Properties: Multiple Properties

PROSPEC CHEMICALS
P.O. BOX 3478
176 STURGEON DRIVE
STURGEON COUNTY, ALBERTA, T8L 2T4
CANADA

PRODUCT: KAX 51

SECTION 01: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURERS.....	PROSPEC CHEMICALS P.O. BOX 3478 176 STURGEON DRIVE STURGEON COUNTY, ALBERTA T8L 2T4 (780) 992-1522
PRODUCT NAME.....	KAX 51
CHEMICAL NAME:.....	MIXTURE. SEE SECTION 3 "HAZARDOUS INGREDIENTS " .
CHEMICAL FAMILY:.....	SALTS OF CARBONIC ACID DITHIO ESTERS.
CHEMICAL FORMULA:.....	NOT APPLICABLE.
MOLECULAR WEIGHT:.....	NOT APPLICABLE.
MATERIAL USE:.....	ORE PROCESSING.
24 HOUR EMERGENCY PHONE NUMBER:	CANUTEC (613) 996-6666.

SECTION 02: HAZARDS IDENTIFICATION

HAZARD CLASSIFICATION.....	SELF-HEATING SUBSTANCES AND MIXTURES — CATEGORY 1 . ACUTE TOXICITY (ORAL) — CATEGORY 4. ACUTE TOXICITY (DERMAL) — CATEGORY 4. EYE IRRITATION — CATEGORY 2A. SKIN IRRITATION — CATEGORY 2.
SIGNAL WORD.....	DANGER.
HAZARD STATEMENT.....	H251 SELF-HEATING: MAY CATCH FIRE. H302+H312 HARMFUL IF SWALLOWED OR IN CONTACT WITH SKIN. H315 CAUSES SKIN IRRITATION. H319 CAUSES SERIOUS EYE IRRITATION.
PRECAUTIONARY STATEMENT	
PREVENTION.....	P235+P410 KEEP COOL. PROTECT FROM SUNLIGHT. P264 WASH SKIN AREA THOROUGHLY AFTER HANDLING. P270 DO NO EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT. P280 WEAR PROTECTIVE GLOVES/PROTECTIVE CLOTHING/EYE PROTECTION/FACE PROTECTION.
RESPONSE.....	P301+P312 IF SWALLOWED: CALL A POISON CENTER OR DOCTOR/PHYSICIAN IF YOU FEEL UNWELL. P330 RINSE MOUTH. P302+P352 IF ON SKIN: WASH WITH PLENTY OF SOAP AND WATER. P332+P313 IF SKIN IRRITATION OCCURS: GET MEDICAL ADVICE/ATTENTION. P362 TAKE OFF CONTAMINATED CLOTHING. P305+P351+P338 IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING. P337+P313 IF EYE IRRITATION PERSISTS: GET MEDICAL ADVICE/ATTENTION.
STORAGE.....	P407 MAINTAIN AIR GAP BETWEEN STACKS/PALLETS. P420 STORE SEPARATELY.
DISPOSAL.....	P501 DISPOSE OF CONTENTS AND CONTAINER IN ACCORDANCE WITH LOCAL REGULATORY REQUIREMENTS. .
OTHER HAZARDS.....	NONE.

SECTION 03: COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS	CAS #	WT. %
ISOAMYL ALCOHOL	123-51-3	1-5
POTASSIUM AMYL XANTHATE	2720-73-2	60-100
POTASSIUM HYDROXIDE	1310-58-3	1-5

SECTION 04: FIRST AID MEASURES

SKIN:.....	SEEK MEDICAL ATTENTION IMMEDIATELY. REMOVE ALL CONTAMINATED CLOTHING. WASH SKIN AREAS FOR 60 MINUTES OR UNTIL CHEMICAL IS REMOVED WITH SOAP AND WATER. DO NOT USE SOLVENTS. LAUNDER CLOTHES BEFORE RE-USE. POTASSIUM HYDROXIDE AT A CONCENTRATION OF 5% IS A SKIN IRRITANT.

PRODUCT: KAX 51

SECTION 04: FIRST AID MEASURES

EYE:.....	FLUSH CONTINUOUSLY WITH WATER FOR 15 MINUTES. FORCIBLY HOLD EYELIDS APART TO ENSURE IRRIGATION OF ALL EYE TISSUE. IF IRRITATION PERSISTS GET MEDICAL ATTENTION.
INHALATION:.....	REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION, OR CARDIOPULMONARY RESUSCITATION (CPR) IF REQUIRED. IF BREATHING IS DIFFICULT, GIVE OXYGEN. KEEP WARM AND QUIET, AND OBTAIN MEDICAL ATTENTION.
INGESTION:.....	IF CONSCIOUS:. DO NOT INDUCE VOMITING. HAVE VICTIM RINSE MOUTH THOROUGHLY WITH WATER. GIVE A MINIMUM OF 500 mL WATER. IF INGESTION OF A LARGE AMOUNT DOES OCCUR SEEK MEDICAL ATTENTION. IF VOMITING OCCURS NATURALLY, HAVE VICTIM LEAN FORWARD TO REDUCE RISK OF ASPIRATION. IF UNCONSCIOUS:. IF INGESTION OF A LARGE AMOUNT DOES OCCUR SEEK MEDICAL ATTENTION.
NOTES TO PHYSICIAN:.....	THERE IS NO SPECIFIC ANTIDOTE. TREATMENT OF EXPOSURE SHOULD BE DIRECTED AT THE CONTROL OF SYMPTOMS AND THE CLINICAL CONDITION OF THE PATIENT.
GENERAL ADVICE:.....	CONSULT A PHYSICIAN AND/OR THE NEAREST POISON CONTROL CENTRE FOR ALL BUT MINOR INSTANCES OF INHALATION OR SKIN CONTACT. AVOID HIGH LEVELS OF DUST, USE DUST MASK OR RESPIRATOR WHEN NECESSARY. PRECAUTIONS SHOULD ALWAYS BE TAKEN TO AVOID SKIN/EYE CONTACT WITH ANY CHEMICAL SUBSTANCE.

SECTION 05: FIRE FIGHTING MEASURES

MEANS OF EXTINCTION:.....	WATER. CARBON DIOXIDE. DRY CHEMICAL. LARGE MASSES EXTINGUISHED WITH CARBON DIOXIDE OR DRY CHEMICAL MAY REIGNITE. WATER IS THE BEST EXTINGUISHER, AS IT WILL DISSOLVE THE PRODUCT AND ELIMINATE THE RISK OF REIGNITION.
HAZARDOUS COMBUSTION PRODUCTS.	OXIDES OF POTASSIUM. OXIDES OF SULPHUR. OXIDES OF CARBON (CO,CO2). CARBONYL SULPHIDE. CARBON DISULPHIDE. POTASSIUM SULPHIDE. AMYL ALCOHOL.
FLAMMABLE LIMITS IN AIR.....	VAPOURS FROM DECOMPOSITION (CARBON DISULPHIDE) ARE EXTREMELY FLAMMABLE.
IF YES, UNDER WHICH CONDITIONS?.....	SOLID XANTHATE WHEN EXPOSED TO HEAT AND/OR MOISTURE CAUSES DECOMPOSITION, AND VAPOURS ARE VERY FLAMMABLE AND SPONTANEOUS COMBUSTION CAN RESULT.
T.D.G. FLAMMABLE CLASS:.....	CLASS 4.2, SELF-HEATING SUBSTANCES.
SPECIAL PROCEDURES:.....	SELF-CONTAINED, POSITIVE PRESSURE BREATHING APPARATUS AND PROPER PROTECTIVE CLOTHING SHOULD BE WORN IN FIGHTING FIRES INVOLVING ANY CHEMICAL SUBSTANCE. HEAT WILL DECOMPOSE BOTH SOLID AND LIQUID XANTHATES YIELDING CARBON DISULPHIDE WHICH IS EXTREMELY FLAMMABLE AND TOXIC.

SECTION 06: ACCIDENTAL RELEASE MEASURES

CLEAN-UP PROCEDURES, LEAK/SPILL:...	IF IN THE LIQUID STATE:. STOP SPILL AT SOURCE. CONTAIN ANY SPILLED MATERIAL TO PREVENT DISCHARGE INTO THE ENVIRONMENT. ELIMINATE ALL SOURCES OF IGNITION. PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM THE AREA. ABSORB WITH INERT DRY MATERIAL. PUT INTO AN APPROVED METAL SALVAGE DRUM FOR DISPOSAL. IF IN THE SOLID STATE:. ELIMINATE ALL SOURCES OF IGNITION. RESTRICT ACCESS TO AREA UNTIL COMPLETION OF CLEAN-UP. ENSURE CLEAN-UP IS CONDUCTED BY TRAINED PERSONNEL ONLY. DO NOT TOUCH SPILLED MATERIAL. DO NOT USE WATER ON SPILLED MATERIAL AS HEAT WILL BE GENERATED. PUT SPILLED MATERIAL INTO APPROVED SALVAGE DRUMS FOR DISPOSAL. FLUSH CLEANED AREA WITH WATER, MAKING SURE NO WATER ENTERS XANTHATE CONTAINERS.

SECTION 07: HANDLING AND STORAGE

HANDLING PROCEDURES AND EQUIPMENT:	AVOID ALL SKIN CONTACT. AVOID CONTACT WITH EYES. AVOID BREATHING VAPOURS. EQUIPMENT SHOULD BE GROUNDED TO AVOID STATIC DISCHARGE. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. USE NON-SPARKING TOOLS AND DO NOT SMOKE.
STORAGE NEEDS:.....	STORE SOLID XANTHATES UNDER COOL, DARK, DRY CONDITIONS. LIQUID PRODUCTS MUST BE KEPT COOL AND USED AS QUICKLY AS POSSIBLE.
SPECIAL SHIPPING INSTRUCTIONS.....	USE PRECAUTION WHEN HANDLING OR SHIPPING ANY CHEMICAL SUBSTANCE. PROTECT AGAINST PHYSICAL DAMAGE.

PRODUCT: KAX 51

SECTION 08: EXPOSURE CONTROLS/PERSONAL PROTECTION

INGREDIENTS	ACGIH TLV TWA	ACGIH TLV STEL	OSHA PEL PEL	OSHA PEL STEL	NIOSH REL
ISOAMYL ALCOHOL	100 ppm TLV, TWA, 125 ppm STEL (ACGIH)				
POTASSIUM AMYL XANTHATE	NOT AVAILABLE				
POTASSIUM HYDROXIDE	2 mg/m3 (ceiling) ACGIH				

EXPOSURE LIMIT OF MATERIAL:..... TLV FOR DUST: 2 mg/m3. CARBON DISULPHIDE (DECOMPOSITION PRODUCT) ACGIH TLV: TWA: 1ppm 8 hour(s).

PROTECTIVE EQUIPMENT:

GLOVES/TYPE:..... WEAR IMPERVIOUS GLOVES (E.G. NEOPRENE, RUBBER).

RESPIRATOR/TYPE:..... IF RESPIRATORY PROTECTION IS REQUIRED, INSTITUTE A COMPLETE RESPIRATORY PROTECTION PROGRAM INCLUDING SELECTION, FIT TESTING, TRAINING, MAINTENANCE AND INSPECTION. REFER TO THE CAS STANDARD Z94.4-M1982 "SELECTION, CARE, AND USE OF RESPIRATORS" WHICH IS AVAILABLE FROM CANADIAN STANDARDS ASSOCIATION, REXDALE ONTARIO, M9W 1R3. IF VAPOURS ARE PRESENT, USE A NIOSH OR MSHA APPROVED RESPIRATOR FOR ACIDIC VAPOURS OR A SELF CONTAINED BREATHING APPARATUS.

EYE/TYPE:..... SAFETY GLASSES. FACE SHIELD.

FOOTWEAR/TYPE:..... SAFETY BOOTS.

CLOTHING/TYPE:..... WEAR ADEQUATE PROTECTIVE CLOTHES.

OTHER/TYPE:..... AN EYE WASH STATION AND SAFETY SHOWER SHOULD BE NEAR THE WORK AREA.

ENGINEERING CONTROLS:..... EXPLOSION PROOF MECHANICAL VENTILATION TO LIMIT VAPOUR CONCENTRATION BELOW T.L.V.

SECTION 09: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:..... SOLID.

ODOUR/APPEARANCE:..... YELLOW TO YELLOW-GREEN.

ODOUR THRESHOLD:..... NOT AVAILABLE.

pH:..... 10% H20 10.5 +/- 0.1.

FREEZING POINT °C:..... NOT APPLICABLE.

BOILING POINT °C:..... NOT APPLICABLE. M.P. 255 - 280 (decomposes).

FLASH POINT, F, COC..... NOT APPLICABLE. -30 °C FOR CARBON DISULPHIDE VAPOURS.

EVAPORATION RATE:..... NOT APPLICABLE.

% VOLATILE:

BY VOLUME..... < 20.

BY WEIGHT

UPPER EXPLOSION LIMIT:..... 50% (RESIDUAL CARBON DISULPHIDE).

LOWER EXPLOSION LIMIT:..... 1.25% (RESIDUAL CARBON DISULPHIDE).

VAPOUR PRESSURE:..... NOT APPLICABLE.

REL. VAPOUR DENSITY..... NOT APPLICABLE.

SPECIFIC GRAVITY:..... NOT APPLICABLE.

SOLUBILITY IN WATER (20 °C):..... SOLUBLE.

COEFFICIENT WATER/OIL DIST.:..... NOT AVAILABLE.

AUTO IGNITION TEMPERATURE °C:..... 90 (CARBON DISULPHIDE VAPOURS).

SECTION 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY:

YES.

NO, WHICH CONDITIONS?..... SOLID XANTHATES ARE STABLE WHEN KEPT COOL AND DRY, EXPOSURE TO HEAT CAUSES DECOMPOSITION. ACIDS AND OXIDIZING AGENTS ACCELERATE AGING. IN SOLUTION, XANTHATES WILL DECOMPOSE SLOWLY EVEN AT ROOM TEMPERATURE.

COMPATIBILITY WITH OTHER SUBSTANCES:

YES.

NO, WHICH ONES?..... STRONG ACIDS. OXIDIZING AGENTS.

REACTS VIOLENTLY WITH..... VAPORS OR DUSTS MAY EXPLODE.

RATE OF BURNING:..... NOT AVAILABLE.

EXPLOSIVE POWER:..... NOT AVAILABLE.

EXPLOSION DATA:

SENSITIVITY TO STATIC DISCHARGE:..... CARBON DISULPHIDE VAPOURS WHICH MAY EVOLVE DUE TO DECOMPOSITION CAN BE READILY IGNITED BY STATIC DISCHARGE.

SENSITIVITY TO IMPACT:..... NOT AVAILABLE.

PRODUCT: KAX 51

SECTION 10: STABILITY AND REACTIVITY

DECOMPOSITION:..... CARBON DISULPHIDE. TRITHIOCARBONATE. AMYL ALCOHOL.

SECTION 11: TOXICOLOGICAL INFORMATION

INGREDIENTS	LC50	LD50
ISOAMYL ALCOHOL	NOT AVAILABLE	ORAL RAT 1300 mg/Kg DERMAL RABBIT 3224 mg/Kg
POTASSIUM AMYL XANTHATE	NOT AVAILABLE	ORAL RAT 1000 mg/Kg
POTASSIUM HYDROXIDE	NOT AVAILABLE	ORAL RAT 273 mg/Kg

RISK PHRASES..... WARNING! CONTAINER MAY RETAIN FLAMMABLE AND TOXIC VAPOURS DUE TO DECOMPOSITION. WARNING! THIS PRODUCT IS CONSIDERED TOXIC, IS A SKIN AND EYE IRRITANT, USE PROPER PROTECTIVE MEASURES.

ROUTE OF ENTRY:
IRRITANCY OF MATERIAL:..... IRRITANT. REFER TO ROUTE OF ENTRY, SECTION 3.
SKIN CONTACT:..... DUST OR VAPOURS WILL IRRITATE. XANTHATE SOLUTIONS WILL CAUSE SEVERE SKIN IRRITATION.
SKIN ABSORPTION:..... NOT AVAILABLE.
EYE ..... DUST OR VAPOURS WILL IRRITATE. POTASSIUM HYDROXIDE HAS BEEN SHOWN TO BE CORROSIVE TO THE EYES OF EXPERIMENTAL ANIMALS. XANTHATE SOLUTIONS WILL CAUSE SEVERE EYE IRRITATION.
INGESTION:..... CAN CAUSE GASTRO-INTESTINAL IRRITATION, NAUSEA, VOMITING AND DIARRHEA.
INHALATION ..... AIRBORNE DUST MAY CAUSE IRRITATION OF RESPIRATORY AIRWAYS. VAPOURS FROM DECOMPOSITION (CARBON DISULPHIDE) CAN CAUSE SEVERE DISTURBANCES OF MOOD AND BEHAVIOR, INCLUDING EXCITATION, ANGER AND VIOLENT DREAMS.
MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE TO THIS PRODUCT HAVE NOT BEEN ESTABLISHED. UNNECESSARY EXPOSURE TO THIS PRODUCT OR ANY OTHER CHEMICAL SHOULD BE AVOIDED.
EFFECTS OF ACUTE EXPOSURE:..... REFER TO ROUTE OF ENTRY.
EFFECTS OF CHRONIC EXPOSURE:..... REFER TO ROUTE OF ENTRY.
INHALATION CHRONIC:..... HIGH CONCENTRATIONS OF DECOMPOSITION PRODUCT (CARBON DISULPHIDE) CAN CAUSE DEATH.

REPRODUCTIVE EFFECTS:
REPRODUCTIVE TOXICITY:..... NOT AVAILABLE.
SENSITIZING CAPABILITY OF MATERIAL: NOT AVAILABLE.
SYNERGISTIC MATERIALS:..... NOT AVAILABLE.
MUTAGENICITY:..... NOT AVAILABLE.
TERATOGENICITY & EMBRYOTOXICITY:. NOT AVAILABLE.
CARCINOGENICITY OF MATERIAL:..... NOT AVAILABLE.
ACUTE ORAL TOXICITY..... NOT AVAILABLE. SEE SECTION 3, HAZARDOUS INGREDIENTS.
LC 50 OF MATERIAL, SPECIES & ROUTE: NOT AVAILABLE.

SECTION 12: ECOLOGICAL INFORMATION

ENVIRONMENTAL..... NOT AVAILABLE.
BIODEGRADABILITY..... NOT AVAILABLE.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL, METHOD AND EQUIPMENT: ..... ALL WASTE FROM THIS PRODUCT INCLUDING ALL EMPTY CONTAINERS MUST BE DISPOSED OF IN ACCORDANCE WITH MUNICIPAL, PROVINCIAL AND FEDERAL REGULATIONS.

SECTION 14: TRANSPORT INFORMATION

T.D.G. CLASSIFICATION:..... CLASS 4.2 UN 3342 P.G. III.
T.D.G. SHIPPING NAME:..... XANTHATES.
T.D.G. SHIPPING INFORMATION:..... THE DANGEROUS GOODS ARE DESCRIBED IN ACCORDANCE WITH THE UN RECOMMENDATIONS.

PRODUCT: KAX 51

SECTION 15: REGULATORY INFORMATION

WHMIS CLASSIFICATION:.....	CLASS B DIV. 6. CLASS D DIV. 1 SUB. B. CLASS E.
CPR COMPLIANCE.....	THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL OF THE INFORMATION REQUIRED BY THE CPR.

SECTION 16: OTHER INFORMATION

MANUFACTURERS MSDS DATE:.....	NOVEMBER 18, 2005.
MSDS REVISION DATE:.....	SEPTEMBER 1, 2015.
NOTES:.....	We urge each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or to use and understand the data contained in this MSDS. To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety, (2) furnish this same information to each of its customers for the product; and (3) requests its customers to notify their employees, customers, and other users of the product of this information. The information on this Material Safety Data Sheet has been obtained from the manufacturer, and where applicable, from other reliable sources such as CCOHS and RTECS. However, CHARLES TENNANT & COMPANY (CANADA) LTD. makes no warranties, expressed or implied, as to the accuracy, completeness or accuracy of the information contained herein, and shall not held liable (regardless of fault) to anyone directly or indirectly for damages or injuries in the use of this product arising out of or in connection with the accuracy, completeness or adequacy of such information.
PREPARED BY	Regulatory Affairs
PREPARATION DATE.....	OCT 07/2015

SAFETY DATA SHEET

CYANCO® SODIUM CYANIDE SOLUTION, MINING QUALITY 23-32% BY WT.

Doc. No.	COR-UNI-EHSS-SDS-001	Revision Date:	1/25/2016
Version	3.0 US	Print Date:	2/1/2016

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements of other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Tradename/Synonym	:	Cyanco® Sodium Cyanide Solution, Mining Quality 23-32% by wt.
Product Use	:	For Industrial Use
Function	:	Electroplating Agent Gold Mining
Company	:	Cyanco 1920 Country Place Parkway. Suite 400 Pearland, Texas 77584 USA
Medical Emergency		
US: Poison Control Center	:	800.222.1222
Transport Emergency		
US: CHEMTREC	:	800.424.9300 Customer Number: CCN6043
Canada: CANUTEC	:	613.996.6666
Product Information	:	775.623.1214 EXT 0
Telefax	:	775.623.1413
Contact Person	:	SDS Coordinator, 832.590.3644

SECTION 2. HAZARDS IDENTIFICATION

DANGER!

• Very toxic by inhalation, in contact with skin and if swallowed. • Contact with acids liberates very toxic gas. • Irritating to eyes and skin. • Very toxic to aquatic organisms. • May cause long-term adverse effects in the aquatic environment. • Causes severe eye burns. • Under the action of acids (as well as carbon dioxide) hydrocyanic acid is released which is combustible and may react with air to form explosive gas mixtures. • Hydrocyanic acid may cause all degrees of poisoning.

Precautions

Eye Contact	:	Corrosive. May cause burns resulting in permanent damage.
Skin Contact	:	Very toxic. May be fatal if absorbed through the skin.
Inhalation	:	Very toxic. May be fatal if inhaled.
Ingestion	:	Very toxic. May be fatal if swallowed.
Repeated Exposure	:	Adverse effects from long-term exposure may include: thyroid dysfunction, central nervous system effects.
Target Organs	:	Central Nervous System, Respiratory System, Thyroid
Carcinogenicity	:	None of the components in this material ≥ 0.1% are listed by OSHA, NTP, or IARC as a carcinogen.
Potential Environmental Effect	:	Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Nature : Solution in Water

Information on Ingredients / Hazardous Components

Sodium Cyanide	CAS No.	143-33-9	Percent (Wt. / Wt.) >23% - <32%
	EC No.	205-599-4	

Other Information : This material is classified as hazardous under OSHA regulations.

Information on Ingredients / Non-hazardous Components

Water	CAS-No.	7732-18-5	Percent (Wt. / Wt.) > 68% - <77%

SECTION 4. FIRST AID MEASURES

General Advice

WARNING!	If exposed to sodium cyanide, seek qualified medical attention immediately! Rescuers or medical responders should first of all protect themselves from exposure! Decontaminate the victim to prevent further absorption and exposure to rescuers and monitor vital signs.

Skin Contact	• Wash off immediately using large amounts of water (and soap if available) while removing all contaminated clothes and shoes. • May cause caustic burns to skin upon contact due to high pH. • Immediately contact or summon an emergency physician in case of intoxication symptoms.
Eye Contact	• In case of contact with the eyes, immediately flush eyes with copious amounts of water for a minimum of 15 minutes while removing clothes. • It is important to seek medical attention for all eye exposures due to potential caustic burns to the eyes. • Immediately contact or summon an emergency physician in case of intoxication symptoms. • An ophthalmologist should also be consulted for evaluation of caustic burns to the eyes. **Note**: Eye burns may not be apparent for up to 48 hours post exposure due to the caustic properties of sodium cyanide.
Inhalation	• Inhalation is possible if cyanide is in the form of aerosols, mists, dusts, or smoke. • Never perform direct mouth-to-mouth or mouth-to-nose artificial respiration. • Use artificial respiration bag or respirator due to the potential danger of poisoning the rescuers! • Maintain an open airway. • In case of breathing difficulties immediately apply oxygen. • Immediately contact an emergency physician and notify of cyanide / hydrocyanic acid poisoning.
Ingestion	• Thoroughly rinse mouth with water. • Seek professional medical care immediately. • Do not induce vomiting. • Call emergency physician immediately and notify of cyanide / hydro-cyanic acid poisoning. • Immediately transport to a medical facility.

Notes to Physician

IMPORTANT: Specific antidote and treatment may vary by region. If you are not familiar with current treatment recommendations, you should contact the Poison Control Center for your region or country for specific recommendations and guidelines.

Possible Signs of Poisoning Intoxication is classified by 2 categories:• Mild poisoning • Severe poisoning

The following symptoms are not sufficient to ensure a correct diagnosis:

Symptoms of the Central Nervous System	**Early Stage:** • headache • dizziness • drowsiness • nausea **Advanced Stage:** • seizures • coma
Pulmonary Symptoms	**Early Stage:** • dyspnea • tachypnea **Advanced Stage:** • hyperventilation • Cheyne-Stokes respiration • apnea

Cardiovascular Symptoms	**Early Stage:** • hypertension • sinus arrhythmia • atrioventricular arrhythmia • bradycardia **Advanced Stage:** • tachycardia • complex arrhythmia • cardiac arrest
Skin Symptoms	**Early Stage:** • rosy skin color **Advanced Stage:** • cyanosis
Effect on the Metabolism	Lactate acidosis: pH 7.1 and lactate level of 17 mmol/l are described.
Treatment	The treatment advice may vary by region. Contact a regional poison control center for appropriate antidote treatment used in your region.

CAUTION: This is an outline of antidotes available for informational purposes. It is important for the treating physician to be familiar with the administration of cyanide antidotes available in the country where the chemical is being used! Rapid treatment with appropriate antidote therapy is essential to saving lives during a high dose acute exposure to cyanide.

NOTE: Removal of toxic substance has equal importance to implementation of antidote therapy.

Mild Poisoning	• Treatment is dependent on clinical presentation with symptoms and history of exposure (related to dose). • 100% oxygen (medical grade) and artificial respiration if indicated. • Closely monitor patient and their vital signs (blood pressure, pulse and respirations). • Monitor the patient for onset of symptoms or deterioration of status. • Depending on the pathology and clinical findings, based on strictly monitored controls of the clinical findings, it may be necessary for the physician to implement symptom-oriented treatment for pulmonary edema prophylaxis. • X-rays of the lungs may be necessary for pulmonary edema diagnosis.
Severe Poisoning	• Specific antidote treatment can be indicated for moderate to severe cyanide intoxication. • It is important to know that there are several different types of antidotes available for treatment of cyanide intoxication in different countries.
For All Cyanide Exposure	• All cyanide exposed persons should undergo continued monitoring for several hours, even if patient feels well to ensure there are no residual or recurrent poisoning symptoms. • Artificial respiration with 100% oxygen (medical grade). • Immediate antidote administration with the legal antidote for the country of the exposure.

Commonly Used Antidotes

Met hemoglobin-Forming Agent

Nitrite Therapy: amyl nitrite, sodium nitrite, sodium thiosulfate.

For Moderate to Severe Exposures (patient still conscious)	Amyl Nitrite Aspirols: 1-3 aspirols administered as an inhalant, held 1-2 inches under the nose for 15 seconds, and then remove for 15 seconds. Read medication information insert prior to administering. Sodium nitrite 300-600 mg administered intravenously over a period of 5 to 15 minutes. Sodium thiosulfate (12.5 g - 100-500 mg/kg weight) intravenously over a period of 15-20 minutes. If patient is conscious, then sodium thiosulfate may be administered as an antidote by itself: (See antidote package information insert) Sodium thiosulfate (12.5 g - 100-500 mg/kg weight) IV may be administered depending on the clinical presentation and symptoms.

Complexing Antidote Agent

Hydroxocobalamin - commonly known as the Cyanokit®.

Treatment as Follows:	Administer hydroxocobalamin (Cyanokit®) 5 g i.v. (70 mg/kg b.w. in adults) by infusion over a period of 20-30 minutes. Administration of this dose can be repeated as required depending on the severity of poisoning. Infusion time for repeated dose: 30 minutes to 2 hours. The only permissible route of administration for hydroxocobalamin is intravenously. The physician should read the medication package information carefully to ensure proper reconstitution to liquid state and administration of antidote!

SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash Point	Not Combustible
Lower Explosion Limit	Not Applicable
Upper Explosion Limit	Not Applicable
Autoignition Temperature	Not Applicable
Suitable Extinguishing Media	Quenching Powder In case of fire in the surroundings: alkali powder quenching agent.
Unsuitable Extinguishing Media	Carbon dioxide (CO_2) must not be used for safety reasons.
Exposure Hazards During Fire Fighting	Hydrocyanic acid (hydrogen cyanide) may be released in case of fire.
Personal Protective Equipment for Fire Fighters	As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

Further Information

• Standard procedure for chemical fires. Ensure there are sufficient retaining facilities for water used to extinguish fire. • Water used to extinguish fire should not enter drainage systems, soil or stretches of water. • Contaminated fire-extinguishing water must be disposed of in accordance with the regulations issued by the appropriate local authorities. • Fire residues should be disposed of in accordance with local, state and federal regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personnel Precautions	• Wear personal protective equipment. • Keep out unprotected persons. • Keep unauthorized persons away. • Ensure sufficient ventilation. • Avoid skin contact because of the danger of skin absorption. • Make safe or remove all sources of ignition.
Environmental Precautions	• Do not allow entrance in soil, stretches of water, groundwater, drainage systems or surface water. • Cyanide-containing sewage water and solutions must be decontaminated before entering a public canal, network or stretch of water. • Do not use a neutralizing agent if runoff can enter nearby streams, rivers or other surface waterways. • On contact with acid, hydrogen cyanide in produced.
Methods for Cleanup in the Event of a Spill	• Absorb with liquid-binding material e.g., inert absorbent. • Pick up mechanically. • Collect in suitable containers. • Dispose of absorbed material in accordance with local, state and federal regulations. • Waste to be packed like clean product and to be properly labeled. • Identification label on packages not to be removed until recycled.

SECTION 7. HANDLING & STORAGE

NOTE: Always have on hand a cyanide antidote kit and trained medical responders who can administer first aid before beginning work with this product.

Handling

Safe Handling Advice	• Container may be opened only under exhaust ventilation hood. • Seal container hermetically immediately after use. • Store under lock and key or in a way that qualified persons have access to it. • Use caution when opening the package, since toxic and caustic gases and vapors may escape.
Advice on Protection Against Fire and Explosion	• The product is not combustible. • See Section 5.

Storage

Requirements for Storage Areas and Containers	• Keep container tightly sealed and store in a dry, well-ventilated place. • Ensure there are sufficient retaining facilities for water used to extinguish fire.
Unsuitable Materials	• Aluminum • Brass • Copper
Advice on Common Storage	• Do not store together with acid and acidic salts. • Keep away from food, drink and animal feedstuffs.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Product Occupational Exposure Guidelines

Sodium Cyanide	CAS-No. 143-33-9	EC No. 205-599-4
PEL (OSHA)	5mg/m^3 as CN 8-hr Time-Weighted Avg	Skin Designation
TLV (ACGIH)	5 mg/m^3 as CN Ceiling Limit	Skin Designation

Component Occupational Exposure Guidelines

Hydrogen Cyanide	CAS-No. 74-90-8	EC No. 200-821-6
PEL (OSHA)	10 ppm as CN 8-hr Time-Weighted Avg	Skin Designation
	11mg/m^3 as CN 8-hr Time-Weighted Avg	Skin Designation
TLV (ACGIH)	4.7 ppm as CN Ceiling Limit	Skin Designation
	5 mg/m^3 as CN Ceiling Limit	Skin Designation

Engineering controls

• Engineer out the risk of exposure if feasible. • Ensure suitable ventilation at the work place and with operational machinery.

Personal Protective Equipment

Respiratory Protection

• A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable state/federal requirements must be followed whenever workplace conditions warrant respirator use. • NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand Protection	• Natural Rubber • Nitrile • Polychrolorprene w/ natural latex rubber • PVC **Note**: The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.
Eye Protection	• Impact resistant chemical protective goggles • Face-shield with brow guard
Skin and Body Protection	• Wear chemical protective suit. • During cleaning work wear rubber or plastic boots. • To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product. • A safety shower and eye wash fountain must be readily available. • Wash contaminated clothing before re-use.
Hygiene Measures	• Avoid contact with skin. • After contact with skin, wash immediately with plenty of water. • No eating, drinking, smoking, chewing gum or snuffing tobacco at work. • Wash face and/or hands before break and end of work.
Protective Measures	• All precautionary measures indicated have to be observed. • The work-place related airborne concentrations have to be kept below the indicated exposure limits. • If the limits at the workplace are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used. (see above)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical

Form	:	Liquid
Color	:	Colorless to Light Yellow
Odor	:	Bitter almond-like odor. **Note**: Some people are unable to smell cyanide. Others can smell it at first, but then can be desensitized to the odor.

Chemical

pH	:	Approx 12.0 Aqueous Solution
Melting point/range	:	-15 to -5 °C Crystal Precipitation
Boiling point/range	:	Approx 105 °C
Flash Point	:	Not Combustible
Flammability	:	Not Applicable
Autoignition Temperature	:	Not Applicable
Lower Explosion Limit	:	Not Applicable
Upper Explosion Limit	:	Not Applicable
Vapor Pressure	:	20.2 hPa at 20 °C Calculated
Specific Gravity	:	Approx 1.15 g/m^3 at 20 °C
Bulk density	:	Not Applicable

Further Information

Miscibility in Water	:	Completely Miscible

SECTION 10. STABILITY AND REACTIVITY

Materials to Avoid	• Under the action of acids (as well as carbon dioxide) hydrocyanic acid is released which is combustible and may react with air to form explosive gas mixtures. • Keep away from acidic salts.
Hazardous Decomposition Products	• HCN: Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION

Sodium Cyanide

Acute Oral Toxicity	:	LD50 Rat: 5 mg/kg Method: Literature
Acute Dermal Toxicity	:	LD50 Rabbit(female): 11.8 mg/kg Method: Literature
Skin Irritation	:	Due to acute dermal toxicity, the irritative effect on the skin cannot be determined.
Eye Irritation	:	Rabbit Irritating
Repeated Dose Toxicity	:	Ames test Salmonella typhimurium Negative
Human Toxicity		• Inhalation is possible if cyanide is in the form of aerosols, mists, dusts, or smoke. • Very toxic by inhalation and if swallowed. • Inhaling of (at already approx. 200 ppm HCN in the air breathed) or swallowing (approx. 200 - 300 mg KCN) can result in immediate unconsciousness and death. • Can be absorbed through the skin. • Poisoning has an effect on the central nervous system. • Irritating to eyes, respiratory system and skin. • Following long-term exposure individual cases of thyroid dysfunction have been described with electroplaters and silver polishers.

SECTION 12. ECOLOGICAL INFORMATION

Elimination Information (Persistence and Degradability)

Biodegradability	:	Potentially biodegradable Abiotic degradation Hydrolysis
Bioaccumulation	:	Low
Mobility	:	In Air: High as HCN

Ecotoxicity Effects

Fish	:	LC50 Leuciscus idus melanotus: 0.07 mg/l
Daphnia	:	EC50 Daphnia magna: 0.3 mg/l
Bacteria	:	EC50 Escherichia coli: 0.004 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal	• Waste must be disposed of in accordance with local, state, provincial and federal laws and regulations. • Empty containers must be handled with care due to product residue.

SECTION 14. TRANSPORT INFORMATION

DOT / AAR / Sea Transport IMDG-Code

Class	:	6.1
UN Number	:	3414
Packing Group	:	1
Proper Shipping Name	:	SODIUM CYANIDE SOLUTION
GHS Shipping Labels		**DANGER!**
Marine Pollutant	:	Yes

Air Transport ICAO-TI/IATA-DGR

Class	:	6.1
UN Number	:	3414
Packing Group	:	1
Proper Shipping Name	:	SODIUM CYANIDE SOLUTION
GHS Shipping Labels		**DANGER!**

Loading Instructions/Remarks

IATA_C	:	ERG-Code 6L
IATA_P	:	ERG-Code 6L
IMDG	:	Do not stow in external container rows

Transport/Futher Information

Do not store together with acids (danger of toxic gases) or with foodstuffs, consumables and feedstuffs.

NOTE: Sodium cyanide is NOT a DOT TIH or PIH.

SECTION 15. REGULATORY INFORMATION

US Federal Regulations

OSHA — If listed below, chemical specific standards apply to the product or components:

- None Listed

CAA Section 112 — If listed below, components present at or above the de minimus level are hazardous air pollutants:

- Sodium Cyanide CAS No. 143-33-9

CERCLA Reportable Quantities — If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- Sodium Cyanide CAS No. 143-33-9 Reportable Quantity: 10 lbs

SARA Title III Section 311/312 Hazard Categories — The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard

SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- Sodium Cyanide CAS No. 143-33-9 Reportable Quantity: 10 lbs

Toxic Substance Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None Listed

State Regulations

California Prop 65

A warning under the California Drinking Water Act is required only if listed below:

- None Listed

Canadian Regulations

This SDS has been prepared in compliance with the Controlled Product Regulations except for use of the 16 headings.

WHMIS Classification

• D1 A • E

International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries listed below.

Listed/registered:

• Europe (EINECS/ELINCS) • USA (TSCA) • Canada (DSL) • Australia (AICS) • Japan (MITI) • Korea (TCCL) • Philippines (PICCS) • China

European Union Risk and Safety Phrases

Risk Sodium cyanide is classified as toxic.

• R25 • R26 • R27 • R28 - Very toxic by inhalation, in contact with skin and if swallowed.
• R32 – Contact with acids liberates very toxic gas.
• R36 • R37 • R38 - Irritating to eyes, respiratory system and skin.
• R41 – Risk of serious damage to the eyes.
• R50 • R53 - Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
• R55 • R56 • R57 - Toxic to fauna, soil organisms and bees.
• R67 - Vapors may cause drowsiness and dizziness.

Safety Sodium cyanide is a hazardous substance.

• S1 • S2 • S4 - Keep locked up, out of the reach of children and away from living quarters.
• S7 • S9 - Keep container tightly closed and in a well ventilated place.
• S13 • S14 - Keep away from food, drink and animal feeding stuffs, acids, acid salts and carbon dioxide fire extinguishers.
• S18 - Handle and open container with care.
• S20 • S21 - When using do not eat, drink or smoke.
• S22 - Do not breathe dust.
• S24 • S25 - Avoid contact with skin and eyes.
• S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
• S27 - Take off immediately all contaminated clothing.
• S28 - After contact with skin, wash immediately with plenty of water.
• S29 - Do not empty into drains.
• S36 • S37 • S39 - Wear suitable protective clothing, gloves and eye/face protection.
• S38 - In case of insufficient ventilation, wear suitable respiratory equipment.
• S40 - To clean the floor and all objects contaminated by this material use sodium or calcium hypochlorite solution.
• S41 • S43 - In case of fire and/or explosion do not breathe fumes, use water, chemical powder or foam. Never use carbon dioxide.
• S45 - In case of accident or if you feel unwell seek medical attention immediately (show the label where possible).
• S46 • S64 - If swallowed, rinse mouth with water (only if the person is conscious), seek medical advice immediately and show this label.
• S50 - Do not mix with carbon dioxide, acids or acid salts
• S51 - Use only in well-ventilated areas.

- S53 - Avoid exposure – Obtain special instruction before use.
- S56 - Dispose of this material and its container to hazardous or special waste collection point
- S59 - Refer to manufacturer for information on recovery/recycling.
- S57 - Use appropriate containment to avoid environmental contamination.
- S61 - Avoid releases to the environment. Refer to special instructions/Safety data sheet.
- S63 - In case of accident by inhalation: remove casualty to fresh air and keep at rest.

SECTION 16. OTHER INFORMATION

HMIS Ratings Health: 3 Flammability: 0 Physical Hazard: 1

Further Information

This version replaces all previous versions.

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.

Significant changes since the last version are highlighted in the margin with a double bar.