Ouray Silver Mines, Inc.
1900 Main St. Unit 1
PO Box 564
Ouray, CO 81427

October 29th, 2021

Mr. Lucas West
Environmental Protection Specialist
Colorado Division of Reclamation Mining and Safety
1313 Sherman Street, Rm 215
Denver, CO 80203

Subject: **Technical Revision 14 (TR-14) Addendum: Additional Alternative Reagent Chemical**
DRMS Permit No. M-2012-032
Revenue Mine, Ouray County, Colorado

Dear Mr. West,

Ouray Silver Mines, Inc. (OSMI) is formally requesting permission to add an additional reagent to the list of chemicals approved through Technical Revision (TR)14. An alternative flocculant (Floquat FL 2949) is needed to address ongoing issues with disruption to the supply chain and to help improve recovery in the mill. Table 4 of TR-14 has been updated to include Floquat and is attached to this addendum. The SDS for Floquat FL 2949 is also attached.

OSMI appreciates your attention to this matter. If you have any questions, please contact me at (970) 325-9830.

Sincerely,

Poppy Staub
VP Environment & Government Affairs
Ouray Silver Mine Inc

Cc: Travis Marshall, DRMS
Amy Yeldell, DRMS
Todd Jesse, OSMI
Brian Briggs, OSMI

Reagent	Manufacturer	Purpose of use	Alt Names	Human Health §2: SDS HCS 2012 (29CFR 1910.1200)		Environmental Impacts §12: SDS		PPE §8: SDS	NFPA - Classification §16 SDS	EPA List of Lists §12 SDS	Corrosivity	Incompatible Materials	
AeroFloat 242 Promoter	Solvay (distributor for Cytec Industries Inc.)	This is the ammonium salt of AEROFLOAT 31 promoter. Widely used for flotation of Pb from Pb/Zn ores and Cu/Pb from Cu/Pb/Zn ores. Improves Ag recovery from these ores.	NA	Acute toxicity, Category 4→ Acute toxicity, Category 3→ Skin Corrosion, Category 1B→ Serious eye damage, Category 1→ Skin Sensitization, Category 1→ Reproductive toxicity, Category 2→ Specific target organ toxicity - repeated exposure, Category 2→	H302: Harmful if swallowed H311: Toxic in contact with skin H314: Causes severe skin burns and eye damage H318: Causes serious eye damage H317: May cause an allergic skin reaction H361: Suspected of damaging fertility or the unborn child H373: May cause damage to organs through prolonged or repeated exposure.	Acute toxicity to fish Acute toxicity to daphnia and other aquatic invertebrates Toxicity to aquatic plants Toxicity to microorganisms M-Factor Ammonium hydroxide Biodegradability Toxicity to benthic organisms Toxicity to soil dwelling organisms Toxicity to terrestrial plants Toxicity to above ground organisms	LC50 - 96 h: ca.66mg/L Rainbow trout Not tested Not tested Not tested Acute aquatic toxicity = 1 < 70% - 28 Days Not tested Not tested Not tested Not tested	Chemical resistant, tightly fitting goggles Impervious clothing Change working clothes after each shift Handle in accordance with good industrial hygiene and safety practice Wash hands before breaksIat the end of workday When using do not eat, drink or smoke Eye wash bottles/stations in compliance with applicable standards Ensure that eyewash stations and showers are close to the workstation location	Health - 3 Serious Flammability - 1 Slight Instability or Reactivity - 0 Minimal	Ammonium HydroxideCAS - No. 1336-21-6 1000lb	Not classified re: corrosion of metals	Oxidizing agents, strong acids or bases, and amines	
Danafloat 067 (alternative to AeroFloat 242)	Quadra Chemicals Inc.	Floatation Agent	NA	Acute toxicity, Category 4→ Acute toxicity, Category 3→ Skin Corrosion, Category 1→ Serious eye damage, Category 1→	H302: Harmful if swallowed H311: Toxic in contact with skin H314: Causes severe skin burns and eye damage H318: Causes serious eye damage	Acute EC50 5 to 10ppm Marine Water - Species: Algae -macrocystic pyrifera - young Acute EC50 7000 µg/l fresh water - Crustaceans - Grammarus fasciatus Acute LC50 10000 µg/l fresh water Fish - lepomis macrochirus	Exposure 4 days 48 Hours 96 Hours	Chemical resistant, tightly fitting goggles Impervious clothing Change working clothes after each shift Handle in accordance with good industrial hygiene and safety practice Wash hands before breaksIat the end of workday When using do not eat, drink or smoke Eye wash bottles/stations in compliance with applicable standards Ensure that eyewash stations and showers are close to the workstation location	Health - 3 Flammability - 0 Physical Hazards - 0	Ammonium O, O-bis(methylphenyl) dithiophosphate 49-51 % CAS -No. 587373-83-4 mix-cressol 0-7% CAS No. 1319-77-3 amoonia 0-7% CAS No. 1336-21-6	Corrosive to the respiratory system and digestive tract	Acids	
Aerophine 3418 Promoter	Solvay (distributor for Cytec Industries Inc.)	AEROPHINE 3418A has application in flotation of copper- and lead-sulfide minerals, particularly where these are found in complex sulfide ores containing sphalerite zinc mineralization, and ores with high levels of pyrite and/or pyrrhotite.	NA	Serious eye damage, Category 1→ Skin sensitization, Sub - Category 1B→ Health hazards not otherwise classified, Category 1→	H318: Causes serious eye damage H317: May cause an allergic skin reaction Contact with acids liberates toxic gases	Acute toxicity to fish Acute toxicity to daphnia and other aquatic invertebrates Toxicity to aquatic plants Toxicity to microorganisms Chronic toxicity to fish Chronic toxicity to daphnia and other aquatic invertebrates Toxicity to benthic organisms Toxicity to soil dwelling organisms Toxicity to terrestrial plants Toxicity to above ground organisms	Not harmful (LC LL50>100mg/L) Not harmful (EC/EL50>100mg/L) Not harmful (EC/EL50>100mg/L) Not tested Not tested Not tested Not tested Not tested Not tested Not tested	Impervious gloves - Nitrile or fluorinated rubber gloves Chemical resistant goggles, tightly fitting Impervious clothing Full protective suit Change working clothes after each shift contaminated work clothing should not be allowed out of the workplace 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, smoke Eye wash bottles/stations in compliance with applicable standards Ensure that eyewash stations and safety showers are close to the work station location.	Health - 3 Serious Flammability - 1 Slight Instability or Reactivity - 0 Minimal	N/A	Not corrosive to metals	Mineral acids, strong oxidizing agents, strong acids or bases	
Copper Sulfate Pentahydrate	Quadra Chemicals LTD.	Used in Zinc flotation as an activator of sphalerite	cupric sulfate, blue vitriol, bluestone	Acute Toxicity - Oral Category 4→ Skin Corrosion/Irritation Category 2→ Eye damage/Irritation Category 2→	Harmful if swallowed Harmful in contact with skin Eye damage/Irritation	Ecotoxicity Persistence and degradability Bioaccumulation Mobility Other Adverse Effects	Very toxic to aquatic life with long lasting effects Not determined Not determined May be mobile due to water solubility Not Determined	Safety glasses with side shields/goggles Long sleeved shirt, long pants, and shoes plus socks Water proof gloves Discard clothing and other absorbent materials that have been drenched or heavily contaminated with products concentrate Wash PPE Separately from other laundry. Wear an approved respirator for dusts or mists Handle in accordance with good industrial hygiene and safety practices.	Health - 3 Serious Flammability - 0 Instability or Reactivity - 0 Minimal	CAS/313 Category Codes N100 & (CERCLA) 313	Mildly corrosive to steel	Aluminum powder, acetylene gas, hydroxylamine, magnesium and moisture	
Floquat FL 2949	SNF, Inc.	Used as a settling agent, A flocculant causes the suspended mineral to form into small masses. This will make the thickener load settle.		No known hazards to humans Aqueous solutions or powders that become wet render surfaces extremely slippery		Acute toxicity to fish Acute toxicity to invertebrates Acute toxicity to algae Chronic toxicity to fish Chronic toxicity to invertebrates Toxicity to microorganisms Effects on terrestrial organisms Sediment toxicity	LC50/Danio rerio/96 hours > 10-100mg/L (OECD 203) LC50/Fathead minnow/96 hours > 10-100mg/L (OECD 203) Algal inhibition tests are not appropriate. No Data No Data No Data No known effects No Data	Safety glasses with side shields PVC or other plastic material gloves Coverall and/or chemical apron and rubber footwear where physical contact can occur. No personal respritory protective equipment normally required Wash hands before breaks and immediately after handling the product.	Health - 0 Flammability - 0 Instability - 0	N/A	Not classified re: corrosion of metals	None known	
Hyperfloc AF 309 (alternative to Floquat)	SNF, Inc.	Used as a settling agent, A flocculant causes the suspended mineral to form into small masses. This will make the thickener load settle.	NA	No known hazards to humans Aqueous solutions or powders that become wet render surfaces extremely slippery		Acute toxicity to fish Acute toxicity to invertebrates Acute toxicity to algae Chronic toxicity to fish Chronic toxicity to invertebrates Toxicity to microorganisms Effects on terrestrial organisms Sediment toxicity	LC50/Danio rerio/96 hours > 100mg/L (OECD 203) LC50/Fathead minnow/96 hours > 100mg/L (OECD 203) LC50/Scenedesmus subspicatus/72 hours > 100mg/L (OECD 201) No Data No Data No Data No known effects No Data	Safety glasses with side shields Plastic material gloves Work clothes protecting arms, legs and body Dust safety masks recommended where working powder concentration is more than 10 mg/m3. Wash hands before breaks and immediately after handling the product.	Health - 0 Flammability - 0 Instability - 0	CERCLA - Hazardous substances list (40 CFR 302.4) - RQ - Not concerned	Not classified re: corrosion of metals	Strong bases, oxidizing agents	
Hydrated Lime	Lhoist North America	Lime is used to adjust the pH to aid in the collector adsorption by controlling the pulp chemistry. It also aids in the depression of certain minerals	NA	Eye damage Category 1→ Carcinogen Category 1→ Skin Irritation Category 2→ Specific Target Organ Toxicity Single Exposure Category 3→ Specific Target Organ Toxicity Repeat Exposure Category 1→	Serious eye damage Skin irritation Respiratory irritation Damage to lungs through prolonged or repeated exposure when inhaled Cancer potential through inhalation Hydrated lime is not listed as a carcinogen, however this product contains crystalline silica, which is classified as carcinogenic to humans when inhaled.	Reacts with atmospheric CO2 overtime to form calcium carbonate No bioaccumulation effect or food chain concentration toxicity Minimal mobility in soil. Reacts with clay portion of soil to form calcium silicates and calcium aluminates This material is alkaline and if released into water or moist soil will cause an increase in pH.	Calcium Hydroxide 13mg/m305-62-0 OSHA PEL: 15 mg/m3 (total) 5 mg/m3 (respirable) ACGIH TLV: 5 mg/m3 Magnesium Oxide 1309-48-4 OSHA PEL: 15 mg/m3 ACGIH TLV: 10 mg/m3 Crystalline Silica 14808-60-7 OSHA PEL: 0.050mg/m3 as an 8 hr. TWA (respirable) ACGIH TLV: 0.025 mg/m3 (respirable)	NIOSH Approved respirators if airborne concentration exceeds PEL Safety Glasses with side shields or safety goggles. Contact lenses should not be work when working with the lime products. Wear appropriate clothing and gloves to prevent contact Eye wash fountain and emergency showers close to work station location	N/A	N/A	Not classified re: corrosion of metals	Acids, reactive fluoridated or brominated compounds, reactive powdered metals, organic acid anhydrides, nitro-organic compounds, reactive phosphorous compounds, interhalogenated compounds	
Oreprep F-549 Frother	Solvay (distributor for Cytec Canada Inc.)	A frothing agent used to create a stable surface for sulfide mineral to adhere.	NA	Skin irritation Category 2→ Eye irritation Category 2A→	H315: Causes skin irritation H319: Causes serious eye irritation	Acute toxicity to fish Acute toxicity to daphnia and other aquatic invertebrates Toxicity to aquatic plants Toxicity to microorganisms Chronic toxicity to fish Chronic toxicity to daphnia and other aquatic invertebrates Abiotic degradation physical and photo-chemical elimination Biodegradation Adsorption potential Known distribution to environmental compartments Results of PBT and vPvB assessment Other adverse effects	No Data No Data No Data No Data No Data No Data No Data No Data No Data No Data No Data No Data	Store in a well ventilated area Chemical resistant goggles tightly fitting Impervious clothing Change work clothes after each work shift Contaminated work clothing should not be allowed out of the workplace Handle in accordance with good industrial hygiene and safety practice Wash hands before breaks and at end of workday Do not eat, drink or smoke while using this product.	Health - 2 Moderate Flammability - 1 Instability or reactivity - 0 or Minimal.	N/A	Not corrosive to metals	Strong oxidizing agents	
Polyfroth W20 (Alternative to Orepreg)	Quadra Chemicals Inc.	A frothing agent used to create a stable surface for sulfide mineral to adhere.	NA	While this material is not considererd hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable informaiton critical to the safe handling and proper us o fthe product. This SDS should be retained and available for employee's and other users of this product. No known significant effects or critcal hazards.		No known significant effects or critical hazards. Ecotoxicity - Not available Persistence and degradeability - Not available.		Chemical resistat, impervioud gloves, complying with an approved standard should be worn at tall times when handling chemical products if a risk assessment indicates this is necessary	Health - 0 Flammability - 0 Instability - 0	NA	NA	No specific test data related to reactivity available for this product or it's ingredients. The product is stable Under normal conditions of storage and use, hazardous reactions will not occur.	
Sodium Isopropyl Xanthate Flottec SIPX Collector	Charles Tennant & Copmany	Xanthate is commonly used in the flotation process of sulfide minerals. Xanthate is a combination of alcohol, sodium hydroxide and carbon dioxide, which is an anionic collector.	NA	Sodium Isopropylxanthate→ Self heating substances and mixtures Category 1→ Acute toxicity (oral) Category 4→ Acute toxicity (dermal) Category 4→ Skin irritation Category 2→ Eye irritation Category 2A→ Catches Fire spontaneously if exposed to air→ Harmful if swallowed or in contact with skin→ Causes skin irritation→	Proxan Sodium (Synonym) H251: Self Heating; may catch fire H302: Harmful if swallowed H315: Causes skin Irritation	Acute Aquatic Toxicity Category 2→ Chronic Aquatic Toxicity Category 2→ Do not allow to enter soil, water ways or waste water. This product may be harmful to aquatic life Biodegradability All waste from this product including all empty containers must be disposed of in accordance with municipal, provincial and federal regulations.	H411: Toxic to aquatic life long lasting effects	Wear impervious gloves when there is greater exposure risk If respiratory protection is required institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. NIOSH or MSHA approved respirator for acidic vapors Face shield, safety glasses with side shields. Safety Boots Adequate protective clothing An eye wash station/safety shower should be near the work station Explosion proof mechanical ventilation to limit vapor concentration below T.L.V.	Health - 2 Flammability - 0 Instability - 2	CAS/313 Category Codes 7440-23-5 CERCLA RQ 10	Not classified re: corrosion of metals	Strong oxidizing agents, strong acids, strong bases, flammable liquids, heat, moisture	
NAX 31 (Sodium Isopropyl Xanthate alternative)	Prospec Chemicals (Chariels Tennant & CO 3rd party supplier of Xanthate. Cascade columbia is a Distributor for Charles Tennant).	Xanthate is commonly used in the flotation process of sulfide minerals. Xanthate is a combination of alcohol, sodium hydroxide and carbon dioxide, which is an anionic collector.	NA	Acute Toxicity Oral Category 1→ Acute Toxicity Dermal Category 4→ Acute Toxicity Skin Irritation→ Eye irritation Category 2→ Danger Category 2→	Harmful if swallowed Harmful in contact with skin Wash with plenty of soap and water Eye damage/Irritation NA	NA	NA	Wear impervious gloves. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. Refer tot eh CAS standard Z94.4-m1982 Selection, care and use of respirators. If vapors are present, use a NIOSH or MSHA approved respirator for acidic vapours or a self contained breathing apparatus. Face shield, safety goggles. Rubber safety boots, adequate protective clothing. Eye wash station and safety shower should be near the work area.	NA	NA	Not classified re: corrosion of metals	Strong oxidizing agents, strong acids, strong bases, flammable liquids, heat, moisture	
Sodium Metabisulfite	Quadra Chemicals LTD. (Prospect Chemicals 2nd/3rd party distributor/supplier)	Sodium Metabisulfite aka MBS is used for pH control in froth flotation to control Pyrite depression. ... It is also used to prevent flotation of sphalerite by copper activation in the presence of Tennantite/Covellite in the ore.	Sodium Pyrosulfite, Disodium Pyrosulfite, Pyrosulfurous Acid, Disodium Salt, Sodium Disulphite.	Acute Toxicity: Oral Category 4→ Acute Toxicity Dermal Category 5→ Serious Eye Irritant Category 1→	Harmful if swallowed Harmful in contact with skin Eye damage/Irritation	Ecotoxicity: Sodium Metabisulfite is a non hazardous solid commonly used as a waste water dechlorination agent. High concentrations will contribute to elevated chemical oxygen demand in aquatic environments		General and local exhaust ventilation systems to maintain airborne concentrations If necessary, wear and MSHA/NIOSH approved respirator. Protective boots, gloves, and clothing to prevent excessive skin contact. Protective eye glasses, safety glasses with side shields, or goggles. emergency eye wash stations, showers, and washing facilities available in the work area. Remove this material from PPE as needed. Do not eat, drink or smoke in work areas.	Health - 2 Serious Flammability - 0 Instability or Reactivity - 0 Minimal	Hazardous Substance (40 CFR 302.4) RQ N/A	Not classified re: corrosion of metals	Acid and water produce sulfure oxides. Powdered potassium, sodium metal, alkali agents, oxidizing agents, and chlorates.	
Zinc Sulphate Monohydrate	Zinc Nacional	The established lead-zinc ore flotation processing scheme is to add zinc sulphate (ZnSO4) to the grind to control metal ion activation (sphalerite depression) ... Sphalerite that is rejected into the lead flotation talls is then floated in a second flotation step after activation with copper sulphate.	**White vitriol,** Goslarite	Acute aquatic toxicity Category 1→ Skin corrosion/irritation Category 2→ Serious eye damage Category 1→ Specific target organ toxicity, single exposure, Respiratory tract irritation Category 3→ Hazardous to the aquatic environment, long-term hazard Category 1→	H302: Harmful if swallowed H315: Causes skin irritation H318: Causes serious eye damage H335: May cause respiratory irritation H410: Very toxic to aquatic life with long lasting effects	LC50 24 Hours fish (rainbow trout) 1.24 mg/L LC50 48 Hours fish (rainbow trout) 2.4 - 5mg/L LC50 96 Hours fish (rainbow trout) 24 - 83 mg/L LC50 96 Hours Daphnia 7.4 mg/L	Zinc Sulphate has a high water solubility and its zinc and manganese contents are directly bio available. The zinc may be toxic to aquatic organism, especially fish, with water hardness\', pH and dissolved organic carbon levels being regulating factors.	Gloves and long-sleeved work clothes or disposable coveralls may be necessary. Eye protection should be worn where dust is generated and there is a potential that eye contact may occur. Use adequate local or general ventilation where necessary to maintain the concentrations of dust well below the recommended occupation exposure limits for general Particulates, not otherwise specified. Where dud fumes are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH approved respiratory protection equipment.	Does not burn or support combustion § 5 Fire Fighting Measures SDS	CERCLA RQ 1000 Section 313c	Not classified re: corrosion of metals	Strong oxidizers, acids, strong bases	

* highlighted items are primary reagent chemicals.. Non-highlighted are alternatives

Updated 10/29/2021

SAFETY DATA SHEET

According to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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

1.1. Product identifier

Product name: **FLOQUAT™ FL 2949**

Type of product: Mixture.

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

Identified uses: Processing aid for industrial applications.

Uses advised against: None.

1.3. Details of the supplier of the safety data sheet

Company:

Telephone:

Telefax:

E-mail address:

1.4. Emergency telephone number

24-hour emergency number:

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture *Classification*

according to paragraph (d) of 29 CFR 1910.1200: Not classified.

2.2. Label elements

Labelling according to paragraph (f) of 29 CFR 1910.1200:

Hazard symbol(s): None.

Signal word: None.

Hazard statement(s): None.

Precautionary statement(s): None.

2.3. Other hazards

Spills produce extremely slippery surfaces.

Ingredient(s) of unknown acute toxicity: None.

For explanation of abbreviations see Section 16.

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable, this product is a mixture.

3.2. Mixtures
This product is a mixture.

Hazardous components
Contains no reportable hazardous substances.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air. No hazards which require special first aid measures.

Skin contact:
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In case of persistent skin irritation, consult a physician.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Alternatively, rinse immediately with Diphoterine ®. Get prompt medical attention.

Ingestion:
Rinse mouth with water. Do NOT induce vomiting. Get medical attention immediately if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed

None under normal use.

4.3. Indication of any immediate medical attention and special treatment needed

None under normal use.

Other information:
None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Water. Water spray. Foam. Carbon dioxide (CO2). Dry powder.
Warning! Spills produce extremely slippery surfaces.

Unsuitable extinguishing media:
None known.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:
Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for firefighters

Protective measures:
Wear self-contained breathing apparatus and protective suit.

Other information:
Spills produce extremely slippery surfaces. Will not burn until water is evaporated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

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

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

6.2. Environmental precautions

Do not contaminate water.

6.3. Methods and material for containment and cleaning up

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

Large spills:
Do not flush with water.Dam up. Soak up with inert absorbent material. Clean up promptly by scoop or vacuum.

Residues:
After cleaning, flush away traces with water.

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

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

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:
None known.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:
Safety glasses with side-shields.

b) Skin protection:

i) Hand protection: PVC or other plastic material gloves.
ii) Other: Wear coveralls and/or chemical apron and rubber footwear where physical contact can occur.

c) Respiratory protection:
No personal respiratory protective equipment normally required.

d) Additional advice:
Wash hands before breaks and immediately after handling the product. Wash hands before breaks and at the end of workday. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Liquid, Colorless to amber.
b) Odour:	Slight / Characteristic
c) Odour Threshold:	Not applicable.
d) pH:	4 - 7 (See Technical Bulletin or Product Specifications for precise value)
e) Melting point/freezing point:	< 5°C
f) Initial boiling point and boiling range:	> 100°C
g) Flash point:	Does not flash.
h) Evaporation rate:	No data available.
i) Flammability (solid, gas):	Not applicable.
j) Upper/lower flammability or explosive limits:	Not expected to create explosive atmospheres.
k) Vapour pressure:	2.3 kPa @ 20°C
l) Vapour density:	0.804 g/litre @ 20°C
m) Relative density:	1.0 - 1.2 (See Technical Bulletin or Product Specifications for precise value)
n) Solubility(ies):	Completely miscible.
o) Partition coefficient:	< 0
p) Autoignition temperature:	Does not self-ignite (based on the chemical structure).
q) Decomposition temperature:	> 150°C
r) Viscosity:	See Technical Bulletin.
s) Explosive properties:	Not expected to be explosive based on the chemical structure.
t) Oxidizing properties:	Not expected to be oxidising based on the chemical structure.

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Protect from frost, heat and sunlight.

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the product as supplied:

Acute oral toxicity:	LD50/oral/rat > 5000 mg/kg
Acute dermal toxicity:	LD50/dermal/rat > 5000 mg/kg.
Acute inhalation toxicity:	Testing by the inhalation route is inappropriate because exposure of humans via inhalation is unlikely: the substance has no vapour pressure and there is practically no exposure to inhalable aerosols.
Skin corrosion/irritation:	Non-irritating to skin.
Serious eye damage/eye irritation:	Slightly irritating.
Respiratory/skin sensitisation:	Not sensitizing to skin. No respiratory sensitization has been observed in the workplace.
Mutagenicity:	By analogy with similar products, this product is not expected to to be mutagenic.
Carcinogenicity:	By analogy with similar substances, this substance is not expected to be carcinogenic.
Reproductive toxicity:	By analogy with similar substances, this substance is not expected to be toxic for reproduction.
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.

Aspiration hazard: No hazards resulting from the material as supplied.

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish: LC50/Danio rerio/96 hours = 10 - 100 mg/L

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

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

Chronic toxicity to fish: No data available.

Chronic toxicity to invertebrates: No data available.

Toxicity to microorganisms: No data available.

Effects on terrestrial organisms: Exposure to soil is unlikely.

Sediment toxicity: Exposure to sediment is unlikely.

12.2. Persistence and degradability

Information on the product as supplied:

Degradation: Not readily biodegradable.

Hydrolysis: Does not hydrolyse.

Photolysis: No data available.

12.3. Bioaccumulative potential

Information on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow): < 0

Bioconcentration factor (BCF): ~0

12.4. Mobility in soil

Information on the product as supplied:

Exposure to soil is not to be expected.

Koc: No data available.

12.5. Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

Dispose in accordance with local and national regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations.

Recycling:

Store containers and offer for recycling of material when in accordance with the local regulations.

SECTION 14: Transport information

Land transport (DOT)

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15: Regulatory information

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

Information on the product as supplied:

TSCA Chemical Substances Inventory:

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

US SARA Reporting Requirements:

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

SARA Title III Sections:

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

Section 304 - Reportable Quantity:
Not concerned.

Section 313 (De minimis concentration):
Not concerned.

Clean Water Act

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

Clean Air Act

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

CERCLA

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

RCRA status :

Not RCRA hazardous.

California Proposition 65 Information:

WARNING! This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm, Epichlorohydrin, 1,3-Dichloro-2-propanol (1,3-DCP), 3-Monochloropropane-1,2-diol (3-MCPD)

SECTION 16: Other information

NFPA and HMIS Ratings:

NFPA:

Health:	0
Flammability:	0
Instability:	0

HMIS:

Health:	0
Flammability:	0
Physical Hazard:	0
PPE Code:	B

This data sheet contains changes from the previous version in section(s):

SECTION 2. Hazards identification, SECTION 5. Fire-fighting measures, SECTION 9. Physical and chemical properties, SECTION 15. Regulatory information, SECTION 16. Other Information.

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

Acronyms
STOT = Specific target organ toxicity

Training advice:

Do not handle until all safety precautions have been read and understood.

This SDS was prepared in accordance with the following:

U.S. Code of Federal Regulations 29 CFR 1910.1200

Version: 19.01.b

LDCC002

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.

To our valued customers,

SNF Holding Company (SNF) is pleased to supply you with the requested SDS (Safety Data Sheet) documents in unprotected/unlocked MS Word format. The attached files reflect, to the best of our knowledge, our official protected/locked Adobe .pdf versions of these documents at the time of your request.

It is the intent that the unprotected/unlocked files are being provided to you solely for the company name (and logo), address, and product name to be changed, as well as any reference to SNF or any of its corporate affiliates be removed.

We would also point out that the use of CHEMTREC emergency response requires an independent subscription to their service. Please verify your company's status under CHEMTREC, or update the document to include your company-specific emergency response phone numbers.

By accepting the attached, you agree to assume all responsibility and/or liabilities associated with any changes you make to these documents and any damages and/or injuries that may occur in reliance upon the information with any modification made by you to the original SDS provided by SNF.

If you have any questions about this letter, or the contents of any of the attached files, please contact our Regulatory Department at: snfregulatoryaffairs@snf.com

Thank you and best regards,

SNF Holding Company
Product Safety & Regulatory Affairs Department