

The following list contains the Material Safety Data Sheets you requested. Please scroll down to view the requested MSDS(s).

Product	MSDS	Distributor	Format	Language	Quantity
2437600	104399	Hach Company	ROWGHS	English	1
2437600	2349832	Hach Company	ROWGHS	English	1

Total Enclosures: 2

World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00022

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Chloride 2 Indicator

Catalog Number: 104399

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00022

Chemical Name: Not applicable

CAS Number: Not applicable

Additional CAS No. (for hydrated forms): Not applicable

Chemical Formula: Not applicable

Chemical Family: Mixture

Intended Use: Laboratory Reagent Determination of chloride

2. HAZARDS IDENTIFICATION

GHS Classification:

Hazard categories: Acute Toxicity: Acute Tox. 4-Orl Skin Corrosion/Irritation: Skin Irrit. 2 Respiratory or Skin Sensitization: Skin Sens.1 Serious Eye Damage/Eye Irritation:Eye Irrit. 2 Specific Target Organ Toxicity - Single Exposure: STOT SE 3 Germ Cell Mutagenicity: Muta. 1B Carcinogenicity: Carc. 1B Hazardous to the Aquatic Environment: Aquatic Chronic 1

GHS Label Elements:

DANGER



Hazard statements: Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. May cause genetic defects. May cause cancer. Very toxic to aquatic life with long lasting effects.

Precautionary statements: Obtain special instructions before use. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not eat, drink or smoke when using this product. Handle environmental release according to local, state, federal, provincial requirements. Wear protective gloves / protective clothing / eye protection / face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. IF INHALED: Remove victim/person to fresh air and keep at rest in a position comfortable for breathing. IF exposed or concerned: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Collect spillage. Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/container according to state, local, federal or national regulations.

HMIS:

Health: 4*

Flammability: 0

Reactivity: 1

Protective Equipment: X - See protective equipment, Section 8.

NFPA:

Health: 2

Flammability: 0

Reactivity: 1

Symbol: Not applicable

WHMIS Hazard Classification: Class D, Division 1, Subdivision B - Toxic material (immediate effects) Class E - Corrosive material Class D, Division 2, Subdivision A - Very toxic materials (other toxic effects)

WHMIS Symbols: Acute Poison Corrosive

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components according to GHS:

Sodium Bicarbonate

CAS Number: 144-55-8

Chemical Formula: NaHCO₃

GHS Classification: Acute Tox. 5-Orl, H303; Skin irrit. 3, H316

Percent Range (Trade Secret): 45.0 - 55.0

Percent Range Units: weight / weight

PEL: 15 mg/m³ as inhalable dust; 5 mg/m³ as respirable dust

TLV: 10 mg/m³ as inhalable dust; 3 mg/m³ as respirable dust

WHMIS Symbols: Not applicable

Hazardous Components according to GHS: No

Potassium Chromate

CAS Number: 7789-00-6

Chemical Formula: K₂CrO₄

GHS Classification: Acute Tox. 3-Orl, H301; Skin Irrit. 2, H315; Skin Sens. 1, H317; Eye Irrit. 2A, H319; STOT Single 3, H335; Muta. 1B, H340; Carc. 1B, H350; Aquatic Chronic 1, H410

Percent Range (Trade Secret): 45.0 - 55.0

Percent Range Units: weight / weight

PEL: 5 µg/m³ (0.00235 ppm Cr⁺⁶), 8 Hr TWA; Action Level is 2.5 µg/m³ (0.00117 ppm), 8 Hr TWA

TLV: 0.05 mg/m³ (0.0235 ppm as Cr⁺⁶)

WHMIS Symbols: Acute Poison Corrosive

4. FIRST AID MEASURES

General Information: In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

Advice to doctor: Treat symptomatically.

Eye Contact: Immediately flush eyes with water for 15 minutes. Call physician immediately.

Skin Contact (First Aid): Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

Inhalation: Remove to fresh air. Give artificial respiration if necessary. Call physician.

Ingestion (First Aid): Never give anything by mouth to an unconscious person. Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately.

5. FIRE FIGHTING MEASURES

Flammable Properties: Material is not classified as flammable according to GHS criteria. During a fire, this product decomposes to form toxic gases. Strong oxidizer. Contact with combustible materials may cause a fire. Material will not burn.

Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

Extinguishing Media: Carbon dioxide Dry chemical. Water.

Extinguishing Media NOT To Be Used: Not applicable

Fire / Explosion Hazards: May react violently with: combustible materials organic materials

Hazardous Combustion Products: This material will not burn.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Containment Technique: Releases of this material may contaminate the environment. Stop spilled material from being released to the environment.

Clean-up Technique: Avoid contact with spilled material. If permitted by regulation, Sweep up material. Dispose of material in government approved hazardous waste facility. Decontaminate the area of the spill with a soap solution. Otherwise, Pick up spill for disposal and place in a closed container. Dispose of in accordance with local, state and federal regulations or laws.

Evacuation Procedure: Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

DOT Emergency Response Guide Number: 151

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes skin clothing. Do not breathe dust. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

Storage: Protect from: heat moisture. Keep away from: oxidizable materials.

Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Maintain general industrial hygiene practices when using this product. Refer to the OSHA Standard at 29CFR1910.1026 for Cr (VI) (See Federal Register 28 February 2006 Page 10100.)

Personal Protective Equipment:

Eye Protection: safety glasses with top and side shields

Skin Protection: lab coat nitrile gloves. In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it.

Inhalation Protection: dust / mist mask and / or laboratory fume hood

Precautionary Measures: Avoid contact with: eyes skin clothing. Do not breathe: dust. Wash thoroughly after handling. Protect from: heat moisture. Keep away from: organic materials.

TLV: Respirable Particles 3 mg/m³; Inhalable Particles 10 mg/m³. Hexavalent chromium (Cr⁺⁶) 0.05 mg/m³.

PEL: Total Dust 15 mg/m³; Respirable Fraction 5 mg/m³. Hexavalent chromium (Cr⁺⁶): 5 µg/m³ 8Hr TWA; Action Level 2.5 µg/m³ Cr⁶ 8 Hr TWA.

For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Bright yellow powder

Physical State: Solid

Molecular Weight: Not applicable

Odor: Odorless

Odor Threshold: Not applicable

pH: 5% solution = 8.2

Metal Corrosivity:

Corrosivity Classification: Not classified as corrosive to metals according to GHS criteria.

Steel: Not Applicable

Aluminum: Not Applicable

Specific Gravity/ Relative Density (water = 1; air =1): 2.25

Viscosity: Not applicable

Solubility:

Water: Soluble

Acid: Soluble

Other: Not determined

Partition Coefficient (n-octanol / water): Not applicable

Coefficient of Water / Oil: Not applicable

Melting Point: Decomposes at 100 °C (212 °F)

Decomposition Temperature: 100 °C (212 °F)

Boiling Point: Not applicable

Vapor Pressure: Not applicable

Vapor Density (air = 1): Not applicable

Evaporation Rate (water = 1): Not applicable

Volatile Organic Compounds Content: Not applicable

Flammable Properties: Material is not classified as flammable according to GHS criteria. During a fire, this product decomposes to form toxic gases. Strong oxidizer. Contact with combustible materials may cause a fire. Material will not burn.

Flash Point: Not applicable

Method: Not applicable

Flammability Limits:

Lower Explosion Limits: Not applicable

Upper Explosion Limits: Not applicable

Autoignition Temperature: Not applicable

Explosive Properties:

Not classified according to GHS criteria.

Oxidizing Properties:

Not classified according to GHS criteria.

Reactivity Properties:

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

Gas under Pressure:

Not classified according to GHS criteria.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable when stored under proper conditions.

Mechanical Impact: None reported

Static Discharge: None reported.

Reactivity / Incompatibility: Incompatible with: organic materials reducers

Hazardous Decomposition: Toxic fumes of: carbon monoxide carbon dioxide chromium chromium trioxide

Conditions to Avoid: Heating to decomposition. Excess moisture

11. TOXICOLOGICAL INFORMATION

Toxicokinetics, Metabolism and Distribution: No information available for mixture.

Toxicologically Synergistic Products: None reported

Acute Toxicity: Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data Route Data Given Below

Oral Rat LD50 = 360 mg/kg

Specific Target Organ Toxicity - Single Exposure (STOT-SE): Target Organs Respiratory Tract

Specific Target Organ Toxicity - Repeat Exposure (STOT-RE): Based on classification principles, the classification criteria are not met. Summary of findings reported in the literature follow.

Potassium Chromate: Intraperitoneal Rat TDLo = 209 mg/kg/2 wk/Liver: Other changes; Kidney, Ureter, Bladder: Other changes; Biochemical: Multiple enzyme effects. Sodium Bicarbonate: Oral Man TDLo = 20 mg/kg/5 Days/Vomiting, metabolic acidosis

Skin Corrosion/Irritation: Irritating to skin.

Eye Damage: Irritating to eyes.

Sensitization: Skin Sensitizer Contains a sensitizing compound.

Contains: Potassium Chromate

CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction): Contains Listed Carcinogen Data supporting mutagenicity was found. Developmental toxicity associated with the substance or an ingredient of the mixture have been reported. Reported impairment of fertility by substance or ingredient of mixture. Summary of findings reported in the literature follow.

Potassium Chromate: Oral Mouse TDLo = 1600 mg/kg/62 wk/Leukemia, bronchiogenic carcinoma; Human Fibroblast - Sister Chromatid Exchange - 100 nmol/L; Human Fibroblast - Unscheduled DNA Synthesis - 0.1 mmol/L; Human Lung - DNA Damage - 0.025 mmol/L

Potassium Chromate: Intraperitoneal Mouse TDLo = 30 mg/kg/Effects on Embryo or Fetus: Cytological changes;

Intraperitoneal Mouse TDLo = 60 mg/kg/Fertility: Other measures of fertility.

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Hexavalent Chromium Compounds
An ingredient of this mixture is: NTP Listed Group 1: Recognized Carcinogen
Hexavalent Chromium Compounds
An ingredient of this product is an OSHA listed carcinogen.
Hexavalent chromium (Cr⁶) compounds

Symptoms/Effects:

Ingestion: May cause: abdominal pain diarrhea dizziness thirst shock liver damage followed by circulatory collapse toxic nephritis (inflammation of the kidneys) alkalosis which causes abnormally high alkali reserve of the blood and other body fluids

Inhalation: May cause: respiratory tract irritation coughing wheezing pulmonary sensitization

Skin Absorption: Will be absorbed through the skin. Effects similar to those of ingestion

Chronic Effects: Chromate and dichromate salts may cause ulceration and perforation of the nasal septum, severe liver damage, central nervous system effects, and lung cancer. Chronic overexposure may cause dermatitis

Medical Conditions Aggravated: Pre-existing: Skin conditions Allergies or sensitivity to chromates or chromic acid.
Asthma

12. ECOLOGICAL INFORMATION

Product Ecological Information: --

No ecological data available for this product. Do not place in landfill. Recycle appropriately. Do not release into the environment. Mobility in soil: Highly mobile No bioaccumulation potential

Method Used for Estimation of Aquatic Toxicity of Mixture Summation Method M-factor (Multiplier) for highly toxic ingredients: 1

Ingredient Ecological Information: Potassium Chromate: 96 hr Fish LC50 = 47.8 mg/L; 96 hr Pimephales promelas LC50 = 40 mg/L; 48 hr Crustaceans EC50 = 37 mg/L; 48 hr Crustaceans EC50 = 0.18 mg/L; 48 hr Daphnia magna EC50 = 15 mg/L; 72 hr Nitzschia sp. ErC50 = 0.26 mg/L

CEPA Statement: Potassium Chromate: Persistent, inherently toxic to aquatic organisms, not bioaccumulative; Sodium Bicarbonate: Persistent, not inherently toxic to aquatic organisms or bioaccumulative.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D007

Special Instructions (Disposal): Dispose of material in an E.P.A. approved hazardous waste facility. Otherwise, Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

Empty Containers: Working in a well-ventilated area, Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of at an E.P. A. approved facility.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Toxic Solid, Inorganic, N.O.S.
(Potassium Chromate Mixture)

Hazard Class: 6.1

Subsidiary Risk: NA

ID Number: UN3288

Packing Group: III

T.D.G.:

Proper Shipping Name: Toxic Solid, Inorganic, N.O.S.
(Potassium Chromate Mixture)

Hazard Class: 6.1

Subsidiary Risk: NA

UN Number/PIN: 3288

Packing Group: III

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Toxic Solid, Inorganic, N.O.S.
(Potassium Chromate Mixture)

Hazard Class: 6.1

Subsidiary Risk: NA

ID Number: UN3288

Packing Group: III

I.M.O.:

Proper Shipping Name: Toxic Solid, Inorganic, N.O.S.
(Potassium Chromate Mixture)

Hazard Class: 6.1

Subsidiary Risk: NA

ID Number: UN3288

Packing Group: III

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Fire Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Potassium Chromate

302 (EHS) TPQ (40 CFR 355): Not applicable

304 CERCLA RQ (40 CFR 302.4): Potassium chromate: 10 lbs.

304 EHS RQ (40 CFR 355): Not applicable

Clean Water Act (40 CFR 116.4): Potassium chromate - RQ = 10 lbs. (4.54 kgs.)

RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

State Regulations:

California Prop. 65: WARNING - This product contains a chemical known to the State of California to cause cancer.

Identification of Prop. 65 Ingredient(s): Potassium Chromate

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

CAS Number: Not applicable

Canadian Inventory Status: All ingredients of this product are DSL Listed.

EEC Inventory Status: All ingredients used to make this product are listed on EINECS / ELINCS.

Australian Inventory (AICS) Status: All ingredients are listed.

New Zealand Inventory (NZIoC) Status: All components either listed or exempt.

Korean Inventory (KECI) Status: All components of this product are either listed, listed as the anhydrous compound or exempt.

Japan (ENCS) Inventory Status: All components either listed or exempt.

China (PRC) Inventory (MEP) Status: All components either listed or exempt.

16. OTHER INFORMATION

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. In-house information. Outside Testing. Vendor Information. Technical Judgment. Cassaret and Doull's Toxicology, 3rd Ed. New York: Macmillan Publishing Co., Inc., 1986. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and

Labeling of Dangerous Substances, Amended July 1992. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991.

Complete Text of H phrases referred to in Section 3: H350C May cause cancer by inhalation. H340 May cause genetic defects. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H410 Very toxic to aquatic life with long lasting effects.

Revision Summary: Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Date of MSDS Preparation:

Day: 05

Month: November

Year: 2014

MSDS Prepared: MSDS prepared by Product Compliance Department extension 3350

CCOHS Evaluation Note: It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). This SDS has been prepared in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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World Headquarters
Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

MSDS No: M00639

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Silver Nitrate Titrant 0.0493 N
Catalog Number: 2349832

Hach Company
P.O.Box 389
Loveland, CO USA 80539
(970) 669-3050

Emergency Telephone Numbers:
(Medical and Transportation)
(303) 623-5716 24 Hour Service
(515)232-2533 8am - 4pm CST

MSDS Number: M00639
Chemical Name: Not applicable
CAS Number: Not applicable
Additional CAS No. (for hydrated forms): Not applicable
Chemical Formula: Not applicable
Chemical Family: Not applicable
Intended Use: Laboratory Reagent Determination of chloride

2. HAZARDS IDENTIFICATION

GHS Classification:

Hazard categories: 1. Serious Eye Damage/Eye Irritation: Eye Irrit. 2. Hazardous to the Aquatic Environment: Aquatic Chronic 1

GHS Label Elements:

WARNING



Hazard statements: 1. Causes serious eye irritation. Very toxic to aquatic life with long lasting effects.

Precautionary statements: Wear protective gloves / protective clothing / eye protection / face protection. Handle environmental release according to local, state, federal, provincial requirements. If skin irritation occurs: Get medical advice/attention. Collect spillage. Dispose of contents/container according to state, local, federal or national regulations. Wear eye protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

HMIS:

Health: 2

Flammability: 1

Reactivity: 0

Protective Equipment: X - See protective equipment, Section 8.

NFPA:

Health: 2

Flammability: 1

Reactivity: 0

Symbol: Not applicable

WHMIS Hazard Classification: Not applicable

WHMIS Symbols: Not applicable

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components according to GHS:

Isopropanol

CAS Number: 67-63-0

Chemical Formula: C₃H₈O

GHS Classification:

Percent Range (Trade Secret): < 5.0

Percent Range Units: weight / weight

PEL: 400 ppm (980 mg/m³)

TLV: 200 ppm (492 mg/m³)

WHMIS Symbols: Flammable / Combustible Other Toxic Effects

Silver Nitrate

CAS Number: 7761-88-8

Chemical Formula: AgNO₃

GHS Classification: Ox. Sol. 1, H271; Skin Corr. 1B, H314; Acute Tox. Orl. 4, H302; STOT Single 3, H335; STOT Rep. 1, H372; Aquatic Ch. 1, H410

Percent Range (Trade Secret): < 1.0

Percent Range Units: weight / weight

PEL: 0.01 mg/m³ as Ag

TLV: 0.01 mg/m³ as Ag

WHMIS Symbols: Acute Poison Corrosive Oxidizing

Hazardous Components according to GHS: No

Demineralized Water

CAS Number: 7732-18-5

Chemical Formula: H₂O

GHS Classification: Not a dangerous substance according to GHS.

Percent Range (Trade Secret): >95.0

Percent Range Units: weight / weight

PEL: Not established

TLV: Not established

WHMIS Symbols: Not applicable

4. FIRST AID MEASURES

General Information: In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

Advice to doctor: Treat symptomatically.

Eye Contact: Flush eyes with water. Check for and remove any contact lenses. Call physician if irritation develops.

Skin Contact (First Aid): Wash skin with plenty of water. Call physician if irritation develops.

Inhalation: None required.

Ingestion (First Aid): Give large quantities of water. Call physician immediately. If you feel unwell, contact a physician.

5. FIRE FIGHTING MEASURES

Flammable Properties: Can burn in fire, releasing toxic vapors. Material is not classified as flammable according to GHS criteria.

Fire Fighting Instruction: As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

Extinguishing Media: Water. Carbon dioxide Dry chemical.

Extinguishing Media NOT To Be Used: Not applicable

Fire / Explosion Hazards: May react violently with: oxidizers

Hazardous Combustion Products: May emit acrid smoke and fumes.

6. ACCIDENTAL RELEASE MEASURES

Spill Response Notice:

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

Containment Technique: Releases of this material may contaminate the environment. Stop spilled material from being released to the environment. Absorb spilled liquid with non-reactive sorbent material. Dike the spill to contain material for later disposal.

Clean-up Technique: Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Decontaminate the area of the spill with a soap solution. Dispose of in accordance with local, state and federal regulations or laws.

Evacuation Procedure: Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

DOT Emergency Response Guide Number: Not applicable

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes skin Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

Storage: Keep container tightly closed when not in use. Store in a cool, dark, dry place. Protect from: light heat extreme temperatures freezing Keep away from: oxidizers

Flammability Class: Not applicable

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Maintain general industrial hygiene practices when using this product.

Personal Protective Equipment:

Eye Protection: safety glasses with top and side shields

Skin Protection: lab coat nitrile gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it.

Inhalation Protection: adequate ventilation

Precautionary Measures: Avoid contact with: eyes skin Wash thoroughly after handling. Protect from: light heat freezing Keep away from: oxidizers

TLV: Not established

PEL: Not established

For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid

Physical State: Liquid

Molecular Weight: Not applicable

Odor: Odorless

Odor Threshold: Not applicable

pH: 3.5

Metal Corrosivity:

Corrosivity Classification: Not classified as corrosive to metals according to GHS criteria.

Steel: Not determined

Aluminum: Not determined

Specific Gravity/ Relative Density (water = 1; air =1): 1.00

Viscosity: 1.3 mPa·s

Solubility:

Water: Soluble

Acid: Soluble

Other: Soluble in most polar organic solvents.

Partition Coefficient (n-octanol / water): Not applicable

Coefficient of Water / Oil: Not applicable

Melting Point: -2 °C (29 °F)

Decomposition Temperature: Not applicable

Boiling Point: 95 °C (203 °F)

Vapor Pressure: 17.3 mm Hg (2.25 kPa) at 20 °C (68 °F)

Vapor Density (air = 1): 0.64

Evaporation Rate (water = 1): 1.0

Volatile Organic Compounds Content: 3.14% Isopropanol

Flammable Properties: Can burn in fire, releasing toxic vapors. Material is not classified as flammable according to GHS criteria.

Flash Point: > 94.4 °C (> 202 °F)

Method: Closed cup

Flammability Limits:

Lower Explosion Limits: Not determined

Upper Explosion Limits: Not determined

Autoignition Temperature: Not determined

Explosive Properties:

Not classified according to GHS criteria.

Oxidizing Properties:

Not classified according to GHS criteria.

Reactivity Properties:

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

Gas under Pressure:

Not classified according to GHS criteria.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable when stored under proper conditions.

Mechanical Impact: None reported

Static Discharge: None reported.

Reactivity / Incompatibility: May react violently in contact with: strong acids strong bases strong oxidizers

Hazardous Decomposition: In a fire, can release toxic fumes of: carbon monoxide carbon dioxide silver oxides

Conditions to Avoid: Exposure to light. Extreme temperatures Excessive heat Evaporation Contact with acid or acid fumes Contact with oxidizers

11. TOXICOLOGICAL INFORMATION

Toxicokinetics, Metabolism and Distribution: No information available for mixture.

Toxicologically Synergistic Products: None reported

Acute Toxicity: Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data Practically Non-toxic Based on classification principles, the classification criteria are not met.

Specific Target Organ Toxicity - Single Exposure (STOT-SE): Based on classification principles, the classification criteria are not met.

Specific Target Organ Toxicity - Repeat Exposure (STOT-RE): Based on classification principles, the classification criteria are not met.

Skin Corrosion/Irritation: Mildly irritating to skin.

Eye Damage: Irritating to eyes.

Sensitization: Based on classification principles, the classification criteria are not met.

CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction): Based on classification principles, the classification criteria are not met.

An ingredient of this mixture is: IARC Group 3: Non-classifiable

Isopropanol

This product does NOT contain any NTP listed chemicals.

This product does NOT contain any OSHA listed carcinogens.

Symptoms/Effects:

Ingestion: Causes a slate-gray to bluish discoloration of body tissues. May cause: abdominal cramps nausea

Inhalation: Causes a slate-gray to bluish discoloration of body tissues.

Skin Absorption: Will be absorbed through the skin. May cause slate-gray to bluish discoloration.

Chronic Effects: Chronic overexposure may cause accumulation of silver in body tissues which causes a slate-gray to bluish discoloration. Silver compounds may cause gray to black discoloration of the eyes and skin.

Medical Conditions Aggravated: Pre-existing: Skin conditions Eye conditions Respiratory conditions

12. ECOLOGICAL INFORMATION

Product Ecological Information: --

Do not release into the environment. Do not place in landfill. Recycle appropriately. No bioaccumulation potential
Mobility in soil: Highly mobile

Method Used for Estimation of Aquatic Toxicity of Mixture Summation Method M-factor (Multiplier) for highly toxic ingredients: 100

Ingredient Ecological Information: Isopropanol: Goldfish LD50 = 5,000 mg/L/24 hr, Brown Shrimp LC50 = 1,400 mg/L/48 hr, Fathead Minnows LC50 = 11,160 mg/L/24 hr; Silver Nitrate: Rainbow Trout LC50 = 10 µg/l/28 days; Largemouth Bass LC50 = 110 µg/l/8 days; Daphnia Magna 48 hr EC50 = 0.001

CEPA Statement: Silver Nitrate: Persistent, inherently toxic to aquatic organisms, not bioaccumulative; Isopropanol: Persistent, not inherently toxic to aquatic organisms or bioaccumulative.

13. DISPOSAL CONSIDERATIONS

EPA Waste ID Number: D011

Special Instructions (Disposal): Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Dispose of material in an E.P.A. approved hazardous waste facility. Otherwise, Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

Empty Containers: Working in a well-ventilated area, Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of at an E.P. A. approved facility. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

NOTICE (Disposal): These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

14. TRANSPORT INFORMATION

D.O.T.:

D.O.T. Proper Shipping Name: Not Currently Regulated

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Hazard Class: NA

Subsidiary Risk: NA

ID Number: NA

Packing Group: NA

T.D.G.:

Proper Shipping Name: Not Currently Regulated

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Hazard Class: NA

Subsidiary Risk: NA

UN Number/PIN: NA

Packing Group: NA

I.C.A.O.:

I.C.A.O. Proper Shipping Name: Not Currently Regulated

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Hazard Class: NA

Subsidiary Risk: NA

ID Number: NA

Packing Group: NA

I.M.O.:

Proper Shipping Name: Not Currently Regulated

--

Hazard Class: NA

Subsidiary Risk: NA

ID Number: NA

Packing Group: NA

Additional Information: There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

U.S. Federal Regulations:

O.S.H.A.: This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

E.P.A.:

S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370): Immediate (Acute) Health Hazard

S.A.R.A. Title III Section 313 (40 CFR 372): This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

Silver Nitrate

302 (EHS) TPQ (40 CFR 355): Not applicable

304 CERCLA RQ (40 CFR 302.4): Silver nitrate: 1 lb.

304 EHS RQ (40 CFR 355): Not applicable

Clean Water Act (40 CFR 116.4): Silver Nitrate - RQ = 1 lb. (0.454 kg)

RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

State Regulations:

California Prop. 65: No Prop. 65 listed chemicals are present in this product.

Identification of Prop. 65 Ingredient(s): None

California Perchlorate Rule CCR Title 22 Chap 33: Not applicable

Trade Secret Registry: Not applicable

National Inventories:

U.S. Inventory Status: All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

CAS Number: Not applicable

Canadian Inventory Status: All ingredients of this product are DSL Listed.

EEC Inventory Status: All ingredients used to make this product are listed on EINECS / ELINCS.

Australian Inventory (AICS) Status: All ingredients are listed.

New Zealand Inventory (NZIoC) Status: All components either listed or exempt.

Korean Inventory (KECI) Status: All components of this product are either listed, listed as the anhydrous compound or exempt.

Japan (ENCS) Inventory Status: All components either listed or exempt.

China (PRC) Inventory (MEP) Status: All components either listed or exempt.

16. OTHER INFORMATION

References: 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993.

Complete Text of H phrases referred to in Section 3: H319 Causes serious eye irritation. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.

Revision Summary: . Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

Date of MSDS Preparation:

Day: 09

Month: November

Year: 2014

MSDS Prepared: MSDS prepared by Product Compliance Department extension 3350

CCOHS Evaluation Note: It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). This SDS has been prepared in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE.
HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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