

Material Safety Data Sheet

Material Name: ZINC CHLORIDE SOLUTION (25-72%)

ID: MRD-094

*** Section 1 - Chemical Product and Company Identification ***

Chemical Name: Inorganic Salt Solution

Product Use: Electroplating Operations

Synonyms: 50% Technical Grade, Electroplating Grade; 62.5% Technical Grade, Electroplating Grade, Battery Grade; 70° BE Technical Grade; 72° BE Technical Grade

Manufacturer Information

MINERAL RESEARCH AND DEVELOPMENT
5910 Pharr Mill Road or PO Box 1330
Harrisburg, NC 28075

Phone: 704-454-4811
FAX: 704-454-7390
Emergency # CHEMTREC: (800) 424-9300

General Comments

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent
7732-18-5	Water	28-75
7646-85-7	Zinc chloride	25-72

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). This product is considered hazardous under the criteria specified in the Canadian Workplace Hazardous Materials Information System (WHMIS).

*** Section 3 - Hazards Identification ***

Emergency Overview

DANGER! CORROSIVE! This product may be harmful or fatal if swallowed. Causes severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system.

Potential Health Effects: Eyes

Depending on the duration of overexposure, contact with the eyes will cause irritation, pain, reddening, and blindness. May cause eye damage or burns.

Potential Health Effects: Skin

This product is severely irritating to the skin and may cause burns. Depending on the duration of skin contact, skin overexposures will cause reddening, discomfort, irritation, ulceration, and chemical burns. Chemical burns can result in blistering of the skin and scarring. Repeated skin overexposures can result in dermatitis (inflammation and reddening of the skin).

Potential Health Effects: Ingestion

This product may be harmful or fatal if swallowed. If ingested, this product will immediately cause burns to the mouth, throat, esophagus and possibly the digestive tract. Overexposure symptoms include: drowsiness, confusion, difficulty swallowing, a burning sensation in the esophagus and stomach, intense thirst, nausea, abdominal pain, vomiting, diarrhea, stomach perforation, bloody stools or urine, convulsions, and collapse. Large quantity ingestion may be fatal.

Potential Health Effects: Inhalation

This product is irritating to the respiratory system. Damage to the tissues of the respiratory system may occur, such as burns and ulcers, especially after prolonged overexposures or overexposures to high concentrations of this product. Additional inhalation symptoms may include the following: choking, coughing, and difficulty breathing. Severe inhalation overexposures can lead to pulmonary edema, pneumonitis, and death.

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Medical Conditions Aggravated by Exposure

Pre-existing skin and eye conditions.

HMIS Ratings: Health: 3 Fire: 0 Physical Hazard: 0

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

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

First Aid: Skin

For skin contact flush with large amounts of water while removing contaminated clothing. Continue flushing skin with water for 15 minutes. Seek immediate medical attention. Contaminated leather articles, including shoes, that cannot be decontaminated should be discarded.

First Aid: Ingestion

If material is ingested, immediately contact a physician or poison control center. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions.

First Aid: Inhalation

If inhaled, immediately remove the affected person to fresh air. If the affected person is not breathing, have qualified personnel apply artificial respiration. Do NOT perform mouth-to-mouth resuscitation. Call a physician immediately.

First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically.

*** Section 5 - Fire Fighting Measures ***

Flash Point: Not flammable

Upper Flammable Limit (UFL): Not applicable

Auto Ignition: Not flammable

Rate of Burning: Not applicable

General Fire Hazards

This product is an aqueous solution which will not burn.

Hazardous Combustion Products

Decomposition may yield zinc compounds, hydrogen chloride, and chlorine.

Extinguishing Media

Dry chemical, foam, carbon dioxide, water fog.

Fire Fighting Equipment/Instructions

This product is corrosive, and presents a severe contact hazard to fire-fighters. Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products. If this product is involved in a fire, fire run-off water should be contained to prevent possible environmental damage.

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 0

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

*** Section 6 - Accidental Release Measures ***

Containment Procedures

Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up. Contain the discharged material and dike the spilled material where possible. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.

Clean-Up Procedures

Absorb spill with inert material. Shovel the absorbed material into appropriate container for disposal. Decontaminate the area thoroughly.

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Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Special Procedures

Isolate exposure. Wear appropriate personal protective equipment. Follow all Local, State, Federal and Provincial regulations for disposal.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Do not get this material in your eyes, on your skin, or on your clothing. Do not inhale vapors or mists of this product. Wash thoroughly after handling. Do not eat, drink or use tobacco products when handling this material. Use this product with adequate ventilation. Launder work clothes frequently. See Section 8 for appropriate protective clothing, equipment and air monitoring procedures.

Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Empty containers may contain residual liquid or vapors. Empty containers should be handled with care.

Storage Procedures

Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see SECTION 10: Stability and Reactivity). Material should be stored in secondary containers, or in a diked area, as appropriate. Keep container tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Exposure Guidelines

A: General Product Information

Keep formation of airborne mists to a minimum.

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B: Component Exposure Limits

Zinc chloride (7646-85-7)

ACGIH:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
OSHA (Final):	1 mg/m3 TWA (fume)
OSHA (Vacated):	1 mg/m3 TWA 2 mg/m3 STEL
NIOSH:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Alberta:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
British Columbia:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Manitoba:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
New Brunswick:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
NW Territories:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Nova Scotia:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Nunavut:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Ontario:	1 mg/m3 TWAEV (fume) 2 mg/m3 STEV (fume)
Quebec:	1 mg/m3 TWAEV (fume)
Saskatchewan:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)
Yukon:	1 mg/m3 TWA (fume) 2 mg/m3 STEL (fume)

Engineering Controls

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear chemical goggles; face shield (if splashing is possible).

Personal Protective Equipment: Skin

Wear impervious (neoprene) gloves, impervious apron.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of vapors or mists, appropriate approved NIOSH respiratory protection must be provided. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2-1992). A written respiratory protection program, including provisions for medical certification, training, fit testing, exposure assessments, maintenance, inspection, cleaning, and convenient, sanitary storage must be implemented.

Personal Protective Equipment: General

Eye wash fountain and emergency showers are recommended. An emergency spill response will necessitate the use of more stringent personal protective equipment.

* * * **Section 9 - Physical & Chemical Properties** * * *

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Appearance:	Pale yellow liquid	Odor:	Odorless
Physical State:	Liquid	pH:	<1.0
Vapor Pressure:	Not Determined	Vapor Density:	<1.0
Boiling Point:	Approx. >275°F (>135°C)	Melting Point:	Not Determined
Solubility (H2O):	Complete	Specific Gravity:	@ 59°F (15°C): Approx. 1.58 - 1.60
Freezing Point:	Approx. 19.4°F (-7°C)	Evaporation Rate:	Similar to water
Octanol/H2O Coeff.:	Not Determined		

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

This is a stable material.

Chemical Stability: Conditions to Avoid

Avoid contact with incompatible materials.

Incompatibility

This product is incompatible with potassium, strong bases and strong oxidizing agents.

Hazardous Decomposition

Decomposition may yield zinc compounds, hydrogen chloride, and chlorine.

Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

Acute exposure can cause severe irritation and burns of the eyes, skin, gastrointestinal tract and respiratory tract.

Zinc chloride is an eye, skin and respiratory system irritant. Inhalation of zinc fumes may result in temporary metal fume fever. Other symptoms such as slight leukocytosis, respiratory disease and hypocalcemia have been reported from occupational exposure to zinc compounds.

B: Component Analysis - LD50/LC50

Water (7732-18-5)

Oral LD50 Rat: >90 mL/kg

Zinc chloride (7646-85-7)

Oral LD50 Rat: 350 mg/kg

50 mg/m³ IDLH (fume)

Carcinogenicity

A: General Product Information

No carcinogenicity data available for this product.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

Due to the acidic nature of this product, a release of this product in a river or other body of water (especially in large volumes) will kill fish and other aquatic life.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

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

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Environmental Fate

The components of this product are relatively stable under ambient, environmental conditions.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

If discarded, this product is considered a RCRA corrosive waste, D002. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

*** Section 14 - Transportation Information ***

US DOT Information

UN/NA #: UN1840

Shipping Name: Zinc chloride, solution

Hazard Class: 8 Packing Group: III

Required Label(s): CORROSIVE

Canada Transportation of Dangerous Goods Information

UN/NA #: UN1840

Shipping Name: Zinc chloride solution

Hazard Class: 8 Packing Group: III

Required Label(s): CORROSIVE

IMDG

UN/NA #: UN1840

Shipping Name: Zinc chloride solution

Hazard Class: 8 Packing Group: III

Required Label(s): CORROSIVE

EmS: F-A, S-B

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Zinc chloride (7646-85-7)

CERCLA: 1000 lb final RQ; 454 kg final RQ

C: Federal Insecticide, Fungicide, and Rodenticide Act

No information is available.

SARA 311/312: Acute Health Yes Chronic Health No Fire No Pressure No Reactive No

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State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State

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

Component	CAS	CA	MA	MN	NJ	PA	RI
Zinc chloride	7646-85-7	Yes	Yes	Yes	Yes	Yes	Yes

Canadian WHMIS Information

A: General Product Information

All components are on the Canadian Domestic Substances or Non-Domestic Substances Inventory Lists.

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Zinc chloride	7646-85-7	1 %

WHMIS Classification: Class E: Corrosive Material

Additional Regulatory Information

A: General Product Information

All components are on the U.S. EPA TSCA Inventory List.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	NDSL	EINECS	AUST	MITI	PHIL	KOREA	ELINCS	CHINA
Water	7732-18-5	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes
Zinc chloride	7646-85-7	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes

* * * Section 16 - Other Information * * *

Other Information

Disclaimer: Supplier gives no warranty of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser will make his own tests to determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental and/or consequential property damage arising out of the use of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Material Safety Data Sheet before handling product.

Key/Legend

NA = Not available or Not Applicable. CERCLA = Comprehensive Environmental Response Compensation & Liability Act; SARA = Superfund Amendments & Reauthorization Act; RCRA = Resource Conservation & Recovery Act. TLV = Threshold Limit Value. NFPA = National Fire Protection Association. HMIS = Hazardous Material Information System. CFR = Code of Federal Regulations. HEPA = High Efficiency Particulate Air EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

This is the end of MSDS # MRD-094