



SAFETY DATA SHEET

Issuing Date 29-Oct-2012

Revision Date 28-April-2015

Revision Number 1

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

Product identifier

Product Name Zinc Bromide - Calcium Bromide Solution

Other means of identification

Synonyms Metal Bromide

Recommended use of the chemical and restrictions on use

Recommended Use Additive brine

Uses advised against No information available

Supplier's details

Manufacturer Address

TETRA Technologies, Inc.
24955 Interstate 45 North
The Woodlands, TX 77380
TEL: 281-367-1983 (Non-Emergency Number)

Emergency telephone number

Emergency Telephone Number CHEMTREC: 1-800-424-9300 for US/ 703-527-3887 outside US

2. HAZARDS IDENTIFICATION

Classification

Serious Eye Damage/Eye Irritation	Category 1
Acute toxicity (oral)	Category 4
Skin corrosion/irritation	Category 1B
Sensitisation — Skin,	Category 1
Hazardous to the aquatic environment — Chronic	Category 2

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word**Danger****Hazard Statements**

Causes serious eye damage
 Harmful if swallowed
 Causes severe skin burns and eye damage
 May cause an allergic skin reaction
 Toxic to aquatic life with long lasting effects

Appearance Colorless to yellow**Physical State** Liquid.**Odor** Odorless**Precautionary Statements****Prevention**

Do not breathe dust/fume/ gas/mist/vapours/spray.
 Do not eat, drink or smoke when using this product.
 Wash face, hands and any exposed skin thoroughly after handling.
 Wear protective gloves/protective clothing/eye protection/face protection.
 Avoid release to the environment.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/physician if you feel unwell.
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with soap and water/shower.
 If skin irritation or rash occurs: Get medical advice/attention.
 Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace.
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 Immediately call a POISON CENTER or doctor/physician.
 Collect spillage.

Storage

Store locked up.

Disposal

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

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight % *
Zinc bromide	7699-45-8	53 – 56
Calcium bromide	7789-41-5	18 – 21

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of necessary first-aid measures

General Advice	If symptoms persist, call a physician.
Eye Contact	Immediately flush eyes thoroughly with large amounts of water for 15-20 minutes. Hold eyelids open during flushing. Get medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent, and large amounts of water. In cases of burns, cover lightly with sterile, dry dressing. Get medical attention immediately.
Inhalation	Remove from exposure area to fresh air. Obtain medical attention immediately.
Ingestion	Do not attempt to give anything by mouth to an unconscious person. Dilute with milk or water and remove gastric lavage is affected person has not vomited. Treat hypotension and replace lost fluids. Keep warm and at rest. Get medical attention immediately.
Protection of First-aiders	Use personal protective equipment.

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects No information available.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician	<p>Treat symptomatically and supportively. If ingested, consider gastric lavage. The decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel only.</p> <p>The following antidote(s) can be considered*:</p> <p><u>Zinc salt poisoning</u> Calcium disodium edentate - intravenous, 15-25 mg/kg (0.08-.0125 mL of 20% solution per kilogram of body weight) in 250-500 mL of 5% dextrose; over a 1 to 2 hour period twice daily. The maximum dose should not exceed 50 mg/kg/day. This should be given in 5-day courses with a rest period of at least 2 days between courses. After the first course, subsequent courses should not exceed 50 mg/kg/day. Daily urinalysis should be performed during treatment period. Dosage should be reduced if any unusual urinary findings appear. For intramuscular administration, give 12.5 mg/kg body weight every 4-6 hours. Dilute each dose with an equal volume of 1% procaine. Dose limitation is the same as that given above.</p> <p><u>Bromide poisoning</u> Sodium chloride - oral, 1 gram every hour in water or as a salt tablet; for severe involvement in which oral medication is possible, give normal saline, 1 liter every 8 hours intravenously to a maximum of 2 liters daily. Sodium chloride therapy must be continued until the blood bromide level drops below 50 mg/dL. Simultaneous administration of diuretics is also useful.</p> <p>*Reference: Dreisbach, Handbook of Poisoning, 12th Ed.</p>
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5. FIRE-FIGHTING MEASURES

Flammable Properties	Non-flammable
Flash Point	Not applicable

Suitable Extinguishing Media

Move container(s) from fire area if you can do so without risk. Apply cooling water to sides of containers that are exposed to flames until well after the fire is out. Keep away from ends of drums and/or ends of tanks. Extinguish fire using agent suitable for type of surrounding fire and/or chemicals. Avoid breathing vapors. Keep upwind. Dike area to prevent runoff and contamination of water sources.

Unsuitable Extinguishing Media No information available.

Explosion Data

Sensitivity to Mechanical Impact

No information available.

Sensitivity to Static Discharge

No information available.

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions

Use personal protective equipment. Avoid contact with the skin and the eyes. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions

Environmental Precautions

Solutions containing zinc bromide are considered Marine Pollutants and Environmentally Hazardous. Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg (or 93 gallons of product).

Methods and materials for containment and cleaning up

Methods for Containment

Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up

Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling

Handle in accordance with good industrial hygiene and safety practice. Use only in area provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Do not eat, drink or smoke when using this product. Do not take internally. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage

Keep in properly labeled containers. Keep container tightly closed in a dry and well-ventilated place. Keep away from incompatible materials.

Incompatible Products

Strong acids. Strong oxidizers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines

No information available.

Appropriate engineering controls

Engineering Measures	Showers Eyewash stations Ventilation systems
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Individual protection measures, such as personal protective equipment

Eye/Face Protection	Chemical splash goggles.
Skin and Body Protection	Impervious gloves. Lightweight protective clothing.

Respiratory Protection	A respirator is not indicated under normal operating conditions. Use of a NIOSH approved respirator should be used based on contamination levels found in the area. In the case of high mist levels wear suitable respiratory protective equipment, Mist respirator with full facepiece. Any air purifying full facepiece respirator with a high-efficiency particulate filter. Any Type "C" supplied-air respirator with a full facepiece operated in pressure-demand or other positive-pressure mode or with a full facepiece, helmet or hood operated in continuous-flow mode.
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Hygiene Measures	When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Appearance	Clear, light yellow to amber
Odor	Odorless	Odor Threshold	No information available

<u>Property</u>	<u>Values</u>	
pH	< 2.5	
Melting Point/Range	No data available	
Boiling Point/Boiling Range	313°F (156°C)	For 55% solution ZnBr ₂ , 19% CaBr ₂
Flash Point	Non-flammable	
Evaporation rate	No data available	
Flammability (solid, gas)	No data available	
Flammability Limits in Air		
upper flammability limit	No data available	
lower flammability limit	No data available	
Vapor Pressure	No data available	
Vapor Density	Not applicable	
Specific Gravity	2.3 @ 77°F (25°C)	For 55% solution ZnBr ₂ , 19% CaBr ₂
Water Solubility	Complete	
Solubility in other solvents	No data available	
Partition coefficient: n-octanol/water	No data available	
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Viscosity	No data available	

Flammable Properties	Non-flammable
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Explosive Properties	No data available
Oxidizing Properties	No data available

Other information

VOC Content (%)	No data available
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10. STABILITY AND REACTIVITY

Reactivity

Can evolve hydrogen bromide and/or bromine when heated. Can evolve bromine gas under oxidizing conditions.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Contact with incompatible materials. Conditions which would lead to accumulation of poisonous gases in tanks and hopper cars.

Incompatible materials

Strong acids. Strong oxidizers..

Hazardous decomposition products

May include acid smokes and fumes of zinc oxides and hydrogen bromide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact	Causes severe eye irritation. May cause eye burns.
Inhalation	Causes severe respiratory irritation.
Skin Contact	May cause skin irritation. May cause skin burns with prolonged contact. May cause an allergic reaction.
Ingestion	Causes burns of the mouth, throat and stomach. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression.

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Calcium bromide	= 4100 mg/kg (Rat)	> 2.000 mg/kg (rabbit)	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Moderately toxic by ingestion. Slightly toxic by dermal absorption. Repeated or prolonged dermal exposure to zinc salts may cause dermatitis with erythematous, papular, and granulomatous reactions in susceptible individuals. Repeated or prolonged ingestion of zinc salts may cause digestive and/or renal disorders. Ingestion of large amounts of astringent zinc salts may cause a burning sensation in the mouth and throat, nausea, vomiting, diarrhea, hemolysis, hematuria, kidney damage with anuria, liver damage with jaundice, and possibly hypotension, convulsions, and unconsciousness. Can also produce drowsiness, irritability, vertigo, confusion, mania, hallucinations, coma, skin rashes, sensory disturbances, increased spinal fluid pressure, and other neurological symptoms
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Delayed and immediate effects and also chronic effects from short and long term exposure

Eye damage/irritation	Eye irritant.
Sensitization	No information available.
Mutagenic Effects	No information available.
Carcinogenicity	OSHA – No NTP – No IARC – No
Reproductive Toxicity	No information available.

STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Chronic Toxicity	No information available.
Target Organ Effects	Kidney, liver
Aspiration Hazard	No information available.

Numerical measures of toxicity - Product

No information available.

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Solutions containing zinc bromide are considered Marine Pollutants and Environmentally Hazardous.

Persistence and Degradability No information available.**Bioaccumulation** No information available.**Other Adverse Effects**

No information available.

13. DISPOSAL CONSIDERATIONS**Waste Disposal Methods** Observe all federal, state and local regulations when disposing of this substance.**Contaminated Packaging** Dispose of contents/containers in accordance with local regulations.**14. TRANSPORT INFORMATION**

For quantities > 93 gallons in one container the RQ designation is required as shown.

DOT UN 3082, Environmentally hazardous substance, liquid, n.o.s., 9, III, RQ (Zinc Bromide), MARINE POLLUTANT (Zinc Bromide)**IATA** UN 3082, Environmentally hazardous substance, liquid, n.o.s., 9, III, RQ (Zinc Bromide), MARINE POLLUTANT (Zinc Bromide)**IMDG/IMO** UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III, RQ (ZINC BROMIDE), MARINE POLLUTANT (ZINC BROMIDE)**15. REGULATORY INFORMATION****International Inventories**

TSCA	Complies
DSL	Complies

Legend**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**U.S. Federal Regulations**

The following components are subject to reporting levels established by SARA Title III, Section 313:

Zinc bromide CAS-No. 7699-45-8

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
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Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

CERCLA

Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg.

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION				
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<u>NFPA</u>	Health Hazard 2	Flammability 0	Instability 0	Physical and Chemical Hazards -
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Prepared By	TETRA Technologies, Inc. sds@tetrathec.com
Issuing Date	29-Oct-2012
Revision Date	28-April-2015
Revision Note	Updated GHS format.

General Disclaimer

The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of Safety Data Sheet