



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

|                          |                                                                       |
|--------------------------|-----------------------------------------------------------------------|
| <b>Material name</b>     | <b>CUPRIC BROMIDE 50% SOLUTION</b>                                    |
| <b>Version #</b>         | 02                                                                    |
| <b>Revision date</b>     | 08-25-2011                                                            |
| <b>CAS #</b>             | Mixture                                                               |
| <b>Product Codes</b>     | <b>Macron: 4895</b>                                                   |
| <b>Synonym(s)</b>        | Copper bromide solution                                               |
| <b>Manufacturer</b>      | Avantor Performance Materials, Inc.                                   |
| <b>Address</b>           | 3477 Corporate Parkway<br>Suite #200<br>Center Valley, PA 18034<br>US |
| <b>Customer Service</b>  | 855-282-6867                                                          |
| <b>24 Hour Emergency</b> | 908-859-2151                                                          |
| <b>Chemtrec</b>          | 800-424-9300                                                          |

## 2. Hazards Identification

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Emergency overview</b>              | DANGER<br><br>Corrosive. Causes skin and eye burns. Harmful if inhaled or swallowed. May be fatal if swallowed. Causes central nervous system effects.                                                                                                                                                                                                                                                                                       |
| <b>OSHA regulatory status</b>          | This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).                                                                                                                                                                                                                                                                                                                                                          |
| <b>Potential health effects</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Routes of exposure</b>              | Inhalation. Ingestion. Skin contact. Eye contact.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Eyes</b>                            | Corrosive to the eyes and may cause severe damage including blindness. Causes chemical burns. Vapors are extremely irritating and corrosive. Do not get this material in contact with eyes.                                                                                                                                                                                                                                                  |
| <b>Skin</b>                            | Corrosive. Causes skin burns. Do not get this material in contact with skin.                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Inhalation</b>                      | Severely irritating to respiratory system. Vapors are corrosive. After some hours, injured persons may develop serious shortness of breath and lung edema. This product may cause metal fume fever with resulting flu-like symptoms. Coughing. Difficulty in breathing. Can cause severe central nervous system depression (including unconsciousness). Prolonged inhalation may be harmful. Do not breathe dust/fume/gas/mist/vapors/spray. |
| <b>Ingestion</b>                       | Harmful if swallowed. Corrosive and may cause severe and permanent damage to mouth, throat, and stomach. Ingestion causes burns of the upper digestive and respiratory tracts. May cause dizziness, incoordination, headache, nausea, and vomiting. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Do not ingest.             |
| <b>Target organs</b>                   | Central nervous system. Brain. Eyes. Liver. Kidneys.                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Chronic effects</b>                 | Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Liver and/or kidney damage. Can cause blood disorders. Can cause lung damage.                                                                                                                                                                                                                                                                |
| <b>Signs and symptoms</b>              | Irritation of nose and throat. Irritation of eyes and mucous membranes. Conjunctivitis. Discomfort in the chest.                                                                                                                                                                                                                                                                                                                             |
| <b>Potential environmental effects</b> | Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.                                                                                                                                                                                                                                                                                                                            |

## 3. Composition / Information on Ingredients

| Hazardous components | CAS #     | Percent |
|----------------------|-----------|---------|
| CUPRIC BROMIDE       | 7789-45-9 | 45 - 55 |

**Non-hazardous components****CAS #****Percent**

WATER

7732-18-5

45 - 55

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**4. First Aid Measures**

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**First aid procedures****Eye contact**

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

**Skin contact**

Immediately flush skin with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.

**Inhalation**

Move to fresh air. Call a physician or poison control center immediately. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

**Ingestion**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Rinse mouth thoroughly. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

**General advice**

Immediate medical attention is required. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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**5. Fire Fighting Measures**

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**Flammable properties**

The product is not flammable. No unusual fire or explosion hazards noted.

**Extinguishing media****Suitable extinguishing media**

Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).

**Protection of firefighters****Protective equipment and precautions for firefighters**

In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**Specific methods**

In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

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**6. Accidental Release Measures**

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**Personal precautions**

Ensure adequate ventilation. Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear appropriate protective equipment and clothing during clean-up.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods for containment**

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

**Methods for cleaning up**

Should not be released into the environment.

Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Do not flush to sewer.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece).

Never return spills in original containers for re-use. Clean surface thoroughly to remove residual contamination.

**7. Handling and Storage****Handling**

Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not get this material on clothing. Do not use in areas without adequate ventilation. Wear personal protective equipment. Avoid prolonged exposure. Wash thoroughly after handling. Avoid release to the environment. Handle and open container with care.

**Storage**

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep out of the reach of children. Use care in handling/storage.

**8. Exposure Controls / Personal Protection****ACGIH****Components****Type****Value**

HYDROGEN BROMIDE (10035-10-6)

Ceiling

2.0000 ppm

**Occupational exposure limits****U.S. - OSHA****Components****Type****Value**

HYDROGEN BROMIDE (10035-10-6)

PEL

3.0000 ppm  
10.0000 mg/m3

**Engineering controls**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment****Eye / face protection**

Chemical goggles are recommended. Face-shield. Provide eyewash station and safety shower.

**Skin protection**

Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves.

**Respiratory protection**

Wear positive pressure self-contained breathing apparatus (SCBA). Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

**General hygiene considerations**

Do not get in eyes. Do not get this material in contact with skin. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical & Chemical Properties****Appearance**

Liquid.

**Color**

Brown.

**Odor**

Hydrogen bromide.

**Odor threshold**

Not available.

**Physical state**

Liquid.

**Form**

Liquid.

**pH**

2.7 - 3 100 g/L at 20 C

|                                                       |                            |
|-------------------------------------------------------|----------------------------|
| <b>Melting point</b>                                  | 928.4 °F (498 °C) for CuBr |
| <b>Boiling point</b>                                  | 1652 °F (900 °C) for CuBr  |
| <b>Flash point</b>                                    | Not available.             |
| <b>Evaporation rate</b>                               | Not available.             |
| <b>Flammability limits in air, upper, % by volume</b> | Not available.             |
| <b>Flammability limits in air, lower, % by volume</b> | Not available.             |
| <b>Vapor density</b>                                  | Not available.             |
| <b>Specific gravity</b>                               | 1.5                        |
| <b>Relative density</b>                               | Not available.             |
| <b>Solubility (water)</b>                             | Miscible                   |
| <b>Partition coefficient (n-octanol/water)</b>        | Not available              |
| <b>Auto-ignition temperature</b>                      | Not available.             |
| <b>Decomposition temperature</b>                      | Not available.             |
| <b>Molecular formula</b>                              | CuBr <sub>2</sub>          |

## 10. Chemical Stability & Reactivity Information

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|                                           |                                                                                                   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Chemical stability</b>                 | Material is stable under normal conditions.                                                       |
| <b>Conditions to avoid</b>                | Incompatible materials.                                                                           |
| <b>Incompatible materials</b>             | Acids. Strong bases. Oxidizing materials. Chlorine. Fluorine. Peroxides. Nitromethane. Potassium. |
| <b>Hazardous decomposition products</b>   | Hydrogen bromide. Halogens. Irritants. Toxic gas.                                                 |
| <b>Possibility of hazardous reactions</b> | Hazardous polymerization does not occur.                                                          |

## 11. Toxicological Information

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### Toxicological data

| Product                               | Test Results                                                                                         |
|---------------------------------------|------------------------------------------------------------------------------------------------------|
| CUPRIC BROMIDE 50% SOLUTION (Mixture) | Acute Inhalation LC50 Mouse: 24667 mg/l estimated<br>Acute Inhalation LC50 Rat: 86606 mg/l estimated |
| Components                            | Test Results                                                                                         |
| HYDROGEN BROMIDE (10035-10-6)         | Acute Inhalation LC50 Mouse: 814 mg/l 1.00 Hours<br>Acute Inhalation LC50 Rat: 2858 mg/l 1.00 Hours  |

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

|                                  |                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------|
| <b>Chronic effects</b>           | Not available.                                                                  |
| <b>Carcinogenicity</b>           | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| <b>Skin corrosion/irritation</b> | Not available.                                                                  |
| <b>Epidemiology</b>              | Not available.                                                                  |
| <b>Neurological effects</b>      | Not available.                                                                  |

## 12. Ecological Information

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|                                      |                                                           |
|--------------------------------------|-----------------------------------------------------------|
| <b>Ecotoxicity</b>                   | Components of this product are hazardous to aquatic life. |
| <b>Environmental effects</b>         | Harmful to aquatic organisms.                             |
| <b>Persistence and degradability</b> | Not available.                                            |

Partition coefficient (n-octanol/water) Not available

### 13. Disposal Considerations

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**Disposal instructions** This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations. Do not allow this material to drain into sewers/water supplies.

### 14. Transport Information

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#### DOT

**Basic shipping requirements:**

**UN number** UN3264  
**Proper shipping name** Corrosive liquid, acidic, inorganic, n.o.s. (copper dibromide, hydrobromic acid)  
**Hazard class** 8  
**Packing group** II

**Additional information:**

**Special provisions** A6, B2, IB2, T11, TP2, TP27

**Basic shipping requirements:**

**Labels required** 8

**Additional information:**

**Packaging exceptions** 154  
**Packaging non bulk** 202  
**Packaging bulk** 242  
**ERG number** 154

#### IATA

**Basic shipping requirements:**

**UN number** 3264  
**Proper shipping name** Corrosive liquid, acidic, inorganic, n.o.s. (copper dibromide, hydrobromic acid)  
**Hazard class** 8  
**Packing group** II

**Additional information:**

**ERG code** 8L

#### IMDG

**Basic shipping requirements:**

**UN number** 3264  
**Proper shipping name** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (COPPER DIBROMIDE, HYDROBROMIC ACID)  
**Hazard class** 8  
**Packing group** II



DOT



IATA



IMDG

## 15. Regulatory Information

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

CERCLA/SARA Hazardous Substances - Not applicable.

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration**

CUPRIC BROMIDE (CAS 7789-45-9) 1.0 % N100

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance**

CUPRIC BROMIDE (CAS 7789-45-9) Listed. N100

**CERCLA (Superfund) reportable quantity**

None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

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

**Section 311 hazardous chemical** Yes

**Inventory status**

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

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US - New Jersey Community RTK (EHS Survey): Reportable threshold**

CUPRIC BROMIDE (CAS 7789-45-9) 500 LBS

**US - Pennsylvania RTK - Hazardous Substances: Listed substance**

HYDROGEN BROMIDE (CAS 10035-10-6) Listed.

**Saf-T-Data**

Health: 3 - Severe (Life)  
Flammability: 0 - None  
Reactivity: 1 - Slight  
Contact: 3 - Severe (Corrosive)  
Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: W - White (Corrosive)

## 16. Labeling Info

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**Label Hazard Warning**

DANGER

Corrosive. Causes skin and eye burns. Harmful if inhaled or swallowed. May be fatal if swallowed. Causes central nervous system effects.

**Label Precautions**

Do not breathe mist or vapor. Keep container closed. Use only with adequate ventilation. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

**Label First Aid**

Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Never give anything by mouth to a victim who is unconscious or is having convulsions. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

## 17. Other Information

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**NFPA ratings**

Health: 3  
Flammability: 0  
Instability: 1

**Disclaimer**

THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.

**Issue date**

08-25-2011

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

Exposure Controls / Personal Protection: Respiratory protection  
Chemical Stability & Reactivity Information: Incompatible materials  
Other Information: Disclaimer