MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**ZINC SULFATE HEPTAHYDRATE**
Version #	02
Revision date	08-30-2011
CAS #	7446-20-0
Product Codes	**J.T.Baker: 4382, 4383, 4384** **Macron: 8872, 8880**
Synonym(s)	Sulfuric acid, zinc salt (1:1), heptahydrate
Manufacturer	Avantor Performance Materials, Inc.
Address	3477 Corporate Parkway Suite #200 Center Valley, PA 18034 US
Customer Service	855-282-6867
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview

DANGER

Harmful if inhaled or swallowed. Causes eye burns. Causes skin irritation. Dust or vapor irritating to the eyes and respiratory tract.

OSHA regulatory status

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure

Ingestion. Inhalation. Skin contact. Eye contact.

Eyes

Causes eye burns. Dust or splashes from the mixture may cause permanent eye damage.

Skin

Causes skin irritation. Prolonged or repeated contact with skin may cause redness, itching, irritation and eczema/chapping.

Inhalation

Harmful if inhaled. Dust may irritate throat and respiratory system and cause coughing.

Ingestion

Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Target organs

Eyes. Skin. Respiratory system. Liver. Kidney.

Chronic effects

Prolonged or repeated exposure may cause liver and kidney damage. These effects have not been observed in humans.

Potential environmental effects

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
ZINC SULFATE HEPTAHYDRATE	7446-20-0	100

Composition comments

CAS # 7446-20-0 can be described by the CAS # 7733-02-0.

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. In case of irritation from airborne exposure, move to fresh air. Get medical attention if irritation develops and persists.

Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.
Inhalation	Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	Keep victim under observation. Treat symptomatically.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	The product is not flammable. No unusual fire or explosion hazards noted.
Extinguishing media	
Suitable extinguishing media	Water spray. Carbon dioxide (CO2). Dry chemical powder. Foam.
Unsuitable extinguishing media	None known.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.
Special protective equipment for fire-fighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.
Specific methods	In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Do not allow to enter drains, sewers or watercourses. Prevent further leakage or spillage if safe to do so.
Methods for containment	Prevent entry into waterways, sewers, basements or confined areas. Stop leak if you can do so without risk. Dike the spilled material, where this is possible.
Methods for cleaning up	Avoid dust formation. Large Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Small Spills: Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Collect in a non-combustible container for prompt disposal.

7. Handling and Storage

Handling	Wear appropriate personal protective equipment. Avoid breathing dust. Do not get in eyes and avoid contact with skin and clothing. Do not taste or swallow. Wash thoroughly after handling. Do not eat, drink or smoke when using the product. See Section 8 of the MSDS for Personal Protective Equipment.

Storage	Keep tightly closed in a dry, cool and well-ventilated place.

8. Exposure Controls / Personal Protection

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 and face shield are recommended.
Skin protection	Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: High-efficiency particulate respirator with full facepiece.
General hygeine considerations	Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
General	Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

Appearance	Crystalline. Granular.
Color	Colorless.
Odor	Odorless.
Odor threshold	Not available.
Physical state	Solid.
Form	Solid.
pH	4.5 aqueous solution
Melting point	212 °F (100 °C)
Freezing point	212 °F (100 °C)
Boiling point	> 932 °F (> 500 °C) Decomposes.
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor density	Not available.
Specific gravity	1.97
Relative density	Not available.
Solubility (water)	960 g/l
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Molecular weight	287.56 g/mol
Molecular formula	O4-S-Zn.7H2O

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions.
Conditions to avoid	Excessive heat. Water, moisture.

Incompatible materials	Strong oxidizing agents. Inorganic salts.
Hazardous decomposition products	Zinc oxide. Sulfur oxides.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Test Results
ZINC SULFATE HEPTAHYDRATE (7446-20-0)	Acute Dermal LD50 Rat: > 2000 mg/kg
	Acute Oral LD50 Rat: 623 mg/kg

Sensitization	Not a skin sensitizer.
Acute effects	Harmful if inhaled or swallowed.
Local effects	Causes eye burns. Causes skin irritation. Inhalation of dusts may cause respiratory irritation.
Chronic effects	Prolonged or repeated exposure may cause liver and kidney damage. These effects have not been observed in humans.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Skin corrosion/irritation	Causes skin irritation.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Neurological effects	No data available for this product.
Reproductive effects	Contains no ingredient listed as toxic to reproduction
Teratogenicity	No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Symptoms and target organs	Severe eye irritation. Moderate skin irritation. Upper respiratory tract irritation.

12. Ecological Information

Ecotoxicological data

Product	Test Results
ZINC SULFATE HEPTAHYDRATE (7446-20-0)	EC50 Water flea (Ceriodaphnia dubia): 0.06 mg/l 48.00 hours
	LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss): 0.103 mg/l 96.00 hours

Ecotoxicity	Expected to be very toxic to aquatic organisms. May cause long-term adverse effects in the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.
Persistence and degradability	The product is not readily biodegradable.
Partition coefficient (n-octanol/water)	Not available

13. Disposal Considerations

Disposal instructions	Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

This product is not listed on the U.S. EPA TSCA Inventory. Under TSCA, hydrates are considered mixtures of their anhydrous salt and water. Accordingly, the anhydrous form is subject to TSCA reporting requirements.

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

ZINC SULFATE HEPTAHYDRATE (CAS 7446-20-0) 1.0 % N982

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

ZINC SULFATE HEPTAHYDRATE (CAS 7446-20-0) Listed. N982

CERCLA (Superfund) reportable quantity

ZINC SULFATE HEPTAHYDRATE: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

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

Section 311 hazardous chemical

Yes

Clean Water Act (CWA)

Hazardous substance
Priority pollutant
Toxic pollutant

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)	No
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	No

*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

ZINC SULFATE HEPTAHYDRATE (CAS 7446-20-0) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

ZINC SULFATE HEPTAHYDRATE (CAS 7446-20-0) Listed.

Saf-T-Data

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

16. Labeling Info

Label Hazard Warning

DANGER

Harmful if inhaled or swallowed. Causes eye burns. Causes skin irritation. Dust is irritating to the eyes and respiratory tract.

Label Precautions

Avoid breathing dust. Do not get in eyes and avoid contact with skin and clothing. Do not taste or swallow. Use only with adequate ventilation. Keep container closed. 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. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

17. Other Information

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Disclaimer

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