



Safety Data Sheet (SDS)

Revision / Review Date: 3/30/15

1. Chemical Product and Company Identification

Product Name:	H-17
Distributed By:	HB Chemical 1665 Enterprise Parkway Twinsburg Oh 44087 Phone - 330-920-8023
SDS Prepared By (w Suppliers Input):	HB Chemical
Chemical Name / Family:	Sulfur
Synonyms:	Colloidal sulfur, flowers of sulfur, precipitated sulfur, sublimed sulfur, brimstone, Sulphur, Pulverized sulfur, Rubbermarker's sulfur, and Commercial sulfur.
Molecular Formula:	S ₈ , S
Molecular Weight via GPC, Mn:	32.07 g/mol
Product Use:	Sulfur
OSHA Status:	Hazardous
CAS No:	7704-34-9
EC No:	231-722-6

For emergency health, safety, and environmental information, calls 330-920-8023

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300

2. Hazard(s) Identification

<u>Warning:</u>	Combustible dust.
<u>Signs and Symptoms of Exposure:</u>	Symptoms of exposure may include irritation, burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting and dermatitis.
<u>Primary Routes of Entry:</u>	Eyes and inhalation.
<u>Medical Conditions Generally Aggravated by Exposure:</u>	Sensitive individuals can experience skin irritation from repeated exposure to sulfur dust. Allergenic responses can occur.
<u>Chronic Exposure:</u>	Prolonged overexposure to sulfur dust can produce possible skin sensitization and permanent eye damage (clouding of the lens and chronic irritation). Prolonged inhalation can cause irritation of mucous membranes. May cause central nervous system effects.
<u>Eye Contact:</u>	Sulfur dust is an eye irritant.

<u>Skin Contact:</u>	May cause skin irritation and possible burns. Skin with existing skin lesions will experience aggravated irritation.
<u>Ingestion:</u>	Considered essentially non-toxic by ingestion. Ingested sulfur is converted to sulfides in the gastrointestinal tract, and ingestion of 10 to 20 grams has caused irritation of the gastrointestinal tract and renal injury. Individuals with allergies to sulfide drugs may have an allergic reaction. Swallowing large amounts may cause nausea and vomiting.
<u>Inhalation:</u>	Prolonged inhalation may cause irritation of the respiratory tract. Breathing of dust may aggravate asthma and other pulmonary diseases. Individuals with allergies to sulfide drugs may have an allergic reaction.
<u>NFPA Rating:</u>	Health - 1, Fire -1, Reactivity- 0
<u>HMIS Hazard Ratings:</u>	Health- 1, Flammability -1, Physical - 0
<u>HMIS limitation statement:</u>	The HMIS hazard ratings numbers are meant to give a quick indication of the relative hazards associated with the product. All of the information contained in the SDS should be consulted to assist with the safe handling of this material.
<u>Principal Hazardous Components:</u>	Sulfur, 10 mg/m3 total dust (TVL/TWA) ACGIH

3. Composition / Information on Ingredients

Weight Percent / Typical	Component Identity	CAS Registry Number
97%	Sulfur	7704-34-9

4. First Aid Measures

<u>Inhalation:</u>	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
<u>Eyes:</u>	Rinse eyes with water for 10-15 minutes. Consult a physician should irritation persist.
<u>Skin:</u>	Wash off with soap and plenty of water. Consult a physician.
<u>Ingestion:</u>	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician

5. Fire-Fighting Measures

<u>Suitable Extinguishing Media:</u>	Use water spray, alcohol-resistant foam, dry chemical or CO2.
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Special Fire Fighting Procedures:

Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use a water fog to extinguish fire. Solid streams of water should not be used because of possibility of dispersing dust clouds of sulfur in air which can cause an explosion or move burning sulfur to adjacent areas. Fire will rekindle until mass is cooled below 310F. Cool containers and surrounding areas with flooding quantities of water until well after fire is out. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Symptoms of exposure can be delayed.

Hazardous Combustion Products:

Sulphur dioxide and hydrogen sulfide.

Unusual fire and explosion hazards:

Sulfur dust suspended in air ignites easily, and can cause an explosion in confined areas. May be ignited by friction, static electricity, heat, sparks or flames. Toxic gases will form upon combustions. Bulk/ solid forms burn only at moderate rate, whereas dust burns with explosive violence. Water spray may cause frothing.

6. Accidental Release Measures

Steps to be taken in case material is spilled:

Wear appropriate personal protective equipment. Clean up spills in a manner that reduce airborne dust and prevent scattering by moistening with water. Use non-sparking tools and equipment. Sweep up and shovel. Pick up spill for recovery or disposal and place in a closed container. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition.

Environmental Disposal Information:

Do not let product enter drains.

Waste Disposal:

Keep in suitable, closed containers for disposal.

7. Handling and Storage

Empty Containers:

Empty containers retain product residue, (liquid and/or vapor), and can be dangerous.

Precautions to be taken in handling:

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Empty only into inert or non-flammable atmosphere. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. May form flammable dust-air mixtures. Avoid contact with eyes, skin, and clothing. Do not pressurize, cut, weld, braze, solder,

drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Store in a tightly closed container in a cool, dry, well-ventilated area away from incompatible substances. Keep away from heat, sparks, and flame.

8. Exposure Controls / Personal Protection

Exposure Controls:

Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Respiratory Protection:

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Ventilation:

General ventilation.

Hand protection:

Rubber, Neoprene if splashing is a problem.

Eye Protection:

Wear safety glasses with side shields.

Skin and Body Protection:

Wear impervious clothing.

Other Precautions:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Decontamination Facilities:

Eye bath, washing facilities (sinks / showers).

9. Physical and Chemical Properties

Physical Form:

Powder

Appearance & Odor:

Light Yellow/ Slight odor

Specific Gravity:

2.07 at 20C (68F)

Softening Point, R&B:

Not available.

pH:

6 at 10 g/l at 20 °C (68 °F)

Solubility in Water:

Insoluble

Flash Point, TAG CC F:

405°F (207 °C) - closed cup

Percent Volatiles (by weight):

97%

Evaporation Rate (Water ~ 1):

Not available.

Vapor Pressure (mm Hg):

0mmHG @280F

<u>Vapor Density (Air ~ 1):</u>	8.9
<u>Boiling Point (°F) Initial:</u>	444.7 °C (832.5°F)
<u>Auto ignition Temperature, °C:</u>	240 °C (464 °F) 478-511F (248-266C)
<u>Flammable Limits, %(V):</u>	Upper explosion limit: 6.83 %(V) Lower explosion limit: 0.17 %(V)
<u>Explosive Limits of Dust in Air:</u>	LEL 35 g/m ³ , UEL 1400 g/m ³
<u>Melting point:</u>	110 - 120 °C (230 - 248 °F)
<u>Relative Density:</u>	2.05 g/cm ³ at 20 °C
<u>Viscosity:</u>	8 mm ² /s at 140 °C

10. Stability and Reactivity

<u>Stability:</u>	This product is stable under normal conditions.
<u>Incompatibility (Materials to Avoid):</u>	Material reacts with strong oxidizing agents, amines and bases, chlorates, nitrates, charcoal, metals, carbides, halogens and other oxidizers. Corrosive to copper and damp sulfur will corrode steel.
<u>Conditions to Avoid:</u>	High temperatures, heat, flame, ignition sources, and dust generation.
<u>Hazardous Polymerization:</u>	Hazardous polymerization will not occur.
<u>Hazardous Decomposition Products:</u>	Oxides of sulfur including sulfur dioxide and sulfur trioxide.

11. Toxicological Information

This material is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA.

<u>ACGIH Threshold Limit Value:</u>	Sulfur, 10 mg/m ³ total dust (TVL/TWA) ACGIH
<u>Oral:</u>	LDLO - Rabbit - 175 mg/kg LD50 I - Rat - > 2.000 mg/kg LD50- Rat: > 5050 mg/kg body weight LD50 - Rat - > 5,000 mg/kg
<u>Inhalation:</u>	LC50 - Rat - 4 h - > 9,23 mg/l @90% LC50- Rats:> 5.49 mg/L air concentration LC50 - Rat - 4 h - 5.434 mg/l
<u>Dermal:</u>	LD50 - Rabbit - > 2,000 mg/kg LD50- Rat:> 2020 mg/kg body weight

<u>Intravenous:</u>	LDLO - Rat - 8 mg/kg LDLO - Rabbit - 5 mg/kg LDLO - Dog - 10 mg/kg
<u>Intraperitoneal:</u>	LDLO - Guinea pig - 55 mg/kg
<u>Skin corrosion/irritation:</u>	Skin - Rabbit - Slightly irritating
<u>Serious eye damage/eye irritation:</u>	Eyes - Rabbit - Minimal irritation in non-washed eyes.
<u>Respiratory or skin sensitization:</u>	No data available.

12. Ecological Information

<u>Toxicity to fish:</u>	LC50 - Oncorhynchus mykiss (rainbow trout) - > 180 mg/l - 96 h LC50 - other fish - 866 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - > 5,000 mg/l - 96 h
<u>Toxicity to daphnia and other aquatic invertebrates:</u>	EC50 - Daphnia magna (Water flea) - > 5.000 mg/l - 48 h EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 48 h
<u>Toxicity to algae:</u>	EC50 - Algae - > 290 mg/l - 72 h
<u>Persistence and degradability:</u>	No data available.
<u>Bioaccumulative potential:</u>	No data available.
<u>Mobility in soil:</u>	No data available.

13. Disposal Considerations

Reclaim or Dispose of material in accordance with all applicable local, state, and federal regulations. Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

14. Transport Information

<u>D.O.T. Shipping Name:</u>	Shipping Name: SULFUR, Class: 4.1, UN Number: NA1350, Packing Group: III
<u>Air - ICAO (international Civil Aviation Organization):</u>	Not available.
<u>Sea - IMDG (International Maritime Dangerous Goods):</u>	UN number: 1350, Class:4.1, Packing group: III, EMS No: F-A, S-G, Proper shipping name: SULPHUR, Marine pollutant: No
<u>IATA:</u>	UN number: 1350, Class: 4.1, Packing group: III, Proper shipping name: Sulphur

15. Regulatory Information

All components of this material are on the TSCA Inventory.

All components of this material are on the Canadian DSL.

SARA 302: None.

SARA 313: None.

SARA 311/312 Hazards: Fire Hazard, Acute Health Hazard.

California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

New Jersey Right To Know Label Information: Sulfur, CAS-No. 7704-34-9

Pennsylvania Right To Know Label Information: Sulfur, CAS-No. 7704-34-9

Massachusetts Right To Know Components: Sulfur, CAS-No. 7704-34-9

16. Other Information

The above information has been compiled from what we believe to be credible sources. To our knowledge the information is accurate and reliable, however, it is not guaranteed. Any recommendations issued by HB Chemical personnel or literature is derived from experience and by no means should be taken as fact or construed as a recommendation to violate of any law, regulation or patent. It is the user's responsibility to determine the suitability of any HB supplied material in their application. The individual conditions of each customer are well outside of our control and we cannot be held liable for its functionality and use. Please contact our office should you need specific information beyond what is supplied above. As with all Chemical usage safety precautions beyond the stated are highly recommended.