

HOLLY INDUSTRIES

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EMERGENCY ASSISTANCE:

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CHEMTREC (800) 424-9300 (24 Hours)
POISON CONTROL CENTRES
Toronto (416) 598-5900
Quebec City (418) 656-8090
Calgary (403) 270-1414
Halifax (902) 428-8161

SECTION 1 CHEMICAL IDENTITY

Trade Name & Synonyms: Sulphur, Flake Sulfur, Granular Sulfur

Chemical Name: Sulfur

Family Name: Element - Sulfur

Chemical Formula: S₈

Appearance: Odorless, tasteless, pale yellow powder or solid

CAS Number: 7704-34-9

Hazardous Ingredient: Sulfur

% by Weight: 99.5% Min.

SECTION 2 PHYSICAL DATA

Appearance: Yellow colored lumps, crystals, powder, or formed shape

Odor: Odorless, or faint odor of rotten eggs

Purity: 99.5% Min.

Formula: S₈ (Rhombic or monoclinic)

Vapor Pressure: 0mmHG at 280°F

Solubility In Water: Insoluble

Specific Gravity: 2.07 @ 70°F

Boiling Point: 832°F (444°C)

Freezing/Melting Point: 230-246°F (110-119°C)

Bulk Density: Lumps 75-115 lbs./ft³ Powder 33-80 lbs./ft³

SECTION 3 FIRE AND EXPLOSION DATA

Flashpoint: 405°F (207.2°C)

Explosive Limits of Dust in Air: LEL: 35 g/m³ UEL: 1400 g/m³

Auto-ignition Temperature: 478-511°F (248-266°C)

Extinguishing Media: Water fog, spray, or regular foam. Do not use a direct water stream.

Burning Sulfur: Decomposes into TOXIC sulfur oxide gasses such as: **Sulfur dioxide** and **Hydrogen sulfide**.

PRIMARY HAZARD:

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 combustion. Bulk/solid forms burn only at moderate rate, whereas dust burns with explosive violence.

FIRE:

Wear full-faced, self-contained breathing apparatus and full protective clothing. **Use a water fog** to extinguish fire. Do not use solid streams of water; which could create sulfur dust clouds and cause an explosion or move burning sulfur to adjacent areas.

Fire will rekindle until mass is cooled below 310°F (154°C). Cool surrounding areas with water fog to prevent re-igniting. Cool containers, tank cars, or trailer loads with flooding quantities of water until well after fire is out. **Evacuate** nonessential personnel from the fire area. If large fire, evacuate people downwind from fire. Isolate for 2 mile in all directions; consider evacuation for 2 mile in all directions. **Prevent human exposure** to smoke, fumes, or products of combustion (sulfur oxide gases). **Firemen exposed** to contaminated smoke should be immediately relieved and checked for symptoms of exposure to

toxic gasses. ***Seek medical attention immediately!*** This should not be mistaken for heat exhaustion or smoke inhalation. These are extremely irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon exposure.

HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme
ACUTE HEALTH = 1
FIRE = 1
REACTIVITY = 0
CONTACT = 1

SECTION 4 REACTIVITY DATA

Stability: Stable

Conditions to Avoid (Instability): Keep from heat sources, sparks, and open flames.

Materials to Avoid (Incompatibility): Oxidizing agents, may react violently. Corrosive to copper and copper alloys. Damp sulfur will corrode steel.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Oxides of sulfur gasses produced by burning sulfur.

SECTION 5 HEALTH HAZARDS

Sulfur is essentially non-toxic either through ingestion, inhalation, skin or eye contact. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Nose or throat irritation, coughing, chest discomfort, asthma, difficulty breathing, nausea, vomiting, stinging eye irritation, skin irritation, hives.

EMERGENCY AND FIRST AID:

SKIN CONTACT:

No adverse effects. Skin irritation may be aggravated in persons with existing skin lesions. Wash exposed clothing separately before reuse.

First Aid: Wash skin with plenty of mild soap and water.

EYE CONTACT:

Sulfur dust is an eye irritant. Avoid contact with eyes, especially contact wearers. Wear safety glasses. **First Aid:** In case of contact, immediately flush eyes with plenty of water for a minimum of fifteen minutes. Hold upper and lower lids apart to insure rinsing of the entire eye surface and lids. Do not use boric acid to rinse with; sulfur is an acid irritant. FOR SEVERE IRRITATION, GET MEDICAL ATTENTION, preferably an ophthalmologist.

INHALATION:

Prolonged inhalation may cause irritation of the respiratory tract. Breathing of dust may aggravate asthma and other pulmonary diseases. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur dust. Maintain adequate ventilation in area where dust is present. Wear dust masks and use NIOSH/MSHA approved dust respirator if airborne concentrations exceed exposure limits. **First Aid:** Move patient to fresh air. Watch for signs of allergic reaction. Use a bronchodilator inhaler if directed by asthma patient. Keep victim warm and quiet. If not breathing, clear airway and start mouth-to-mouth resuscitation. If heart has stopped beating, start cardiopulmonary resuscitation (CPR). GET MEDICAL ATTENTION.

INGESTION:

Ingested sulfur is converted to sulfides in the gastrointestinal tract, and ingestion of 10 to 20 grams has caused irritation of the GI tract and renal injury. Individuals with known allergies to sulfide drugs may also have allergic reactions to elemental sulfur. Swallowing large amounts may cause nausea and vomiting. Do not eat sulfur. **First Aid:** For large amounts ingested, if the victim is conscious and alert, give two or more glasses of water to drink. If available, give one tablespoon of Syrup of Ipecac to induce vomiting. If vomiting does occur, give fluids again. If vomiting has not occurred in twenty minutes, the same dose of Syrup of Ipecac may be repeated one additional time. Alternatively, vomiting may be induced by touching the back of the throat with a finger. Do not give anything by mouth to an unconscious or convulsing person. GET MEDICAL ATTENTION.

EXPOSURE LIMITS:

No exposure limits have been established.

TOXICOLOGY:

Oral LD₅₀ (Rats):>5050 mg/kg body weight

Dermal LD₅₀ (Rats):>2020 mg/kg body weight

Inhalation @ 90% LC₅₀ (Rats):>5.49 mg/L air concentration

Skin Effects (Rabbits): Slightly irritating

Eye Effects (Rabbits): Minimal irritation in non-washed eyes

CARCINOGENICITY, TERATOGENICITY, MUTAGENICITY:

This product does not contain any ingredient designated by NTP, IARC, or OSHA as a probable human carcinogen.

SECTION 6 PRECAUTIONS FOR SAFE HANDLING AND USE

STORAGE:

Containers should be stored in a cool, dry, well-ventilated area. Keep container tightly closed. Store away from flammable materials, sources of heat, flame and sparks. Separate from chlorates, nitrates and other oxidizing agents. Exercise due caution to prevent damage to or leakage from container.

EXPLOSION HAZARD:

Avoid any conditions that might tend to create a dust explosion. Be careful not to create dust. Maintain good housekeeping practices to minimize dust build-up and dispersion. Eliminate sources of ignition. Keep away from heat, sparks and flames. Use nonferrous tools to reduce sparking. Sweep or shovel up spilled material using a natural fiber broom and/or aluminum shovel to prevent sparking. Maintain adequate ventilation in all areas.

SMALL or LARGE SPILLS:

No flares or flames in area. No smoking. Danger of dust explosion near sparks. Sweep or shovel up spilled material using a natural fiber broom and/or aluminum shovel to prevent sparking. Place sweepings in an appropriate chemical waste container for reclaiming or disposal in an approved facility. Wash spill site after clean up is complete. Wear protective clothing during clean up: safety glasses, rubber gloves, impervious clothing, dust mask or respirator.

SECTION 7 PROTECTIVE EQUIPMENT

WORK AREA:

Protective equipment should be used during the following procedures:

- Manufacture or formulation of this product.
- Repair and maintenance of contaminated equipment.
- Clean up of leaks and spills.
- Any situation that may result in hazardous exposure.

Maintain adequate ventilation and wear a respirator or a dust mask to prevent inhalation. Wear suitable, protective clothing and safety glasses to prevent skin and eye irritation from dust. Maintain a sink, safety shower and eyewash fountain in the work area. Wash skin thoroughly after handling and before eating or smoking. Wash contaminated clothing separately before reuse.

SECTION 8 DOT AND REGULATORY INFORMATION

ENVIRONMENTAL:

No Canadian Federal standards. This product, or all components, is listed on the Domestic substances list, as required under the Canadian Environmental Protection Act.

BIODEGRADABILITY:

Not applicable.

WHMIS:

This product is not a WHMIS controlled substance:

TDG:

Special Provision 22: A person who handles offers for transport or transports these dangerous goods is not required to comply with these Regulations if the dangerous goods (a) are in a quantity of less than 400 kg; or (b) have been formed to a specific shape such as prills, granules, pellets, pastilles or flakes.

Shipping Name: Sulfur

Hazard Class: None required

ID Number: None required

Packing Group: None required

Label: None required

Placard: None required

Hazardous Substance/Rq: Not Applicable

FOR ADDITIONAL INFORMATION, CONTACT YOUR TECHNICAL SALES REPRESENTATIVE. FOR ADDITIONAL HEALTH & SAFETY INFORMATION, CALL HOLLY INDUSTRIES AT 229-244-0000.

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