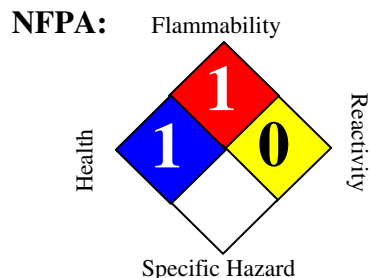


Material Safety Data Sheet

Sulfur, Prill



HMIS III:

HEALTH	1
FLAMMABILITY	1
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Sulfur, Prill	
Synonyms	:	Sulfur Block, Brimstone, Sulphur, 888100004458	
MSDS Number	:	888100004458	Version : 1.11
Product Use Description	:	Refining byproduct	
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259	
Tesoro Call Center	:	(877) 783-7676	Chemtrec (Emergency Contact) : (800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Regulatory status	:	This material is considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).
Signal Word	:	Caution
Hazard Summary	:	Combustible Solid. Dust may form explosive mixture with air.. May cause skin irritation. May cause respiratory and digestive tract irritation. Causes eye irritation. Burning sulfur releases toxic sulfur dioxide gas. Sulfur may release toxic hydrogen sulfide gas that can accumulate in confined spaces. Inhalation of hydrogen sulfide gas can cause immediate loss of consciousness and cessation of breathing. Death may result unless victim is promptly and successfully resuscitated.

Potential Health Effects

Eyes	:	Causes eye irritation. Effects may be delayed.
Skin	:	May cause skin irritation with prolonged or repeated contact.
Ingestion	:	Ingestion may cause gastrointestinal irritation and diarrhea.
Inhalation	:	May cause respiratory tract irritation if inhaled.
Target Organs	:	Eyes, Respiratory system

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
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SECTION 7. HANDLING AND STORAGE

- Handling** : Handle and open containers with care. Protect from moisture.
- Advice on protection against fire and explosion** : Minimize dust generation and accumulation. Dust may form explosive mixture with air. Keep away from heat and sources of ignition. No smoking near areas where material is stored or used. Electrical installations and equipment in hazardous locations should be installed according to articles 501 and 502 of the National Electric Code. Reference also NFPA 655 Standard for the Prevention of Sulfur Fires and Explosions.
- Dust explosion class** : Keep ignition sources away from sulfur dust. Severe hazard if high concentrations of airborne dust are generated.
- Requirements for storage areas and containers** : Keep container tightly closed in a dry and well-ventilated place. Prevent unauthorized access.
- Advice on common storage** : Keep away from food, drink and animal feed. Avoid dispersal of dust in the air such as cleaning dusty surfaces with compressed air.
- Other data** : Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Sulfur	7704-34-9	TWA	15 mg/m3
	Hydrogen Sulfide	7783-06-4	STEL	20 ppm
ACGIH	Hydrogen Sulfide	7783-06-4	TWA	1 ppm
		7783-06-4	STEL	5 ppm

- Engineering measures** : Provide adequate ventilation. Handle only in a place equipped with local exhaust (or other appropriate exhaust). Dust control equipment such as local exhaust ventilation or material transport systems handling sulfur should contain explosion relief vents or explosion suppression systems.
- Eye protection** : Safety glasses. Indirect vented, dust-tight goggles are recommended if dust is generated when handling this product. Ensure that eyewash stations and safety showers are close to the workstation location.
- Hand protection** : Impervious gloves such as neoprene gloves. If product is hot, thermally protective gloves are recommended. Consult manufacturer specifications for further information.
- Skin and body protection** : Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.
- Respiratory protection** : Where dust or sulfur dioxide are generated and cannot be controlled to within acceptable levels, use appropriate NIOSH-approved respiratory protection equipment (a combination of a 42CFR84 Class N, R or P-95 particulate filter and an acid gas cartridge). Where hydrogen sulfide is present or possibly present in confined spaces at hazardous levels a NIOSH-approved supplied air respirator or self-contained breathing apparatus (SCBA) is necessary.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Promptly remove contaminated clothing and launder before reuse. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	: Solid form
Appearance	: Light yellow to yellow crystals or powder
Odor	: Odorless. Hydrogen sulfide (H ₂ S) has a characteristic rotten egg odor with an odor threshold as low as 10 parts per billion or even less. However, this odor should not be used as a warning property because H ₂ S can deaden the sense of smell. H ₂ S concentrations can be measured with an H ₂ S meter or colorimetric indicating tubes.
Flash point	: 167 °C (333 °F) Method: ISO 3679
Auto Ignition temperature	: 235 °C (455 °F)
Thermal decomposition	: No decomposition if stored and applied as directed., Toxic oxides of sulfur and hydrogen sulfide may be released from heated or burning sulfur.
Lower explosive limit	: 30 g/m ³ for airborne dust.
Upper explosive limit	: No data available
pH	: Not applicable
Boiling point	: 445 °C(833 °F)
Vapor Pressure	: 1.3 kPa at 118.9 °C (246.0 °F)
Density	: 8.9 g/cm ³
Water solubility	: Insoluble
Viscosity, kinematic	: No data available
Percent Volatiles	: Negligible
Kst	: 151 bar-m/sec for 20 micron median size dust
MIE	: < 1mJ

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: Keep away from heat and sources of ignition.
Materials to avoid	: Combustible material. Potassium. Halogenated compounds.
Hazardous decomposition products	: Risk of explosion. Risk of ignition. No decomposition if stored and applied as directed.
Thermal decomposition	: No decomposition if stored and applied as directed. Toxic oxides of sulfur and hydrogen sulfide may be released from heated or burning sulfur.

SECTION 11. TOXICOLOGICAL INFORMATION**Carcinogenicity**

- NTP** : No component of this product which is present at levels greater than or equal to 0.1 % is identified as a known or anticipated carcinogen by NTP.
- IARC** : No component of this product which is present at levels greater than or equal to 0.1 % is identified as probable, possible or confirmed human carcinogen by IARC.
- OSHA** : No component of this product which is present at levels greater than or equal to 0.1 % is identified as a carcinogen or potential carcinogen by OSHA.
- CA Prop 65** : This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.
- Skin irritation** : Slight irritation
- Eye irritation** : Slight irritation

Component:

- Sulfur** 7704-34-9 Acute oral toxicity: LD50 rat
Dose: 5,001 mg/kg
- Acute dermal toxicity: LD50 rabbit
Dose: 2,001 mg/kg
- Acute inhalation toxicity: LC50 rat
Dose: 9.24 mg/l
Exposure time: 4 h
- Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

SECTION 12. ECOLOGICAL INFORMATION

- Additional ecological information** : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

- Sulfur** 7704-34-9 Acute and prolonged toxicity for aquatic invertebrates:
EC0
Species: Daphnia magna (Water flea)
Dose: > 10,000 mg/l
Exposure time: 24 h

SECTION 13. DISPOSAL CONSIDERATIONS

- Disposal** : Consult federal, state and local waste regulations to determine appropriate waste characterization of material and allowable disposal methods. Refer to "40 CFR Protection of Environment Parts 260 - 299" for complete waste disposal regulations for corrosive materials.

SECTION 14. TRANSPORT INFORMATION

CFR

Proper shipping name : Sulfur
 UN-No. : 1350
 Class : 4.1
 Packing group : III

TDG

Proper shipping name : Sulfur
 UN-No. : UN1350
 Class : 4.1
 Packing group : III

IATA Cargo Transport

UN UN-No. : UN1350
 Description of the goods : SULFUR
 Class : 4.1
 Packaging group : III
 ICAO-Labels : 4.1
 Packing instruction (cargo aircraft) : 449
 Packing instruction (cargo aircraft) : Y443

IATA Passenger Transport

UN UN-No. : UN1350
 Description of the goods : SULFUR
 Class : 4.1
 Packaging group : III
 ICAO-Labels : 4.1
 Packing instruction (passenger aircraft) : 446
 Packing instruction (passenger aircraft) : Y443

IMDG-Code

UN-No. : UN 1350
 Description of the goods : Sulfur
 Class : 4.1
 Packaging group : III
 IMDG-Labels : 4.1
 EmS Number : F-A S-G
 Marine pollutant : No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Toxic by inhalation.
 Moderate eye irritant

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Acute Health Hazard
 Chronic Health Hazard
 Fire Hazard

