INTEROCEANIC

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SAFETY DATA SHEET

Sulfur, Molten

Section 1. Identification

Product identifier : Sulfur, Molten

Chemical name : Sulfur

Formula : S

Other means of identification : Molten sulfur, sulphur

Product type : Liquid

Relevant uses of the substance or mixture and uses advised against

Identified uses

Refinery feedstock

Uses advised against

None identified

Supplier's details

Interoceanic Corporation
7 Renaissance Square, 7th Floor
White Plains, NY 10603 United States
Non-Emergency Phone: 1-914-762-7800
Email: TradeExecution@ioccorp.com
www.ioccorp.com

Emergency telephone number (with hours of operation)

24 HOUR EMERGENCY TELEPHONE 1-800-424-9300
CHEMTREC (Canada & US)

Note: CHEMTREC number to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals.

Section 2. Hazard Identification

Hazards : Flammable solid – Category 2
Acute toxicity, inhalation – Category 3
Skin corrosion/irritation – Category 2
Specific target organ toxicity, single exposure – Category 3 (respiratory tract irritation)
Hazardous to the aquatic environment, acute hazard – Category 3
Hazardous to the aquatic environment, long-term hazard – Category 3

OSHA/ HCS Status : Not classified

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable solid. Causes skin irritation. Causes eye irritation. Toxic if inhaled. May cause respiratory irritation.

Precautionary statements

Prevention : Keep away from heat/ sparks/ open flames/ hot surfaces. - No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting equipment. Wear protective gloves/ eye protection/ face protection. Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling.

Response : In case of fire: Use foam, carbon dioxide, dry powder or water fog for extinction. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/ attention. Take off contaminated clothing and wash before re-use.

Storage : Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal : Dispose of contents/container in accordance with local/ regional/ national/ international regulations.

Supplemental label elements : None

Other hazards : None known

Section 3. Composition/Information on Ingredients

Substance/Mixture : Substance

Ingredient Name	% (w/w)	CAS Number
Sulfur	99 – 100	7704-34-9
Hydrogen sulfide	0 – 1	7783-06-4

Section 4. First-aid Measures

Description of necessary first aid measures

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. If molten material contacts the eye, immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.

Inhalation : Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact : Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If burned by contact with hot material, cool molten material adhering to skin as quickly as possible with water and see a physician for removal of adhering material and treatment of burn.

Ingestion : Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effect, acute and delayed

Potential acute health effects : Molten material will produce thermal burns. Causes skin, eye and respiratory tract irritation. Persons with pre-existing respiratory tract, skin and lung (such as asthma) disorders may be aggravated by exposure to this product. Hydrogen sulfide, a highly toxic gas, may be present.

Over-exposure signs/symptoms: Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain

in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Burns should be treated as thermal burns.
In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.
Symptoms may be delayed.

General Information : If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

See toxicological information in Section 11

Section 5. Fire-fighting Measures

Extinguishing Media

Suitable extinguishing media : Water spray. Water fog. Dry chemical powder. Carbon dioxide (CO_2).

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical : Contact with molten material may cause thermal burns.

Hazardous thermal decomposition products: None

Special protective actions for fire-fighters : Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray.

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.

Remarks : None

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

For emergency responders : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Extinguish all flames in the vicinity. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Environmental precautions : If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Combustible dust. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames , smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Spilled

material may be absorbed by an appropriate absorbent and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact CHEMTREC at 1-800-424-9300.

Methods and materials for containment and cleaning up

Small spill : Sweep or shovel up material and place in a clearly labeled container for waste. Following product recovery, flush area with water. Prevent product from entering drains. Do not allow material to contaminate ground water system. Clean surface thoroughly to remove residual contamination.

Large spill : Stop the flow of material if this is without risk. Dike spill for later disposal.

Section 7. Handling and Storage

Precautions for safe handling

Protective measures : Wear personal protective equipment. Do not breathe dust or vapor. Do not get in eyes, on skin, on clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities : Do not handle or store near an open flame, heat or other sources of ignition. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feed. Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection

Control parameters

Occupational exposure limits

Ingredient Name	Exposure Limits
Sulfur, Molten	**ACGIH** TWA: 0.5 mg/m^3 total dust
Hydrogen sulfide	**US OSHA Table Z-2 (29 CFR 1910.1000)** Ceiling: 20 ppm **US ACGIH Threshold Limit Values** STEL: 5 ppm TWA: 1 ppm **US NIOSH: Pocket Guide to Chemical Hazards** Ceiling: 15 mg/m^3, 10 ppm

Appropriate engineering controls	:	Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks.
Environmental exposure controls	:	No biological exposure limits noted for the ingredient(s).
Individual protection measures		
Hygiene measures	:	Consult supervisor for special handling instructions. Do not breathe dust. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.
Eye/face protection	:	Safety glasses. Wear a face shield when working with molten material.
Skin protection		
Hand protection	:	Wear protective gloves. When material is heated, wear gloves to protect against thermal burns.
Thermal protection	:	When material is heated, wear gloves to protect against thermal burns.
Other skin protection	:	Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Heat resistant/insulated gloves and clothing are recommended when working with molten material.
Respiratory protection	:	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

Section 9. Physical and Chemical Properties

Appearance		
Physical state	:	Liquid (solid at ambient temperature)
Color	:	Yellow
Odor	:	Sulfurous
Odor threshold	:	Not available
pH	:	Not available
Melting point	:	246.2 °F (119 °C)
Boiling point	:	832.28 °F (444.6 °C)
Flash point	:	404.3 °F (206.9 °C)

Evaporation rate	:	Not available
Flammability (solid, gas)	:	Flammable solid
Lower and upper explosive (flammable) limits	:	Flammability Limit – Lower: 35 g/m^3 Flammability Limit – Upper: 1400 g/m^3 Explosive Limit – Lower: Not available Explosive Limit – Upper: Not available
Vapor pressure	:	0 kPa (0 mm Hg)
Vapor density	:	Not applicable
Relative density	:	Not available
Bulk density	:	Not available
Solubility	:	Very slightly soluble in water
Partition coefficient: n-octanol/water	:	Not available
Auto-ignition temperature	:	449.33 °F (231.85 °C)
Decomposition temperature	:	Not available
Viscosity	:	Not available

Section 10. Stability and Reactivity

Reactivity	:	Not available.
Chemical stability	:	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	:	Hazardous polymerization does not occur.
Conditions to avoid	:	Heat. Ignition sources. Keep away from combustible material.
Incompatible materials	:	Strong oxidizing agents.
Hazardous decomposition products	:	Sulfur oxides. Hydrogen sulfide.

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Conclusion/Summary	:	Molten material will produce thermal burns. Toxic if inhaled. Causes skin, eye and respiratory tract irritation.

Irritation/Corrosion

Conclusion/Summary

Skin	:	Causes skin irritation.
Eyes	:	Causes eye irritation.
Respiratory	:	Causes respiratory tract irritation.

Sensitization

Conclusion/Summary	:	Not classified

Mutagenicity

Conclusion/Summary	:	Not classified

Carcinogenicity

Conclusion/Summary	:	Not classified

Reproductive toxicity

Conclusion/Summary	:	Not classified

Teratogenicity

Conclusion/Summary	:	Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not applicable

Information on the likely routes of exposure : Skin contact, Inhalation

Potential acute health effects

Eye contact : Molten material will produce thermal burns. Causes eye irritation.

Inhalation : Toxic if inhaled. May cause respiratory tract irritation.

Skin contact : Molten material will produce thermal burns. Causes skin irritation.

Ingestion : Molten material will produce thermal burns. Ingestion may cause irritation and malaise.

Symptoms related to the physical, chemical and toxicological characteristics

General : Contact with molten material may cause thermal burns. Causes skin, eye and respiratory tract irritation. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : See above.

Potential delayed effects : See above.

Long term exposure

Potential immediate effects : See above.

Potential delayed effects : See below.

Potential chronic health effects

Conclusion/Summary : Not available

General : Not available

Carcinogenicity : Not available

Mutagenicity : Not available

Reproductive toxicity : Not available

Section 12. Ecological Information

Toxicity

Conclusion/Summary : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment due to trace amounts of Hydrogen Sulfide(H_2S).

Persistence and degradability

Conclusion/Summary : No data available.

Bioaccumulative potential : No data available.

Mobility in soil

Soil/water partition coefficient (Koc) : No data available.

Other adverse effects : No data available.

Section 13. Disposal Considerations

Disposal methods : Dispose in accordance with all applicable regulations. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

Section 14. Transport Information

In accordance with DOT :
UN number: NA2448
UN proper shipping name: Sulfur, molten
Transport hazard class(es)
Class: 9
Subsidiary risk: -
Label(s): 9
Packing group: III
Special precautions for user: Not available
Special provisions: 30, IB3, T1, TP3
Packaging exceptions: None
Packaging non bulk: 213
Packaging bulk: 247

In accordance with IMDG :
UN number: UN2448
UN proper shipping name: SULPHUR, MOLTEN
Transport hazard class(es)
Class: 4.1
Subsidiary risk: -
Packing group: III
Environmental hazards
Marine pollutant: No
EmS: F-A, S-H
Special precautions for user: Not available

In accordance with IATA :
UN number: UN2448
UN proper shipping name: Sulphur, molten
Transport hazard class(es)
Class: 4.1
Subsidiary risk: -
Packing group: Not applicable
Environmental hazards: No
ERG Code: 3L
Special precautions for user: Not available

Transport in bulk according to Annex II: of MARPOL 73/78 and the IBC Code
This product is a liquid and when transported in bulk is covered under MARPOL 73/78 Annex II.
This product is listed in the IBC Code.
Ship type: 3
Pollution category: Z

Section 15. Regulatory Information

International Inventory list

Country	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 this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

U.S. Federal regulations : This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200 (OSHA) and 8 CCR § 5194 (Cal/OSHA).
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated

CERCLA Hazardous Substance List (40 CFR 302.4)

Hydrogen sulfide (CAS 7783-06-4) LISTED

Clean Air Act Section 112 Hazardous Air Pollutants (HAPs)

Not regulated

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrogen sulfide (CAS 7783-06-4)

Safe Drinking Water Act (SDWA)

Not regulated

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories : Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard – No

SARA 302/304

Hydrogen sulfide (CAS 7783-06-4) : Reportable Quantity: 100 lbs
Threshold Planning Quantity: 500 lbs

SARA 311/312

Classification : Not applicable

SARA 313

Not regulated

State regulations

Massachusetts (RTK - Substance List)

Hydrogen sulfide (CAS 7783-06-4)
Sulfur (CAS 7704-34-9)

New Jersey (Worker and Community Right-to-Know Act)

Hydrogen sulfide (CAS 7783-06-4)
Sulfur (CAS 7704-34-9)

Pennsylvania (Worker and Community Right-to-Know Law)

Hydrogen sulfide (CAS 7783-06-4)
Sulfur (CAS 7704-34-9)

Rhode Island (RTK)

Hydrogen sulfide (CAS 7783-06-4)

California Prop. 65

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

Section 16. Other Information

Key to abbreviations :

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
HPR = Hazardous Products Regulations

NFPA Rating :

Notice to reader

Supply chain partners must ensure they pass this SDS, and all other relevant safety information to their customers.

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