

MATERIAL SAFETY DATA SHEET

Spent, non-regenerated Brimsorb®

Creation Date: March 13, 2014

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SECTION 1: PRODUCT IDENTIFICATION

| | | |
|---------------|--|---|
| Product Name: | Supplier: | 24 HOUR EMERGENCY ASSISTANCE: |
| Brimsorb® 100 | Beijing Sanju Environmental Protection & New Materials Co., Ltd. 9/F, Dahang Jiye Plaza, No. 33 North Renda Road, Haidian District Beijing, PRC, 100080 | +86-010-82684990/91/92 |
| Synonyms: | Recommended Use: | Restrictions on Use: |
| None. | Sulfur removal from chemical gas and liquid | Not to be used for purposes other than recommended by supplier. |

SECTION 2: HAZARD IDENTIFICATION

Emergency Overview: **Warning!** May cause eye irritation. May cause damage to organs. The toxicological properties of this material have not been fully investigated.

GHS Hazard Classification: Eye irritant (Category 2)
Specific Target Organ Toxicity Repeated Exposure (Category 2)



Hazard/Precautionary Statements:

- May be harmful in contact with skin.
- May cause eye irritation.
- May cause damage to organs (lungs) through prolonged or repeated exposure.
- May cause respiratory tract irritation.
- May be harmful if swallowed.
- Avoid contact with the eyes.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after handling.
- Obtain special instructions before use.
- Use personal protective equipment as required.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust.
- 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 swallowed: Call a poison center or physician if you feel unwell. Rinse mouth.
- If exposed or concerned: Get medical advice.

Agency (NFPA) Rating: Not listed for the material mixture.
For FeS and TiO₂

| | | |
|---------------|---|---|
| Health: | 1 | (1=Slightly hazardous) |
| Flammability: | 0 | (0=Will not burn under typical fire conditions) |
| Reactivity: | 0 | (0=No special hazards) |

Other Hazards: No additional hazards identified. See Section 4 for potential health effects.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Identity | Chemical Formula | CAS Registry Number | Weight % |
|-------------------|------------------|---------------------|----------|
| Brimsorb® 100 | FeS | 1317-37-9 | >90% |
| | TiO ₂ | 13463-67-7 | 4.5±0.5% |
| | Hydrocarbon | ----- | <1% |
| | Others | ----- | Balanced |

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SECTION 4: FIRST AID MEASURES

| | |
|-------------------------------------|---|
| General Advice: | Consult MSDS before use of this product. Wear proper personal protective equipment before entering area of exposure (see Section 8). Consult a physician in case of overexposure. Show this safety data sheet to the doctor in attendance. Move victim out of area of exposure. |
| Eyes: | Immediately flush eyes with plenty of water for at least 15 minutes, including under eyelids. Remove contacts if present and continue to flush. Seek medical attention if irritation develops or persists. |
| Skin: | Flush skin with plenty of water for at least 5 minutes. Remove contaminated clothing and footwear and wash before reuse. Seek medical attention if irritation develops or persists. |
| Ingestion: | In case of ingestion, drink two glasses of water and press throat with fingers to induce vomiting immediately. Seek medical attention immediately. |
| Inhalation: | In case of inhalation, get medical attention immediately as solid foreign matter inhalation. |
| Protection of First-Aid Responders: | Wear personal protective equipment suitable to level of exposure and surrounding conditions (see Section 8). |

SECTION 5: FIRE FIGHTING MEASURES

| | |
|--------------------------------|--|
| Extinguishing Media: | Dry powder extinguisher |
| Special Fire Hazards: | During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. |
| Precautions for Firefighters: | In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA) with full face piece operated in the pressure demand or other positive pressure mode. See also Section 8. Keep run-off water out of sewers and water sources. |
| Special Extinguishing Methods: | Keep adjacent drums and tanks cool by spraying with water. |
| Flash Point (Method): | No available. |

SECTION 6: ACCIDENTAL RELEASE MEASURES

| | |
|--|---|
| Personal Precautions: | Wear appropriate personal protective equipment (see Section 8). Evacuate to a safe location. Seek medical attention if symptoms of overexposure develop. |
| Emergency Procedures: | Keep public away. Isolate and evacuate area of spill. Shut off source if safe to do so. Wear appropriate personal protective equipment (see Section 8). |
| Environmental Precautions: | Prevent contamination of soil and water. Prevent from entry into sewers and waterways by using sand, earth or other appropriate barriers. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities (see Section 15). Advise authorities and National Response Center if substance has entered a waterway or sewer. The toll free number for the US Coast Guard National Response Center is (800) 424-8802. Notify local health and pollution control agencies, if appropriate. |
| Methods and Materials for Containment: | Prevent entry into sewers and waterways using physical barriers such as soil, sand, vermiculite or other appropriate barrier. |
| Methods and Materials for Cleaning Up: | With shovel or scoop, place material into clean, dry container; move containers from spill area. Minimize airborne particulates. Protect against inhalation of dusts. Wear gloves and long sleeves. |

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Avoid contact with skin. Use eye protection.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:

Avoid ANY crushing on the material. Avoid sudden drop or any other kinds of shocking on the material. Specialized personnel and tools are need to for loading and unloading, for details, please refer to manufacturer's operating manual or directly consult with manufacturer.

Avoid contact with eyes. Avoid breathing fumes or vapors. Do NOT take internally. Keep container closed. Wash hands after handling. Remove contaminated clothing and protective equipment before eating or entering eating areas.

Conditions for Safe Storage:

Keep containers tightly closed in a cool, well-ventilated place. Avoid moisture/ water. Avoid acids. Keep away from fire or heat source. Purge with inert gas to maintain quality (Nitrogen).

Packaging Materials:

Use airtight stainless steel vessels as container. For additional regulation on containers, please refer to manufacturer's operating manual.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters:

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|-------------------|--|--|-------------------|
| Iron (II) Sulfide | 1 mg/m3 TWA (as Fe) (listed under Iron salts (soluble)). | 1 mg/m3 TWA (as Fe) (listed under Iron salts (soluble)). | none listed |

Engineering Controls:

Provide safety showers and eyewash stations. Mechanical ventilation of the area recommended. A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion into the general work area. Please refer to the ACGIH document, *Industrial Ventilation: A Manual of Recommended Practices*, most recent edition, for details.

Personal Protective Equipment:

Respiratory:

Ensure adequate ventilation, especially in confined areas. Where local exhaust ventilation is not practical, wear half mask respirator with organic vapor cartridge and built-in particulate filter type NPF 20 (gas only), type P95 (US) or type P1 (EN143). WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. See OSHA 29 CFR 1910.134 for details on written respirator program requirements and selection guidelines where respirators are part of required protective equipment.

Hands:

Wear chemical resistant gloves when handling this product. Compatible glove materials include polypropylene and ethylene propylene. Nitrile, fluorocarbon and neoprene gloves are only suitable for splash resistance and should be changed if contaminated. PVC is not suitable. Wash thoroughly after handling.

Eyes:

Use chemical safety goggles or masks. Do NOT wear contact lenses. Maintain eye wash fountain and quick-drench facilities in work area.

Skin and Body:

Wear standard issue work clothes, including safety shoes or boots (chemical resistant). Appropriate body protection depends on the concentration and form of exposure. In extremely high concentration exposure situations, a full protective body suit may be advisable. More details please refer to manufacturer's operation manual.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--|-------------------|---------------------------|-------------------|
| Physical State | Solid | Vapor Pressure | NA |
| Color | Grey to Brown | Vapor Density | NA |
| Odor | No data available | Density | ~4.84 kg/L |
| Odor Threshold | No data available | Solubility | No data available |
| pH (Concentration) | No data available | Partition Coefficient | No data available |
| Freezing/Melting Point | No data available | Auto ignition Temperature | No data available |
| Boiling Point | Decomposes | Decomposition Temperature | No data available |
| Melting Point | ~1194°C | Viscosity | No data available |
| Evaporation Rate | No data available | Explosive Properties | No data available |
| Flammability (solid, gas) | No data available | Oxidizing Properties | No data available |
| Upper/Lower Flammability or Explosive Limits | Not flammable | Other Safety Information | No data available |

The product properties listed are not product specifications, and are listed for safety data only. Some properties may be estimated.

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: This material is stable under recommended storage conditions.

Hazardous Reactions: No data available

Conditions to Avoid: Sudden shock and caustic. Moisture, exposure to air, strong oxidants.

Incompatible
Materials to Avoid: Moisture/ water, strong oxidants.

Hazardous
Decomposition Products: Oxides of sulfur, hydrogen sulfide.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: No data available

Eye Effects: Eye irritation,

Skin Effects: No data available

Ingestion Effects: May cause irritations to digestive tract.

Inhalation Effects: May cause respiratory tract irritation.

Sensitization: No data available

Carcinogenicity: No data available

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Reproductive Cell Mutagenicity: No data available

Reproductive Toxicity and Teratogenicity: No data available

Specific Organ Toxicity: May cause damage to organs (lungs) through prolonged or repeated exposure.

Aspiration Hazard: No data available

Other Effects: No data available

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: LC50 – No data available
LC50 – No data available
EC50 – No data available
Ecological information is not available for all components. Available information and effects for components are presented in this section. No data is available for the mixture as a whole.

Persistence and Degradability: No data available

Bioaccumulative Potential: No data available

Mobility in Soil: No data available

Other Adverse Effects: No data available

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Qualified recovery organizations are authorized for disposal. Dispose in accordance with state and local environmental protection regulations and requirements.

Contaminated Packaging: Treat as unused product and dispose of appropriately.

SECTION 14: TRANSPORT INFORMATION

This MSDS is NOT intended for shipping purposes.

SECTION 15: REGULATORY INFORMATION

OSHA Hazards
No known OSHA hazards

SARA 302 Components
SARA 302:
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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Pennsylvania Right To Know Components

CAS-No.1317-37-9

Iron Sulphide

Revision Date 1989-08-11

New Jersey Right To Know Components

CAS-No.1317-37-9

Iron Sulphide

Revision Date 1989-08-11

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.

SECTION 16: OTHER INFORMATION

No additional information.

The information above is believed to be accurate and represents the best information currently available to the supplier listed in Section 1 of this Material Safety Data Sheet. The product properties listed are not product specifications, and are listed as safety data only. The supplier makes no warranty of merchantability or any other warranty, expressed or implied, with respect to such information. The supplier assumes no liability resulting from the use of this product. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the supplier be liable for any claims, losses or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages howsoever arising, even if the supplier has been advised of the possibility of such damages.

END OF MSDS