



MATERIAL SAFETY DATA SHEET (MSDS)

Section 1 - Identification of the substance/preparation and of the company/undertaking

Product identifier

Product Name: Spent TH-KB/KS scavenger

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Sulfur removal

Details of the manufacturer of the safety data sheet

Manufacturer: Beijing Sanju Environmental Protection & New Materials Co., Ltd.

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Section 2 - Hazards Identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Eye irritation (category 2)

Skin irritation (category 2)

Specific target organ toxicity – single exposure (Category 3)

Classification according to EU Directories 67/548/EEC or 1999/45/EC

Xi, R36/37/38

Label elements

Labeling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram



Signal word Warning

Hazard statement(s)

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Precautionary statements

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.



P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P501 Dispose of contents/container to an approved waste disposal plant.

Other hazards

Physical and chemical hazards: See section 10.

Human health hazards: See section 11.

Environmental hazards: See section 12.

3. Section 3 - Composition/Information on Ingredients

Chemical composition

Component	CAS No.	Formula	Composition	EC No.	Classification	GHSCLAS
Iron oxide	1309-37-1	Fe ₂ O ₃	66%	215-168-2	Xi,R36/37/38	Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 H315 H319 H335
Iron sulfide	11126-12-8	Fe ₂ S ₃	18.6%	234-367-5	/	/
Sulfur	7704-34-9	S	12.4%	231-722-6	Xi,R38	Skin Irrit. 2 H315
Titanium oxide	13463-67-7	TiO ₂	2%	236-675-5	Xn,R40	Carc. 2 H351
Magnesium oxide	1309-48-4	MgO	0.6%	215-171-9	/	/
Manganese oxide	1344-43-0	MnO	0.4%	215-695-8	Xn,R21/22 Xi,R36/37/38	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3 H302 H312 H315 H319 H335

For the full text of H-Statements and R-Phrases mentioned in this section, see Section 16.

Section 4 - First Aid Measures

Description of first aid measures

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for a least 15 minutes. Occasionally lifting the upper and lower eyelids. Get medical attention if irritation occurs.

Skin contact: Immediately wash skin with soap and copious amounts of water while removing



contaminated clothing and shoes. Be particularly careful to clean folds, crevices, creases and groin. If irritation develops, use mild skin cream. If irritation develops and persists, seek medical attention.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person.

Wash out mouth with water. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Personal protective equipment for first-aid responders:

No further relevant information available.

Most important symptoms/effects, acute and delayed:

No further relevant information available.

Indication of immediate medical attention and special treatment needed:

No further relevant information available.

Section 5 - Fire Fighting Measures

Extinguishing media

Suitable extinguishing media:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture:

Under fire conditions toxic fumes may be released. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Advice for firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

If package rupture, ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Spilled or released at long industrial condition: Remove ignition sources, keep away from heat and flame, evacuate area.

Avoid dust formation. Avoid breathing dust. Shut off source of the leak only if it is easy to do so.

Do not get water inside containers.

Environmental precautions

Keep spilled material out of sewers, ditches and bodies of water.

Methods and materials for containment and cleaning up

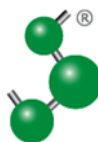
Sweep up and place in suitable containers for recycle or disposal according to local/national regulations (see section 13). Keep in suitable, closed containers for disposal.

References to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protective equipment.

See Section 13 for disposal information.



Section 7 - Handling and Storage

Precautions for safe handling

Dust generated in handling of this product can be explosive if sufficient quantities are mixed in air. In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid breathing dust. Avoid physical damage to the container. Ground and bond containers when transferring material. Take necessary action to avoid static electricity discharge. Do not eat, drink or smoke while handling the product. Keep away from heat. Keep away from sources of ignition. Keep away from incompatibles such as oxidizing agents, acids, alkalis. Do not allow water to get into the container.

Conditions for safe storage, including any incompatibilities

Keep away from heat and flame. Store in a cool, dry, well-ventilated away from incompatible substances. Store in a tightly closed container. The waste should be landfilled as soon as possible. Prolonged storage of the waste is not recommended. The waste should be kept soaked with water during change-out, transportation, and landfill processes. Exposure of dry waste to the air is strongly prohibited.

Specific end uses

No data available

Section 8 - Exposure Controls and Personal Protection

Control parameters

Exposure limits:

CAS# 1309-37-1:

ACGIH: TLV-TWA: 5 mg/m³ (respirable)

OSHA: PEL-TWA: 15 mg/m³ (total); TWA: 5 mg/m³ (respirable)

NIOSH: REL--TWA: 5 mg/m³

Belgium – TWA: 2 ppm (fume, as Fe); 5 mg/m³ (fume, as Fe)

France – VME: 5 mg/m³ (fume, as Fe)

Germany – MAK: 1.5 mg/m³ (respirable, as Fe)

Netherlands – MAC – TGG: 10 mg/m³

Russia – TWA: 6 mg/m³

United Kingdom – TWA: 4mg/m³ TWA (respirable); 10mg/m³ (inhalable); 5mg/m³(as Fe)

United Kingdom – STEL: 10 mg/m³ STEL (as Fe)

CAS# 7704-34-9:

Russia – TWA: 6 mg/m³

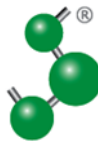
CAS# 13463-67-7:

ACGIH: TLV – TWA: 10 mg/m³

OSHA: PEL-TWA: 15 mg/m³ (total); TWA: 5 mg/m³ (respirable)

Belgium – TWA: 10 mg/m³

Denmark: TWA: 6 mg(Ti)/m³



France – VME: 10 mg/m³
Germany – MAK: 1.5 mg/m³ (respirable, as Fe)
Japan- OEL- 10 mg/m³
Korea – TWA: 10 mg/m³
Netherlands – MAG-TGG: 10mg/m³
New Zealand – TWA: 10mg/m³ (inspirable dust)
Russia – TWA: 10mg/m³
United Kingdom – 10mg/m³ (inhalable); TWA: 4mg/m³ (respirable)

CAS# 1309-48-4:

ACGIH: TLV – TWA: 10 mg/m³ (inhalable)
OSHA: PEL-TWA: 15 mg/m³ (total)
Australia - TWA: 10 mg/m³
Belgium – TWA: 10 mg/m³ (fume)
Denmark: TWA: 6 mg(Mg)/m³
France – VME: 10 mg/m³ (fume)
Germany – MAK: 4 mg/m³ (inhalable); 1.5 mg/m³ (respirable)
Netherlands – MAG-TGG: 10 mg/m³
Russia – STEL: 4 mg/m³
United Kingdom – TWA: 4 mg(Mg)/m³; 10 mg(Mg)/m³(inhalable);
STEL: 10 mg/m³ (fume, resp.)

Engineering Controls

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Personal Protective Equipment

Eyes Protection: Wear appropriate eye protection to prevent eye contact.

Skin Protection: For prolonged or repeated contact use protective gloves.

Body Protection: Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respirators Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Other Protection: Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. To maintain good health habits.

Section 9 - Physical and Chemical Properties

Item	Specifications
Appearance (Form & colour)	Khaki Irregular Particle
Odour	Sulfur taste
Odour Threshold	No data available
pH	7
Melting point/freezing point	No data available

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Initial boiling point and boiling range	No data available
Flash point	No applicable
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Vapour density	No data available
Relative density	No data available
Water solubility	Insoluble
Partition coefficient: n-octanol/water	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available

10. Stability and Reactivity

Reactivity No data available

Chemical stability Stable under normal conditions

Possibility of hazardous reactions

Hazardous Polymerization Will not occur

Hazardous reactions None under normal processing

Conditions to avoid Incompatible material. Avoid dust formation, exposure to moist air or water. Keep away from open flame, hot surfaces and ignition sources.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products Under fire conditions toxic fumes may be released. Metal oxide fume, sulfur oxides, sulfides.

Section 11 - Toxicological Information

Information on toxicological effects

Acute toxicity:

CAS# 1309-37-1:

Subcutaneous, dog: LDLo = 30mg/kg;

CAS# 7704-34-9:

Inhalation, mammal: LC50 = 1600 mg/m³;

CAS# 13463-67-7:

Oral, rat: LD50>10 g/kg;

Skin, rabbit: LD50>10 g/kg;

CAS# 1344-43-0:



Inhalation, rat: LC50>5.35 mg/L/4h;

Oral, mouse: LD50>2000 mg/kg;

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Iron oxide – This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification. IARC: Group 3 – Not classifiable as to carcinogenicity to humans.

Iron sulfide – IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Sulfur – IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Titanium oxide – IARC: 2B - Group 2B: Possibly carcinogenic to humans.

Magnesium oxide – IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Manganese oxide – IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available

Specific target organ toxicity – single exposure

Inhalation – May cause respiratory irritation

Specific target organ toxicity – repeated exposure

No data available

Aspiration hazard

No data available

Potential Health Effects

Eye: Dust may cause mechanical irritation. Signs/symptoms may include redness, pain, blurred vision.

Skin: Dust cause skin irritation. May be harmful if absorbed through skin. Repeated or prolonged contact with skin may cause dermatitis.

Ingestion: Ingestion is an unlikely route of exposure; no hazard in normal industrial use. If ingested in sufficient quantity may cause injury such as gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain, and diarrhea.

Inhalation: Inhalation of airborne dust may cause irritation to the mucous membrane and upper



airways. Symptoms of exposure can include coughing, sneezing, wheezing and breathing difficulties. The substance may have effects on respiratory tract, resulting in chronic bronchitis.

Signs and Symptoms of Exposure

Repeated or prolonged contact with skin may cause dermatitis. To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS#: CAS# 1309-37-1: NO7400000 NO7420000 NO7480000/ CAS# 11126-12-8: Unlisted/
CAS# 7704-34-9: WS4250000/ CAS# 13463-67-7: XR2275000/ CAS# 1309-48-4:
OM3850000/ CAS# 1344-43-0: OP0900000

Section 12 - Ecological Information

Toxicity

CAS# 7704-34-9: Fish: *Oncorhynchus mykiss* (rainbow trout): LC50 > 180 mg/l/96 h;
Daphnia: *Daphnia magna* (Water flea): EC50 > 5.000 mg/l/48 h;

CAS# 1344-43-0: Fish: *Oncorhynchus mykiss* (rainbow trout): LC50 > 1.2 mg/l/96 h;
Daphnia: *Daphnia magna* (Water flea): EC50 > 4 mg/l/48 h;

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

No data available

Other adverse effects

Do not empty into drains

Section 13 - Disposal Considerations

Waste treatment methods

Waste from Residues / Unused Products: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

Contaminated packaging: Contaminated packaging material should be treated equivalent to residual chemical, Clean packaging material should be subjected to waste management schemes (recovery recycling, reuse) according to local legislation.

Section 14 - Transport Information

	IATA	IMDG	RID / ADR
Proper shipping name	Not regulated	Not regulated	Not regulated
Hazard class	/	/	/



Un number	/	/	/
Packing group	/	/	/

Section 15 - Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available

Canada

Components of this product are listed on Canada's DSL List.

US Federal

Toxic Substance Control Act (TSCA)

CAS# 11126-12-8 is not listed on the TSCA Inventory. Other component of this product are listed on the TSCA Inventory

China

Inventory of Existing Chemical Substances Produced or Imported in China (IECSC)

CAS# 11126-12-8 is not listed on the IECSC Inventory. Other component of this product are listed on the TSCA Inventory.

Section 16 - Other Information

SDS Creation Date: January 10, 2018

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Text of H-code (s) and R-phrase (s) mentioned in Section 3

Skin Irrit. 2: Skin irritation (Category 2)

Eye Irrit. 2: Eye irritation (Category 2)

STOT SE 3: Specific target organ toxicity – single exposure (Category 3)

Carc. 2: Carcinogenicity (Category 2)

Acute Tox. 4: Acute toxicity, Oral (Category 4)

Acute Tox. 4: Acute toxicity, Dermal (Category 4)

H302 Harmful if swallowed.

H312 Harmful in contact with skin.

H315 Causes skin irritation.

H319 Causes serious eye irritation.



H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

R21/22 Harmful in contact with skin.and if swallowed.

R36/37/38 Irritating to eyes, respiratory system and skin.

R38 Irritating to skin.

R40 Limited evidence of a carcinogenic effect.

Other Information:

ACGIH: (American Conference of Governmental Industrial Hygienists); CAS: (Chemical Abstracts Service); DSL: (the Domestic Substances List of Canada); EC: (European Commission); IARC: (International Agency for Research on Cancer); IATA: (International Air Transport Association); IMDG: (International Maritime Dangerous Goods); ADR: (European Agreement Concerning the International Carriage of Dangerous Goods by Road); RID: (Regulations Concerning the International Carriage of Dangerous Goods by Rail); LD50: (Lethal dose, 50 percent kill); NDSL: (the Non-domestic Substances List of Canada); NIOSH: (US National Institute for Occupational Safety and Health); NTP: (US National Toxicology Program); OSHA: (US Occupational Safety and Health); PEL: (Permissible Exposure Level); REL: (Recommended Exposure Limit); RTECS: (Registry of Toxic Effects of Chemical Substances); STEL: (Short Term Exposure Limit); TDG: (Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations); TSCA: (Toxic Substances Control Act of USA); IECSC: Inventory of Existing Chemical Substances Produced or Imported in China ; TWA: (Time Weighted Average); TLV: (Threshold Limit Value)