



THFG-01, THFL-01

MSDS DATE: 03/06/08

REV: 04

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: THFG-01, THFL-01

SYNONYMS: thiol-SAMMS[®], thiol-SAMMS[®] Ferrite

MANUFACTURER: Steward Environmental Solutions, LLC

ADDRESS: 1245 East 38th Street
Chattanooga, TN 37407

EMERGENCY PHONE: (423) 468-1800; Dial extension 0 after normal business hours

MSDS INFORMATION: (423) 468-1845

FAX PHONE: (423) 468-1802

CHEMICAL NAME: Ferrite/silated

CAS NUMBER: None

CHEMICAL FAMILY: Adsorbent

PREPARED BY: David Vermetti
General Manager

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT:	CAS NO.	% WT	%TLV	SARA 313 REPORTABLE
Ferric Oxide (Ferrite), Mesostructured	1317-61-9	Proprietary	ND	No
Organo-silane, reacted	4420-74-0	Proprietary	ND	No

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: HARMFUL! Harmful by inhalation. Irritating to eyes and respiratory system. HMIS rating of the Ase Organo-silane is Health: 3, Flammability: 2, Reactivity: 1; however in reacted form is chemically changed and strongly bound to ferrite whose HMIS ratings are Health: 1, Flammability: 0, Reactivity: 1. Volatile, irritating compounds and methanol may be released when immersed in strong bases or when burned in air. Product may cause irritation of the eyes and respiratory system and may exhibit mildly unpleasant odor of sulfide. The toxicological properties of this material have not been fully investigated.

ROUTES OF ENTRY: Inhalation, eye contact.

POTENTIAL HEALTH EFFECTS

EYES: Ceramic materials are abrasive to the eyes. May cause irritation and redness. Silane may cause immediate or delayed eye irritation.

SKIN: May cause irritation, dryness and chapping due to loss of skin moisture. Prompt and thorough washing with soap and water will reduce or eliminate potential dermal effects.

INGESTION: Unknown. However, may be harmful.

INHALATION: Inhalation of the dusts may cause irritation of the nose, throat, and upper respiratory tract. Harmful if inhaled, may cause coughing, headaches, and nausea.

ACUTE HEALTH HAZARDS: Irritation of the eyes, skin and respiratory system.

CHRONIC HEALTH HAZARDS: The silane has a primary irritation index (skin) of 0.19, and no known chronic effects related to the compound.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known.



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CARCINOGENICITY

OSHA: No

ACGIH: No

NTP: No

IARC: No

SECTION 4: FIRST AID MEASURES

EYES: Flush eyes with copious amounts of water for at least 15 minutes. Consult a physician, preferably an ophthalmologist if irritation persists.

SKIN: Flush with water; wash affected area with plenty of soap and water. Remove contaminated clothing and shoes. Consult a physician if irritation persists.

INGESTION: Ingestion is unlikely, if swallowed wash out mouth with water provided person is conscious and consult a physician.

INHALATION: If inhaled remove to fresh air. If breathing is difficult, assist breathing and seek medical attention.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: None

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable

METHOD USED: N/A

FLAMMABLE LIMITS IN AIR: Not determined, ferrite is not flammable, volatile compounds may be evolved if heated over 200°C

(% BY VOLUME)

UPPER: N/A

LOWER: N/A

AUTOIGNITION TEMPERATURE: N/A

NFPA HAZARD CLASSIFICATION

HEALTH: 1

FLAMMABILITY: 0

REACTIVITY: 1

OTHER: N/A

HMS HAZARD CLASSIFICATION

HEALTH: 1 (*additional chronic hazards present)

FLAMMABILITY: 0

REACTIVITY: 1

PROTECTION: X

EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire conditions.

SPECIAL FIRE FIGHTING PROCEDURES: Avoid eye, skin and inhalation contact with smoke and fumes

UNUSUAL FIRE AND EXPLOSION HAZARDS: Under extreme heating conditions may produce sulfide gases

HAZARDOUS DECOMPOSITION PRODUCTS: In the presence of a strong base, a silane may be evolved that can be flammable and potentially harmful. Under combustion a sulfide or organo-sulfide compound may be evolved at temperatures exceeding 200°C.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Vacuum up spilled material using a high efficiency vacuum with HEPA filters. Avoid raising dust. Ventilate the area and wash spill site after material pickup is complete. Place recovered material in a suitable container for re-use or disposal. Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.



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SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Do not store material at temperatures above 60°C (140°F). Avoid prolonged or repeated exposure. Avoid contact with eyes, skin, and clothing. Store away from incompatible materials (see section 10). Wash thoroughly after handling. Observe good industrial hygiene practices. Keep tightly closed. To increase shelf-life store in an air tight container.

OTHER PRECAUTIONS: None

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: To keep airborne particulates below listed exposure limits, use general dilution type ventilation or local exhaust as necessary.

RESPIRATORY PROTECTION: If ventilation is not sufficient to control airborne particles, a NIOSH or MSHA-approved cartridge type air filtering respirator is recommended. Follow guidelines set forth in 29 CFR 1910.134.

EYE PROTECTION: Safety glasses

SKIN PROTECTION: Wear compatible chemical-resistant gloves to reduce skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Full protective clothing is recommended for bulk powder handling.

WORK HYGIENIC PRACTICES: Wash thoroughly after handling. Ensure that an eyewash and safety shower is readily accessible. Observe good industrial hygiene practices.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: black or grey ceramic powder.

ODOR: slight sulfurous smell.

PHYSICAL STATE: Solid, powder

pH AS SUPPLIED: N/A

BOILING POINT: N/A

MELTING POINT: 1500°C

VAPOR PRESSURE (mmHg): N/A

VAPOR DENSITY (Air = 1): N/A

SPECIFIC GRAVITY (H₂O = 1): 2-4

EVAPORATION RATE (Butyl Acetate=1): N/A

SOLUBILITY IN WATER: Negligible

PERCENT VOLATILE BY VOLUME: N/A



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SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of use and storage. May absorb small amounts of carbon dioxide and water from air. May evolve sulfides when mixed with strong acids or placed in flame. Avoid strong bases, strong acids, hydrogen fluoride, chlorine trifluoride, ethylene oxide, halocarbons, oxygen difluoride, sodium nitrate, vinyl acetate.

CONDITIONS TO AVOID (STABILITY): None

INCOMPATIBILITY (MATERIAL TO AVOID): Concentrated acids, strong reducing agents, and peroxides.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: In the presence of a strong base or combustion product may evolve sulfide gases. Nature of other decomposition products is unknown.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID (POLYMERIZATION): None

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: The toxicological properties of this material have not been fully investigated. Product or constituents may cause skin irritation, may be harmful if absorbed through the skin, may cause eye irritation. Inhalation may cause irritation to mucous membranes and upper respiratory tract. Chronic overexposure may cause coughing, respiratory distress.

EXPERIMENTAL TOXICOLOGY: The silane has oral toxicity-rat of 2380 mg/kg, and primary irritation (skin) index of 0.19 with no known chronic effects related to the silane.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: No information found on ferrite, free silanes may be hazardous to aquatic life if released in open waters; however the material is a strong adsorbent of "soft" heavy metals.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Product that has not been exposed to contaminants should be managed as a non-hazardous waste and disposed of at an approved waste disposal facility. Product that has been exposed to contaminants should be disposed of in compliance with your state and local solid waste disposal regulations, as they may differ from federal regulations. Processing, use or contamination of this product may change the waste management options. The material is a strong adsorbent of "soft" heavy metals.

RCRA HAZARD CLASS: In an unused state this material is not regulated under RCRA. After use material may become contaminated and should be thoroughly tested to determine if the material meets the definition of a hazardous waste as found in RCRA.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: THFG-01 or THFL-01

HAZARD CLASS: Not regulated.

ID NUMBER: Not regulated.

PACKING GROUP: Not regulated.

LABEL STATEMENT: WARNING! Inhalation of this material may cause respiratory distress if inhaled in sufficient quantity. Product may cause irritation of the eyes, skin and respiratory system. The toxicological properties of this material have not been fully investigated.



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WATER TRANSPORTATION

PROPER SHIPPING NAME: THFG-01 or THFL-01

HAZARD CLASS: Not regulated.

ID NUMBER: Not regulated.

PACKING GROUP: Not regulated.

LABEL STATEMENT: WARNING! Inhalation of this material may cause respiratory distress if inhaled in sufficient quantity. Product may cause irritation of the eyes, skin and respiratory system. The toxicological properties of this material have not been fully investigated.

AIR TRANSPORTATION

PROPER SHIPPING NAME: THFG-01 or THFL-01

HAZARD CLASS: Not regulated.

ID NUMBER: Not regulated.

PACKING GROUP: Not regulated.

LABEL STATEMENT: WARNING! Inhalation of this material may cause respiratory distress if inhaled in sufficient quantity. Product may cause irritation of the eyes, skin and respiratory system. The toxicological properties of this material have not been fully investigated.

OTHER AGENCIES: N/A

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): This material and all raw materials used to manufacture this material are listed.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Not regulated.

311/312 HAZARD CATEGORIES:

IMMEDIATE (ACUTE): Yes

DELAYED (CHRONIC): Yes

FIRE: No

SUDDEN RELEASE OF PRESSURE: No

REACTIVITY: No

313 REPORTABLE INGREDIENTS: None.

STATE REGULATIONS: None found.

INTERNATIONAL REGULATIONS: None found.

SECTION 16: OTHER INFORMATION

DISCLAIMER:

This material can not be used for the removal of mercury from produced water in association with the recovery of crude oil.

The information contained in this material safety data sheet is believed to be accurate and represents the best information currently available. The manufacturer extends no warranties, makes no representation, and assumes no responsibility as to the accuracy or suitability of this information for the purchaser's intended purpose.