

**CHEMICAL SAFETY DATA SHEET****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Trade Name : **EMG 1400 Polar Coated Dry Magnetic Nanoparticles**  
Chemical Name : Proprietary Product  
Chemical Formula : Mixture  
Chemical Family : Coated particles  
Relevant Identified Use: Biomedical/Scientific Research  
Uses Advised Against : Not intended for continued contact with skin or mucosa

Name of manufacture: Ferrotec Corporation (Chiba Plant)  
Name of Distributor : Ferrotec (USA) Corporation  
Responsible Party : Ferrofluid-Safety@ferrotec.com  
Address: 1-4 Midoridaira, Sosa-shi, Chiba, 289-2131 Japan  
Name of section: Ferrofluid Section Quality Assurance Department  
Phone number: +81-479-73-6752 (JAPAN) FAX number: +81-479-73-6602 (JAPAN)  
Other product information: Chiba Plant +81-479-73-6752 (Japan)

**2. HAZARDS IDENTIFICATION****GHS-Classification**

Specific target organ toxicity (single exposure) : Category 3 ( Respiratory tract irritation)  
Specific target organ toxicity (repeated exposure) : Category 1 (Respiratory system)

**Pictograms**

**Signal word** : Danger

**Hazard statements**

H335 – May cause respiratory irritation

H372 – Causes damage to the following organs through prolonged or repeated exposure: respiratory system

**Precautionary statements-(Prevention)**

Wash face, hands and any exposed skin thoroughly after handling  
Wear protective gloves/protective clothing/eye protection/face protection  
Do not breathe dust/fume/gas/mist/vapors/spray  
Do not eat, drink or smoke when using this product  
Use only outdoors or in a well-ventilated area

**Precautionary statements–(Response)**

Get medical advice/attention if you feel unwell  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 Immediately call a POISON CENTER or doctor/physician  
 IF ON SKIN: Wash with plenty of soap and water  
 If skin irritation occurs: Get medical advice/attention  
 Take off contaminated clothing and wash before reuse  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 Call a POISON CENTER or doctor/physician if you feel unwell.

**Precautionary statements–(Storage)**

Store in a well-ventilated place. Keep container tightly closed

**Precautionary statements–(Disposal)**

Dispose of contents/container to an approved waste disposal plan

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Substance/Mixture:	Mixture		
General product description:	Magnetic particles		
Ingredients and composition:			
Chemical name	Composition (wt. %)	Chemical formula	CAS No.
Ferrosoferric oxide	68.5 – 92.4	Fe <sub>3</sub> O <sub>4</sub>	1309-38-2
Surface coating	7.6 – 31.5	—	112-80-1
UN Class:	Not applicable	UN No.:	Not applicable

**4. FIRST – AID MEASURES**

**Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

**Skin contact**

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

**Eye contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

**Ingestion**

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Do not induce vomiting without medical advice.

**Protection of first-responders:**

Use personal protective equipment as required.

**5. FIRE – FIGHTING MEASURES**

**Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

**Unsuitable extinguishing media** No information available

**Special extinguishing method** No information available

**Specific hazards arising from the chemical product**

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

**Protection of fire-fighters**

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions, protective equipment and emergency procedures**

For indoor, provide adequate ventilation process until the end of the work shift. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipment to avoid contact with skin or inhalation of the vapors. Work from windward, and move people upwind.

**Environmental precautions**

Do not discharge to the environment without proper wastewater treatment. See Section 12 for additional ecological information.

**Methods and materials for contaminant and methods and materials for cleaning up**

Do not touch spilled material without suitable protection (See section 8). After material is completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove and clean, or dispose of contaminated clothing.

**Recovery, neutralization**

No information available

**Secondary disaster prevention measures**

Clean contaminated objects and areas thoroughly, observing environmental regulations.

**7. HANDLING AND STORAGE**

**Handling**

**Technical measures**

Avoid contact with eyes and skin Use with local exhaust ventilation.

### Precautions

Do not handle containers roughly, such as jostling, dropping, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Do not generate steam and dust. Seal the container after use. After handling, wash hands and face, and then gargle with water. Do not smoke, eat or drink in areas other than those specified. Contaminated protective equipment and gloves should not be brought into break rooms or common areas. Deny unnecessary entry of non-emergency personnel to the handling area.

### Safety handling precautions

Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

### Storage

#### Safe storage conditions

**Storage conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Safe packaging material** Glass

**Incompatible substances** Strong acids

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION .

### Engineering measures :

In the case of indoor workplaces, seal the source or use a local exhaust system. Provide a safety shower facility, and hand- and eye-wash facility. Display their positions clearly.

### Personal protective equipment

Respiratory protection Dust mask, conform to EN 149 (EU)

Hand protection Protective gloves, conform to EN 374 (EU)

Eye protection Protective eyeglasses or chemical safety goggles, conform to EN 166 (EU)

Skin and body protection Long-sleeved work clothes

**General hygiene considerations** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black/brown particles

Odor: No data available

Odor Threshold: No data available

pH: Not applicable

Melting Point/Freezing Point: Not applicable

Initial boiling point and boiling range: Not applicable

Flash point: Not applicable

Evaporation rate: Not applicable

Flammability (solid/gas): Not applicable

Upper/lower flammability or explosive limits: Not applicable

Density: No data available

Vapor density (air= 1): Not applicable

Vapor pressure: Negligible

Percentage volatiles: Negligible

Solubility in water: Negligible

Partition coefficient; n-octanol/water: No data available

Auto-ignition temperature: Not applicable

Decomposition temperature: No data available

Viscosity: Not applicable

Explosive properties: Not applicable

Oxidizing properties: No data available

## 10. STABILITY AND REACTIVITY

Stability Stable under recommended storage conditions.

Possibility of hazardous reactions No information available.

Conditions to avoid Extremes of temperature and direct sunlight

Materials to avoid No information available.

Hazardous decomposition products No information available

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity<sup>2) 3) 4)</sup>:

INHALATION LC<sub>50</sub> Not applicable

ORAL LD<sub>50</sub> >10000mg/kg (rat)

DERMAL LD<sub>50</sub> Not applicable

LC<sub>50</sub>: Lethal concentration 50%

LD<sub>50</sub>: Lethal dose 50% kill

### Skin corrosion/irritation : Species: human

Classification: Not classified as irritant

Result: No skin irritation

Method: Patch test

### Serious eye damage/ irritation : Human

Corrosive(IUCLID (2000)).

### Respiratory sensitization /Skin sensitization : Species: human

Classification: Not a skin sensitizer.

**12. ECOLOGICAL INFORMATION**

Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Hazard to the ozone layer	No information available

**13. DISPOSAL CONSIDERATIONS**

**Waste from residues**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated container and contaminated packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**14. TRANSPORT INFORMATION**

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**IATA DGR 60<sup>th</sup> (INTERNATIONAL AIR TRANSPORT ASSOCIATION DANGEROUS GOODS REGULATIONS 60<sup>th</sup> EDITION)**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

•Not regulated as a hazardous material or dangerous goods for transportation by this agency.

**15. REGULATORY INFORMATION**

Composition	CAS No.	TSCA	EINECS	OSHA
Ferrosferric oxide (Fe3O4)	1309-38-2		Registered	Registered Registered
Surface coating	112-80-1		Registered	Registered Registered

## 16. OTHER INFORMATION

References:

- 1) TLVs and BEIs (ACGIH 2018)
- 2) Material Data Sheet of manufacturer of components (2017)
- 3) Registry of Toxic Effects of Chemical Substances (2010 CD-ROM DB)
- 4) GHS Classification Data Base (National Institute of Technology and Evaluation (2016, Japan)

Inquiry of the information contained here in:

Ferrofluid Section Quality Assurance Department  
Phone number +81-479-73-6752 (Japan)

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