

CHEMICAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical product name: APGO series /APGOn series (magnetic fluid)
Name of manufacture: Ferrotec Corporation
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)
Emergency call: CHEMTRC (International) +703-527-3887
Other product information: Chiba Plant +81-479-73-6752 (Japan)

Recommended use of the chemical and restrictions on use: Heat radiation material

2. HAZARDS IDENTIFICATION

GHS-Classification

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

GHS-Labeling

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture
General product description: Magnetic fluid
Ingredients and composition:

Chemical name	Composition (wt. %)	Chemical formula	CAS No.
Ferrosferric oxide	11.7 – 42.1	Fe ₃ O ₄	1309-38-2
Oil soluble dispersant	5.0 – 61.7	—	Trade secret
Synthetic Ester	2.7 – 71.9	—	Trade secret
Oil soluble additive	0.8 – 4.1	—	Trade secret

UN Class: Not applicable

UN No.: Not applicable

4. FIRST – AID MEASURES

Inhalation: Remove the victim from the contamination immediately to fresh air. If breathing is weak, irregular or has stopped, open his airway, loosen his collar and belt and administer artificial respiration. Keep person warm and get medical attention immediately.

Skin contact: Take off all contaminated clothing. Wash the affected area with plenty of water with mild soap. If irritation persists, seek medical attention.

Eye contact: Gently rinse the affected eyes with clean water for at least 15 minutes. Ask the victim to look up, down and side-to-side in order to reach all parts of eyes. Get medical attention immediately.

Ingestion: Do not induce vomiting, rinse mouth with water and get medical attention immediately.
Never give anything to someone who is unconscious.

5. FIRE – FIGHTING MEASURES

Flammable properties: Flash point >200°C

Suitable extinguishing media: Dry chemical powder, carbon dioxide, foam, water spray and dry sand.

Specific hazards regarding with fire-fighting measure

- Large fires are best controlled by foam.
- Apply water from a safe distance to cool and project surrounding area.
- Firefighters should wear proper protective equipment and self-breathing apparatus and fight a fire from windward.

Hazardous decomposition products: Carbon monoxide, smoke and fumes.

Toxic gases (carbon monoxide and nitrogen oxides) will form upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

- Evacuate personnel to safe area. Evacuate non-essential personnel. Shut off all sources of ignition. No flares, smoking or flame in area.
- Wear proper protective equipment.

Environmental precautions:

- Do not wash away into sewer, watercourse or river.

Methods and materials for contaminant and cleaning up:

- For small spill, absorb spills with inert materials(e.g. dry sand or earth), then place in a chemical waste containers.
- For large spill, dike for later disposal, cover spills with foam, then absorb in nonflammable materials and store in chemical waste container using non-sparking tools.

7. HANDLING AND STORAGE

Handling:

- Shut off all gas pilot and electrical igniters and other sources of ignition during use.
- Avoid release of this material into sewer or drainage.
- In case of handling, wear proper protective equipment to avoid contact and inhalation.
- Use local exhaust ventilation.
- Wash hands and face after handling.

Storage:

- Keep containers tightly sealed and store in a dark and cool place.
- Keep away from strong acids, bases and oxidizing agents.

Other precautions:

Avoid contamination of tobacco products. Users should be aware that a very small percentage of the population may display unexpected allergic skin reaction to otherwise innocuous chemicals and raw materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION .

Control parameters: ACGIH (2009) TLV: TWA 5mg/m³ STEL 10mg/m³ (Oil mist, mineral)¹⁾

TLV; Threshold Limit Value TWA; Time Weighted Average STEL; Short Term Exposure Limit

Engineering measure: Make available in the work area with emergency shower and eyes washer.

Personal protection equipment:

- Ventilation: Use exhaust ventilation if vapor forms.
- Respiratory protection: Not required.
- Eye protection: Safety goggles or face shield.
- Hands and skin protection: Chemical – resistant gloves to prevent contact with skin.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Black brown liquid
Odor:	Slightly characteristic odor
Flash point:	>200°C
Density:	1.030 – 1.370g/ml (25°C)
Vapor density (air= 1) :	>1
Vapor pressure:	Negligible
Percentage volatiles:	<1%
Solubility in water:	Insoluble

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperature and pressure..
Materials to avoid: Strong acids, strong bases, and oxidizing materials.
Hazardous decomposition products: Carbon monoxide and nitrogen oxides may form on combustion.
Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Route of entry: May cause absorption in the body by inhalation, dermal and oral.

Acute toxicity^{2) 3) 4)}:

ORAL LD₅₀ >5000mg/kg (rat) (Oil soluble dispersant)

>2000mg/kg (rat) (Synthetic Ester)

DERMAL LD₅₀ >2000mg/kg (rat) (Oil soluble dispersant)

LC₅₀: Lethal concentration 50% LD₅₀: Lethal dose 50% kill

Skin corrosion/irritation:

The product is irritating to the skin. Prolonged contact may cause dermatitis.

Eye irritation:

The product is irritating to the eye. Prolonged contact may cause dermatitis.

Respiratory or skin sensitization: No relevant information found.

Germ cell mutagenicity: No relevant information found.

Carcinogenicity: No relevant information found.

Specific target organ toxicity – Single exposure: No relevant information found.

Specific target organ toxicity – Repeated exposure: No relevant information found.

12. ECOLOGICAL INFORMATION

Biodegradability: No relevant information found.

Bioaccumulation: No relevant information found.

Eco-toxicity: No relevant information found.

13. DISPOSAL CONSIDERATIONS

Information on their safe handling of disposal:

- Do not dump into sewers, on the ground or into any body of water.

Appropriate methods of disposal:

- Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in general careful matter as flammable liquid.
- Follow all regulation in your country or region.

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 57th (INTERNATIONAL AIR TRANSPORT ASSOCIATION DANGEROUS GOODS
REGURATIONS 57th EDITION)

•Not regulated as a hazardous material or dangerous goods for transportation of IATA dangerous goods
regulation 56th edition 2015.

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 (Fe ₃ O ₄)	1309-38-2	Registered	Registered	Registered
Oil Soluble Dispersant	Proprietary	Registered	Registered	Registered
Synthetic ester	Proprietary	Registered	Registered	Registered

16. OTHER INFORMATION

References:

- 1) TLVs and BEIs (ACGIH 2009)
- 2) Material Data Sheet of manufacturer of components (2011)
- 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)
- 5) IARC Monograph Vol.1-Vol.99 (2009)

Inquiry of the information contained here in:

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

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