# CHEMICAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- **Chemical product name:** APG1100 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)
- **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:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Composition (wt. %)</th>
<th>Chemical Formula</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrosferric oxide</td>
<td>11.2 – 30.1</td>
<td>$\text{Fe}_3\text{O}_4$</td>
<td>1309–38–2</td>
</tr>
<tr>
<td>Oil soluble dispersant</td>
<td>10.1 – 55.0</td>
<td>—</td>
<td>Trade secret</td>
</tr>
<tr>
<td>Synthetic hydrocarbon</td>
<td>23.4 – 64.6</td>
<td>—</td>
<td>Trade secret</td>
</tr>
<tr>
<td>Oil soluble additive</td>
<td>2.8</td>
<td>—</td>
<td>Trade secret</td>
</tr>
</tbody>
</table>

**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: 0.890 – 1.150g/ml (25°C)
Vapor density (air= 1): >1
Vapor pressure: Negligible
Percentage volatiles: <1%
Solubility in water: Insoluble

10. STABILITY AND REACTIVITY
11. TOXICOLOGICAL INFORMATION

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

Acute toxicity:\(^2\) \(^3\) \(^4\):

\[
\text{INHALATION } \text{LC}_{50} >5\text{mg/l (Oil soluble dispersant)} \\
>5\text{mg/l (Synthetic hydrocarbon)}
\]

\[
\text{ORAL } \text{LD}_{50} >2000\text{mg/kg (rat) (Oil soluble dispersant)} \\
>5000\text{mg/kg (rat) (Synthetic hydrocarbon)}
\]

\[
\text{DERMAL } \text{LD}_{50} >2000\text{mg/kg (rabbit) (Oil soluble dispersant)} \\
>2000\text{mg/kg (rabbit) (Synthetic hydrocarbon)}
\]

\[\text{LC}_{50}: \text{Lethal concentration 50%} \quad \text{LD}_{50}: \text{Lethal dose 50% kill}\]

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 60th (INTERNATIONAL AIR TRANSPORT ASSOCIATION DANGEROUS GOODS REGULATIONS 60th 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

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>TSCA</th>
<th>EINECS</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrosoferric oxide (Fe3O4)</td>
<td>1309-38-2</td>
<td>Registered</td>
<td>Registered</td>
<td>Registered</td>
</tr>
<tr>
<td>Oil Soluble Dispersant</td>
<td>Proprietary</td>
<td>Registered</td>
<td>Registered</td>
<td>Registered</td>
</tr>
<tr>
<td>Synthetic hydrocarbon</td>
<td>Proprietary</td>
<td>Registered</td>
<td>Registered</td>
<td>Registered</td>
</tr>
</tbody>
</table>

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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