【SECTION 1】: PRODUCT AND COMPANY IDENTIFICATION

1.1. Product Details
Product Name: Ferrofluid
Trade Name: APG1100 series
Chemical Name: Proprietary product
Chemical Formula: Mixture
Molar Mass: N/A
Chemical Family: Colloidal mixture of iron oxide particles and synthetic hydrocarbon
Manufacturer’s Code: None

1.2. Manufacturer
Manufacturer’s Name: Ferrotec (USA) Corporation
Importers / distributor’s Name & Address: 33 Constitution Dr., Bedford, NH 03110
Telephone Number: (603) 472-6800

Emergency Telephone number: +1 (800) 424-9300 / CHEMTREC (US only )
+1 (703) 527-3887 / CHEMTREC (International)
Other product safety information: +81-479-73-6752 / Ferrotec Corp. Ferrofluid Dept. (JAPAN)
+49-7022-9270-0 / Ferrotec GmbH (Germany)

【SECTION 2】: COMPOSITION / INFORMATION ON INGREDIENTS
The precise composition of this mixture is proprietary information.
A more complete disclosure will be provided to a physician or a nurse in the event of a medical emergency. All components are registered each in Chemical Abstracts Service.

<table>
<thead>
<tr>
<th>Composition</th>
<th>Proportion % (by volume)</th>
<th>Exposure Limit</th>
<th>Toxicity Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Iron oxide</td>
<td>2.9 - 12.6</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>B Oil soluble dispersant</td>
<td>8.0 – 76.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Synthetic hydrocarbon</td>
<td>10.6 – 89.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Oil soluble additives</td>
<td>&lt;3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
[SECTION 3] : HAZARDS IDENTIFICATION
Most important hazards: None
Potential health effects
  Ingestion: No significant health hazards identified.
  Eye contact: No significant health hazards identified.
  Skin contact: No significant health hazards identified.
  Inhalation: Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

[SECTION 4] : FIRST AID MEASURES
Ingestion: Consult a physician for treatment.
Eye contact: Flush with water and consult a physician for treatment.
Skin contact: Wash with soap and water.
Inhalation: Move affected person to fresh air and consult a physician for treatment.
Notes to physician: A more complete disclosure will be provided to a physician in the event of a medical emergency.

[SECTION 5] : FIRE FIGHTING MEASURES
Flammable properties
  Flash point: >200° C
  Flammable limits: Not applicable
  Extinguishing Media: CO2, Foam, Dry chemical
  Fire fighting instruction: Use extinguishing media and remove combustibles.

[SECTION 6] : ACCIDENTAL RELEASE MEASURES
Steps to be taken in case material is released or spilled: Remove free liquid. Add absorbent (sand, earth, sawdust) to spilled area. After removing absorbent, wash surface with soap and water to reduce possible slipping hazard.

[SECTION 7] : HANDLING AND STORAGE
Handling: Ordinary care in handling chemical substances. Wash hands after handling.
Storage: Keep in a dark and a cool place.
Other precautions: Avoid contamination of tobacco products. Users should be aware that a very small percentage of the population may display unexpected allergic skin reactions to otherwise innocuous industrial chemicals and raw material.
【SECTION 8】: EXPOSURE CONTROLS / PERSONAL PROTECTION
a. Exposure Limit: No experience on over exposure.
b. Engineering measurement: N/A
c. Personal protection
   Respiratory protection: Not required.
   Ventilation: Not required.
   Hand protection: Rubber or plastic gloves to prevent prolonged or repeated contacting with skin.
   Eye Protection: Safety glasses.
   Other Protective Equipment: Not required.

【SECTION 9】: PHYSICAL AND CHEMICAL PROPERTIES
Appearance: Brown and / or black fluid
Odor: Mild faint
Solubility: Stable
Boiling Point(°C): N/A
Melting Point (°C): N/A
Vapor Pressure (kPa at 20 °C): Negligible
Percentage Volatiles: < 1
Evaporation Rate: Very slow, Negligible
Vapor Density (Air=1): > 1
Density (g/cm³): 0.890 – 1.150
Flash point: >200 °C
Auto ignition temperature: N/A
Flammable limit (%): N/A
Other properties if applicable: N/D

【SECTION 10】: STABILITY AND REACTIVITY
Conditions to avoid: Pyrolysis
Stability: Stable at normal temperatures and pressure.
Material to avoid: Strong oxidizing material, heat and flame.
Hazardous decomposition products: Burning may produce carbon monoxide and nitrogen oxide.
Hazardous polymerization: will not occur
【SECTION 11】: TOXICOLOGICAL INFORMATION
Toxicity Data: No data
Carcinogen city: No data
Reproductive Effect: No data
Effects of overexposure: No data
Chronic effects: No data
Target organs: No data
Medical Conditions Generally Aggravated by exposure: No data

【SECTION 12】: ECOLOGICAL INFORMATION
Mobility: No data
Bioaccumulation: No data
Biodegradability: No data
Aquatic Toxicity: No data

【SECTION 13】: DISPOSAL CONSIDERATIONS
Comply with all federal, state and local regulations.
Do not dump this product into sewers, on the ground or into any body of water.

【SECTION 14】: TRANSPORT INFORMATION
This product is not regulated as the United Nations Dangerous Goods.
Hazard Class: N/A
UN No: N/A
Packing Group: N/A
DOT/IATA: Not Restricted
【SECTION 15】: REGULATORY INFORMATION
All components are in compliance with Pollutant Release and Transfer Register of Japan.

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>TSCA</th>
<th>EINECS</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Iron oxide</td>
<td>Trade secret</td>
<td>Registered</td>
<td>Registered</td>
<td></td>
</tr>
<tr>
<td>B Soluble dispersant</td>
<td>Trade secret</td>
<td>Registered</td>
<td>Registered</td>
<td>Not listed</td>
</tr>
<tr>
<td>C Synthetic hydrocarbon</td>
<td>Trade secret</td>
<td>Registered</td>
<td>Not registered</td>
<td></td>
</tr>
<tr>
<td>D Oil soluble additives</td>
<td>Trade secret</td>
<td>Registered</td>
<td>Registered</td>
<td></td>
</tr>
</tbody>
</table>

This product does not contain any chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372.

【SECTION 16】: OTHER INFORMATION
We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising from their use.

This material is not sold for use in products for which prolonged contact with skin or implantation in the human body is intended. We do not recommend this material as safe and effective for such uses and assumes no liability for any such use.