

SAFETY DATA SHEET

[SECTION 1]: PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name : **APG L Series – APG: L11, L12, L13, L14, L16, L17, L19, L23, L33 Ferrofluid**

Chemical Name : **Proprietary Product**
Chemical Formula : **Mixture**
Chemical Family : **Colloidal Dispersion**
Relevant Identified Use : **Audio Loudspeakers, Heat Radiation**
Uses Advised Against : **Not intended for continued contact with skin**

Manufacturer and Address : **Ferrotec (USA) Corp., 33 Constitution Dr., Bedford, NH 03110, USA**
Responsible Party : **Ferrofluid-Safety@ferrotec.com**
Telephone Number : **(603) 472-6800**
Emergency Tel. Number : **+1 (800)424-9300 (CHEMTREC – US only)**
+1 (703)527-3887 (CHEMTREC – International)

Other safety information : **+81-479-73-6752 (FERROTEC CORP. – Japan)**
+49-7022-9270-0 (FERROTEC GmbH – Germany)

[SECTION 2]: HAZARD IDENTIFICATION

Skin Corrosion / Irritation: Category 2

Severe Eye Damage / Irritation: Category 2

Target Organs : Not Established

GHS Label Elements, including precautionary statements

Pictogram:



Signal word: **Warning**

Hazard statement(s):

H315 Cause skin irritation

H319 Cause serious eye irritation

Precautionary statement(s):

-Prevention

P264 Wash thoroughly after handling

P273 Avoid release to the environment

P280 Wear protective gloves / protective clothing / eye protection / face protection.

-Response

P302+P352 If on skin: Wash with plenty of soap and water

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if possible and easy to do. Continue rinsing.

P332+P313: IF skin irritation occurs: Get medical advice/attention.

P337+P313: If eye irritation persists: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P391 Collect spillage

Any hazards not otherwise classified or identified during classification process: **N/A**

% of mixture consisting of ingredient(s) of unknown toxicity: **N/A**

HMIS Classification

Health hazard: 1

Chronic Health Hazard: 0

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 1

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation: May cause slight irritation

Skin: Prolonged exposure may cause slight skin irritation

Eyes: May cause slight irritation

Ingestion: May cause slight irritation to lung tissue if aspirated when swallowed

[SECTION 3]: COMPOSITION / INGREDIENT INFORMATION

Synonyms: N/A

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 in Chemical Abstracts Service (CAS).

Composition		Proportion % (by volume)	Exposure Limit	Toxicity Data
A	Magnetite (Fe ₃ O ₄)	8.9 – 35.2	Not Determined	N/A
B	Polyolefin Anhydride Dispersant	3.2 – 52.7	Not Determined	N/A
C	Synthetic Ester Oil	18.7 - 75.4	Not Determined	N/A
D	Oil Soluble Additive	1.7 – 4.3	Not Determined	N/A

[SECTION 4]: FIRST AID MEASURES

Necessary measures to be taken according to route(s) of exposure -

Ingestion: Rinse mouth and give moderate amount of water to drink. Do not induce vomiting unless directed by medical professional. If vomiting does occur, the head should be kept lower than the torso so as to prevent aspiration into the lungs.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting eyelids. Check for and remove contact lenses. Get medical attention.

Skin Contact: Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation: Move person to fresh air. If person is not breathing, call for emergency assistance (911 or other emergency number) then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Most important symptoms/effects: N/A

Acute: N/A

Delayed: N/A

Indication of immediate medical attention and special treatment needed, if necessary: **N/A**

Notes to physicians: **This product may cause slight skin and/or eye irritation. Treatment is symptomatic and supportive.**

[SECTION 5]: FIRE FIGHTING MEASURES

Suitable extinguishing media: N/A

Unsuitable extinguishing media: N/A

Specific hazards arising from chemical combustion products: N/A

Special protective equipment and precautions for fire-fighters: N/A

[SECTION 6]: ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled:

Personal precautions: Wear rubber (latex or nitrile) gloves and eye protection if splash is possible.

Environmental Precautions: Remove free liquid. Add absorbent (sand, earth, sawdust) to spill area. After removing absorbent, wash surface with soap and water to reduce possible slipping hazard.

Methods and materials for containment and cleanup: Consult federal, state and local regulations applicable to disposal of wastewater.

[SECTION 7]: HANDLING AND STORAGE

Precautions for safe handling: Ordinary care in handling of chemicals. Wash hands after handling.

Conditions for safe storage: Store in a cool, dry area.

Other precautions: Avoid contamination of food or 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 materials.

[SECTION 8]: EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA permissible exposure limit (PEL): **Not established**

ACGIH Threshold Limit Value (TLV): **Not established**

Any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available: **N/A**

Appropriate engineering controls: **Emergency eye wash and shower should be available in the workplace.**

Personal Protective Measures/Equipment:

Respiratory protection: **None required unless smoke, mists or vapors are produced.**

Ventilation: **No special ventilation required**

Hand protection: **Rubber or plastic gloves conforming to EN 374 (EU) to prevent prolonged or repeated contact with skin**

Eye protection: **Safety glasses conforming to EN 166 (EU) if splash is possible**

Other protective equipment: **Not needed**

[SECTION 9]: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Blackish brown fluid	Lower /Upper Explosion Limits: N/A
Odor: Mild faint	Vapor Pressure (kPa @20°C): <1
Odor Threshold: Not established	Vapor Density (Air=1): N/A
pH: N/A	Density (g/cm³): 1.00 – 1.30 @ 25°C
Melting/Freezing Point (°C): N/A	Water Solubility: Insoluble
Boiling Point (°C): 150	Partition Coefficient: n-octanol/water: Not established
Flash Point (°C): > 200°C	Auto-ignition Temperature: Not established
Evaporation Rate: 1.5 – 2.8 * 10⁻⁷ g/cm² sec at 175°C	Decomposition Temp.: Not established
Flammability (solid/gas): N/A	Viscosity(mPa·s): 60 – 2000 cP
Explosive properties: N/A	Oxidizing properties: N/A

[SECTION 10]: STABILITY AND REACTIVITY

Reactivity Information

Chemical stability: **Stable at normal temperatures and pressure**

Possibility of hazardous reactions: **Will not occur**

Conditions to avoid (e.g. static discharge, shock or vibration): **heat and flame**

Incompatible materials: **Strong oxidizing material**

Hazardous decomposition products: **N/A**

[SECTION 11]: TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral LD50

LD50 Oral – **Not established**

Inhalation LC50

LC50 Inhalation – **Not established**

Dermal LD50

LD50 Dermal – **Not established**

Other information on acute toxicity

Skin corrosion/irritation: **This product may irritate skin with prolonged contact.**

Serious eye damage/eye irritation: **product may irritate eyes.**

Respiratory or skin sensitization: **No data**

Germ cell mutagenicity: **No data**

Carcinogenicity: **No data**

IARC: **No data**

NTP: **No data**

OSHA: **No data**

Reproductive Toxicity: **No data**

Teratogenicity: **No data**

Specific target organ toxicity – single exposure (Globally Harmonized System): **No data**

Specific target organ toxicity – repeated exposure (Globally Harmonized System): **No data**

Aspiration hazard: **If this material is aspirated, move person to fresh air. If person is not breathing, call for emergency assistance (911 or other emergency number) then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.**

Potential health effects

Inhalation: **Not established**

Ingestion: **Not established**

Skin: **Not established**

Eyes: **Not established**

Signs and Symptoms of Exposure: **Not established**

Synergistic effects: **Not established**

Additional Information: **N/A**

[SECTION 12]: ECOLOGICAL INFORMATION

Ecotoxicity (Aquatic and Terrestrial toxicity): **No data**

Persistence and biodegradability: **No data**

Bioaccumulative potential: **No data**

Mobility in soil: **No data**

Other adverse effects: **No data**

[SECTION 13]: DISPOSAL CONSIDERATION

Product: Comply with all federal, state and local regulations.

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

Contaminated packaging: Dispose of as unused product.

[SECTION 14]: TRANSPORT INFORMATION

DOT (US)

Hazard class: **N/A**

UN No: **N/A**

Packing Group: **N/A**

Proper bulk shipping description: **Not regulated**

Proper non-bulk shipping description: **Not regulated**

Reportable Quantity: **N/A**

Marine Pollutant: **N/A**

Poison Inhalation Hazard: **N/A**

IMDG

Hazard class: **N/A**

UN No: **N/A**

Packing Group: **N/A**

Proper bulk shipping description: **Not regulated**

Proper non-bulk shipping description: **Not regulated**

ICAO shipping description: **Not regulated**

ADR/RID hazard class: **Not regulated**

IATA

Hazard class: **N/A**

UN No: **N/A**

Packing Group: **N/A**

Proper bulk shipping description: **Not regulated**

Proper non-bulk shipping description: **Not regulated**

SECTION 15]: REGULATORY INFORMATION

OSHA Hazards: **N/A**

DSL Status: **N/A**

SARA 302 Components: **None**

SARA 313 Components: **None**

Composition	CAS No.	TSCA	EINECS	OSHA
A Iron oxide (magnetite)	1309-38-2	Registered	Registered	Registered
B Maleic Anhydride Dispersant	108-31-6	Registered	Registered	Registered
C Synthetic Ester Oil	Proprietary	Registered	Registered	Registered
D Oil Soluble Additive	Proprietary	Registered	Registered	Registered

These components do not contain any chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR part 372.

[SECTION 16]: OTHER INFORMATION

We believe the statements, technical information and recommendations contained herein to be 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 into the human body is intended. We do not recommend this material as safe and effective for such uses and assume no liability for any such use.

RoHS compliance statement: We believe this product to be RoHS compliant.

REACH 2 Compliance Statement: We believe this product to be REACH 2 compliant.

Date of preparation: 2008-09-18

Date of last revision and revision level: 2020-01-07, Rev. E