

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

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|--|-------------------------|
| Trade name or designation of the mixture | FERODO Brake Fluid LHM+ |
| Registration number | - |
| Synonyms | None. |
| Product No.: | LHM and LHM Plus (LHM+) |
| Issue date | 22-May-2013 |
| Version number | 03 |
| Revision date | 30-July-2015 |
| Supersedes date | 02-June-2015 |

1.2. Relevant identified uses of the substance or mixture and uses advised against

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| Identified uses | Hydraulic fluid in the central hydraulic systems. |
| Uses advised against | None known. |

1.3. Details of the supplier of the safety data sheet**Manufacturer/Supplier**

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|----------------------|---|
| Company name | Federal Mogul Corporation (BE) |
| Address: | Central Distribution Centre Prins Boudewijnlaan 7 B-2550 Kontich, Belgium |
| Contact person: | Product Manager GA Europe, Middle-East and Africa e-mail: mario.garelli@federalmogul.com Address: Mario Garelli - via Fermi, 8 - 37135 Verona - ITALY; Tel. +39 045 82 81 354 |
| Emergency telephone: | 24hr EP (INFOTRAC): 1-800-535-5053 International: (001) 352-323-3500 |

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture**

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

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| Health hazards | | |
| Aspiration hazard | Category 1 | H304 - May be fatal if swallowed and enters airways. |

Hazard summary May be fatal if swallowed and enters airways.

2.2. Label elements**Label according to Regulation (EC) No. 1272/2008 as amended**

Contains: Lubricating Oils (petroleum), C15-30, Hydrotreated Neutral Oil-based

Hazard pictograms

Signal word Danger

Hazard statements

H304 May be fatal if swallowed and enters airways.

Precautionary statements

Prevention None.

Response

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician.
P331 Do NOT induce vomiting.

Storage Store away from incompatible materials.

Disposal

P501

Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information None.

2.3. Other hazards Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | INDEX No. | Notes |
|---|---------|-------------------------|------------------------|--------------|-------|
| Lubricating Oils (petroleum), C15-30, Hydrotreated Neutral Oil-based Classification: Asp. Tox. 1;H304 | 30 - 60 | 72623-86-0 276-737-9 | 01-2119474878-16 | 649-482-00-X | L |
| Distillates (petroleum), hydrotreated middle Classification: Asp. Tox. 1;H304 | 25 - 30 | 64742-46-7 265-148-2 | 01-2119826592-36 | 649-221-00-X | N |
| Ethyl 3-[[bis(1-methylethoxy)phosphinothioy]thio]propionate Classification: Aquatic Chronic 2;H411 | 0 - 1 | 71735-74-5 275-965-6 | - | - | |

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Note L: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346 "Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions - Dimethyl sulphoxide extraction refractive index method", Institute of Petroleum, London. This note applies only to certain complex oil-derived substances in Part 3.

Note N: The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen. This note applies only to certain complex oil-derived substances in Part 3.

SECTION 4: First aid measures

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation

Move injured person into fresh air and keep person calm under observation. In case of persistent throat irritation or coughing or after inhalation of oil mist: Seek medical attention and bring along these instructions.

Skin contact

Remove contaminated clothing and wash skin with soap and water. Get medical attention if irritation develops and persists.

Eye contact

Flush thoroughly with water. If irritation occurs, get medical assistance.

Ingestion

Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Lay on the side. Get medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed

Defats the skin. Be aware that symptoms of chemical pneumonia (shortness of breath) may occur several hours after exposure.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards

Will burn if involved in a fire.

5.1. Extinguishing media

Suitable extinguishing media

Water spray, dry powder or carbon dioxide.

Unsuitable extinguishing media

Water jet.

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| 5.2. Special hazards arising from the substance or mixture | During fire, gases hazardous to health may be formed. |
| 5.3. Advice for firefighters | |
| Special protective equipment for firefighters | Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. |
| Special fire fighting procedures | Use standard firefighting procedures and consider the hazards of other involved materials. Containers close to fire should be removed immediately or cooled with water. |
| Specific methods | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Use standard firefighting procedures and consider the hazards of other involved materials. |

SECTION 6: Accidental release measures

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| 6.1. Personal precautions, protective equipment and emergency procedures | |
| For non-emergency personnel | Extinguish all ignition sources. Avoid sparks, flames and smoking. Ventilate. Avoid inhalation of oil mist and contact with skin and eyes. Avoid prolonged and repeated contact with oil, particularly used oil. Wear suitable protective clothing. |
| For emergency responders | Use personal protection recommended in Section 8 of the SDS. |
| 6.2. Environmental precautions | Do not discharge into drains, water courses or onto the ground. |
| 6.3. Methods and material for containment and cleaning up | Remove sources of ignition. Absorb spillage with oil-absorbing material. Clean contaminated area with oil-removing material. Collect in containers and seal securely. |
| 6.4. Reference to other sections | For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS. |

SECTION 7: Handling and storage

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| 7.1. Precautions for safe handling | Avoid inhalation of oil mist and contact with skin and eyes. Avoid prolonged and repeated contact with oil, particularly used oil. Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets. Use work methods which minimise oil mist production. Wear appropriate personal protective equipment. See Section 8 for personal protective equipment. Observe good industrial hygiene practices. |
| 7.2. Conditions for safe storage, including any incompatibilities | Keep container tightly closed and dry. Keep container in a well-ventilated place. Keep away from heat, sparks and open flame. Store away from incompatible materials. |
| 7.3. Specific end use(s) | Hydraulic fluid in the central hydraulic systems. |

SECTION 8: Exposure controls/personal protection

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| 8.1. Control parameters | |
| Occupational exposure limits | No exposure limits noted for ingredient(s). |
| Biological limit values | No biological exposure limits noted for the ingredient(s). |
| Recommended monitoring procedures | Follow standard monitoring procedures. |
| Derived no-effect level (DNEL) | Not available. |
| Predicted no effect concentrations (PNECs) | Not available. |
| 8.2. Exposure controls | |
| Appropriate engineering controls | Use explosion-proof equipment. Adequate ventilation should be provided whenever the material is heated or mists are generated. |
| Individual protection measures, such as personal protective equipment | |
| General information | Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. |
| Eye/face protection | Risk of splashes: Wear approved safety goggles. |
| Skin protection | |
| - Hand protection | Wear suitable gloves. Nitrile gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier. |
| - Other | Wear appropriate clothing to prevent repeated or prolonged skin contact. |
| Respiratory protection | In case of inadequate ventilation or risk of inhalation of oil mist, suitable respiratory equipment with combination filter (type A2/P2) can be used. |
| Thermal hazards | When material is heated, wear gloves to protect against thermal burns. |

Hygiene measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.

Form Liquid.

Colour Bright green.

Odour Oil smell.

Odour threshold Not available.

pH Not applicable.

Melting point/freezing point < -50 °C (< -58 °F)

Initial boiling point and boiling range 250 - 380 °C (482 - 716 °F)

Flash point > 110.0 °C (> 230.0 °F)

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 1 % (Estimated)

Flammability limit - upper (%) 8 % (Estimated)

Vapour pressure < 0.1 kPa @ (20 °C)

Vapour density Not available.

Relative density 0.83 @ (20°C)

Solubility(ies) Insoluble in water. Miscible with: Ethanol.

Partition coefficient (n-octanol/water) > 3 (Log Pow)

Auto-ignition temperature > 350 °C (> 662 °F)

Decomposition temperature Not available.

Viscosity 18 cSt @ (40°C) Kinematic.

Explosive properties Not available.

Oxidizing properties Not available.

9.2. Other information No relevant additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity The product is stable and non reactive under normal conditions of use, storage and transport.

10.2. Chemical stability Stable under normal temperature conditions.

10.3. Possibility of hazardous reactions Will not occur.

10.4. Conditions to avoid Avoid exposure to high temperatures or direct sunlight.

10.5. Incompatible materials Strong oxidising agents. Strong acids.

10.6. Hazardous decomposition products Carbon dioxide. Carbon monoxide. Nitrogen oxides. Sulphur oxides.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation Inhalation of oil mist or vapours formed during heating of the product will irritate the respiratory system and provoke coughing. Repeated and prolonged overexposure to oil mists may result in droplet deposition, oil granuloma formation, inflammation and increased incidence of infection in the respiratory tract.

Skin contact Prolonged and repeated contact with used oil may dry skin and cause redness. Prolonged or repeated contact with used oil may cause serious skin diseases, such as dermatitis. The harmful effects may increase in used oil.

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| Eye contact | May cause minor irritation on eye contact. |
| Ingestion | May cause discomfort if swallowed. Swallowing or vomiting of the liquid may result in aspiration into the lungs. |
| Symptoms | Defats the skin. Be aware that symptoms of chemical pneumonia (shortness of breath) may occur several hours after exposure. |

11.1. Information on toxicological effects

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| Acute toxicity | May cause discomfort if swallowed. |
| Skin corrosion/irritation | May cause skin irritation. |
| Serious eye damage/eye irritation | May cause minor irritation on eye contact. |
| Respiratory sensitisation | No data available. |
| Skin sensitisation | Not a skin sensitiser. |
| Germ cell mutagenicity | No data available. |
| Carcinogenicity | Prolonged and repeated contact with used oil may cause serious skin diseases, such as dermatitis and skin cancer. |
| Reproductive toxicity | No data available. |
| Specific target organ toxicity - single exposure | No data available. |
| Specific target organ toxicity - repeated exposure | No data available. |
| Aspiration hazard | May be fatal if swallowed and enters airways. |
| Mixture versus substance information | Not available. |
| Other information | No data available. |

SECTION 12: Ecological information

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| 12.1. Toxicity | The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. |
| 12.2. Persistence and degradability | Expected to be inherently biodegradable. The product contains substances which are not expected to be biodegradable. |
| 12.3. Bioaccumulative potential | The product contains substances, which may accumulate in sediment. |
| Partition coefficient n-octanol/water (log Kow) | |
| FERODO Brake Fluid LHM+ | > 3, (Log Pow) |
| Bioconcentration factor (BCF) | Not available. |
| 12.4. Mobility in soil | No data available. |
| Mobility in general | The product is insoluble in water and will spread on the water surface. |
| 12.5. Results of PBT and vPvB assessment | Not a PBT or vPvB substance or mixture. |
| 12.6. Other adverse effects | No data available. |

SECTION 13: Disposal considerations

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| 13.1. Waste treatment methods | |
| Residual waste | Dispose of in accordance with local regulations. |
| Contaminated packaging | Since emptied containers retain product residue, follow label warnings even after container is emptied. |
| EU waste code | 13 01 10* Waste codes should be assigned by the user based on the application for which the product was used. |
| Disposal methods/information | Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. |

SECTION 14: Transport information

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| ADR | Not regulated as dangerous goods. |
| RID | Not regulated as dangerous goods. |

ADN

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3 as amended

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Not listed.

Directive 94/33/EC on the protection of young people at work

Not listed.

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006 as amended. The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended and respective national laws implementing EC directives.

National regulations

Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

DNEL: Derived No-Effect Level.

PNEC: Predicted No-Effect Concentration. PBT:

Persistent, bioaccumulative and toxic. vPvB:

Very Persistent and very Bioaccumulative.

Registry of Toxic Effects of Chemical Substances (RTECS)

HSDB® - Hazardous Substances Data Bank

References

Information on evaluation method leading to the classification of mixture

The mixture is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

Full text of any H-statements not written out in full under Sections 2 to 15

H304 May be fatal if swallowed and enters airways.

H411 Toxic to aquatic life with long lasting effects.

Training information

Follow training instructions when handling this material.

Disclaimer

The information provided on this data sheet was abstracted from supplier safety data sheets and standard references in occupational health and toxicology. Federal-Mogul makes no representation or warranty with respect to the information obtained from such references. The information is however, as of the date provided, true and accurate to the best of Federal-Mogul's knowledge, and should be used to make an independent determination of the methods to safeguard workers and the environment.