HELLA PAGID
BRAKE SYSTEMS

Safety Data Sheet
Brake Fluid LHM / LHM+

Section 1: Identification of the substance / mixture and of the company / undertaking.

1.1 Product Identifier:
Trade Name: HELLA PAGID LHM and LHM Plus (LHM+) hydraulic fluids.
Material number: **8DF 355 360-101** (355.360-101, 95010)
8DF 355 360-111 (355.360-111, 95011)

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Identified use: As a suspension and hydraulic fluid in automotive central hydraulic systems.

1.3 Details of the supplier of the MSDS:
HELLA PAGID GmbH
Lüschershofstr. 80
45356 Essen / Germany
www.hella-pagid.com
Phone: +49 (0) 201 217600 30
E-mail: service@hella-pagid.com
Department issuing data sheet: Productmanagement, Contact Person: Mr. Gorkow, Tel. +49 (0) 201 217600 24

1.4 Emergency Telephone Number:
Informationszentrale gegen Vergiftungen,
Universitätsklinikum Bonn
Adenauerallee 119
D-53113 Bonn
Tel: +49 (0)228-19240

Section 2: Hazards identification

2.1 Classification of the substance or mixture:
Classification according to regulation 1999/45/EC (DPD)
Not Classified.
Classification according to regulation 1272/2008 (CLP/GHS)
Aspiration hazard – category 1. H 304 – May be fatal if swallowed and enters airways.

2.2 Label Elements:
Labelling according to 1999/45/EC (DPD)
Not classified
Labelling according to 1272/2008 (CLP/GHS)
Hazard Pictogram/s:

Signal word: "Danger"

Hazard phrases:
- H304 – May be fatal if swallowed and enters airways.

Precautionary phrases recommended:
- P301 + 310 – If swallowed, immediately call a poison centre or doctor/physician and have container or label at hand.
- P331 – Do NOT induce vomiting.
- P405 – Store locked up.
- P501 – Dispose of container to a licensed waste oil disposal site.

2.3 Other Hazards:
Large spills may contaminate soil or ground water.
Product is not classified as flammable or combustible but will burn.
Product is not classified as PBT or vPvB according to Annex Xlll.

Section 3: Composition / information on ingredients

3.1 Substances:
Not applicable.

3.2 Mixtures:
General description:
Blend of highly refined mineral oils, anti-wear/lubricity additives, and viscosity index improver.

Hazardous Ingredients

Ingredient	EC No.	CAS No.	Registration No.	% w/w	Classi-fication 67/548EEC	Classification 1272 / 2008
Lubricating oil (petroleum) C15-30 Hydrotreated neutral oil-based	232-455-8	72623-86-0	01-2119474878-16	60-100	Not classified	Aspiration toxicity – Cat 1; H304
Distillates (petroleum) Hydrotreated light; Kerosine unspecified	265-148-2	64742-46-7	01-2119826592-36	10-30	Xn; R65	Aspiration toxicity – Cat 1; H304
Ethyl 3-[[Bis(methyl-ethoxy) phosphinothioy] thio] propionate	275-965-6	71735-74-5		0-1	N; R51/53	Aquatic chronic – Cat 2; H411.

See Section 16 for explanation of the classification codes.
Petroleum product – DMSO extract <3 % by weight.

Section 4: First aid measures

4.1 Description of first aid measures:

General Advice
If at any point aspiration into the lungs is suspected, admit to hospital immediately.

Inhalation
Remove to fresh air and keep at rest. Seek medical attention if any discomfort continues.

Skin Contact:
Remove contaminated clothing. Wash affected skin with soap and water. If irritation persists seek medical attention.

Eye Contact
Flush eye with water for at least 10 minutes. Remove any contact lenses and open eyes wide apart.
If irritation persists seek medical attention.

Ingestion
Obtain medical advice immediately. **DO NOT INDUCE VOMITING.**

4.2 Most important symptoms and effects both acute and delayed:

Aspiration
Chemical pneumonia

Inhalation
Upper respiratory tract irritation.

Skin contact
Prolonged contact may cause redness, irritation and dry skin.

Eye contact
Irritation of eyes and mucous membranes.

Ingestion
May cause discomfort if swallowed. There is a danger of product being aspirated into the lungs if vomiting occurs.

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

Medical personnel seeking to administer first aid are referred to the services of the Poisons Information Service who can advise in such instances. Treat symptomatically.

Section 5: Fire fighting measures

5.1 Extinguishing Media:

Suitable Extinguishing media
Foam, Carbon dioxide, dry powder or water (fog or fine spray).

Unsuitable Extinguishing Media
Direct water jet (although these may be used to cool adjacent containers).

5.2 Special hazards arising from the substance or mixture:

Combustion products may contain harmful or irritant fumes. Heat from a fire could result in drums bursting.

5.3 Advice for fire fighters:

In the event of a large fire self-contained breathing apparatus should be worn. Prevent water spray from entering water courses.

Section 6: Accidental release measures

6.1 Personal Precautions, protective equipment and emergency procedures:

Being a lubricant, spilt product presents a significant slip or skid hazard -prevent any unnecessary personnel or vehicles entering the area. Precautions should be taken to prevent skin and eye contact when cleaning up.

6.2 Environmental Precautions:

Prevent entry into watercourses (drains, ditches or rivers etc.). If spillage does enter environment inform Environmental Authority immediately (in UK the Environmental Agency). Product is insoluble in water and will spread on the surface – if spilt onto water prevent spread by suitable barrier equipment.

6.3 Methods and materials for containment and cleaning Up:
Contain spillage using inert material (sand, earth etc.). Product spilled on water may be collected with booms and skimmers. Collection may be by salvage vehicle and/or the use of inert absorbents. Remove all material to an appropriately labelled salvage container for disposal. Clean contaminated area with plenty of water and detergent.

6.4 Reference to other sections:
For personal protection see section 8. For disposal methods see section 13.

Section 7: Handling and storage.

7.1 Precautions for safe handling:
Handling equipment should minimise the formulation of mists. If large quantities of the product are being moved (pumped or decanted) static discharges are possible – especially in dry weather. To avoid this earth bonding of pipework, vessels etc. may be advisable. Do not use oil contaminated clothing or shoes and do not place rags moistened with oil in pocket.

7.2 Conditions for safe storage including any incompatibilities:
Suitable bulk storage vessels are mild or stainless steel tanks or tight head steel drums. For smaller quantity resealable tinplated steel or HD Polyethylene containers are recommended. Store away from sources of strong heat and strong oxidising agents. Keep containers tightly closed and avoid contact with any other substance. Take precautionary measures to prevent product entering the environment. In the UK the Oil Storage Regulations may apply.

7.3 Specific end use:
None other than that identified in section 1.2

Section 8: Exposure controls / personal protection

8.1 Control Parameters:
8.1.1 Occupational exposure limits
Mixture (as mineral oil mist): Due to the low vapour pressure of the preparation vapour is not generally a problem at ambient temperature.

Country	8 hours	15 min
Australia	5 mg/m3	
Austria	5 mg/m3	
Belgium	5 mg/m3	
Canada	5 mg/m3	10 mg/m3
Denmark	1 mg/m3	2 mg/m3
Hungary		5 mg/m3
Latvia	5 mg/m3	
New Zealand	5 mg/m3	10 mg/m3
Spain	5 mg/m3	10 mg/m3
Sweden	1 mg/m3	3 mg/m3
The Netherlands	5 mg/m3	
USA	5 mg/m3	10 mg/m3
UK (not current)	5 mg/m3	10 mg/m3

8.2 Exposure Controls:
8.2.1 General
Employ good industrial hygiene practice as part of a control banding approach.

8.2.2 Appropriate engineering controls
Not necessary under normal conditions. If fluid is being heated or atomised, local exhaust ventilation with filter / scrubber is recommended.

8.2.3 Individual protection measures / personal protective equipment

Respiratory Protection

Not needed under normal conditions. Self contained breathing apparatus or Organic vapour respirators (A-P2) may be used where product is being heated or atomised and engineering control measures are not practical.

Hand Protection

Wear chemically resistant impervious gloves (EN 374) to avoid prolonged or repeated contact. Butyl rubber, Natural rubber, Nitrile rubber and PVC are suitable materials. Because of great variety of types of gloves see manufacturer's figures for breakthrough times. In the case of prolonged contact a glove with a protection class of 6 (breakthrough time of >480 min) is recommended.

Eye Protection

Wear close-fitting goggles (EN 166) or face shield where there is a risk of splashing (acrylic or PVC preferred to polycarbonate which may be attacked by brake fluid). Eye baths should be provided at locations where accidental exposure may occur.

Skin Protection

Where significant exposure is possible wear impervious body covering. It is recommended that showers are provided at locations where accidental exposure may occur.

8.2.4 Environmental Exposure Controls

Appropriate secondary containment should be provided to prevent the product entering the environment. The measures outlined in the Oil Storage Regulations 2001 should be adopted where appropriate.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

		Test method
Appearance	Bright green liquid	Visual
Odour	Oil N/A	
Odour Threshold	N/A – very low odour	
pH	N/A (Oil)	
Boiling Range	250 – 380 °C.	IP 123
Melting Point	< -50 °C.	ISO 7308
Flash Point:	> 110 °C.	IP35
Auto-Ignition Temperature	> 350 °C. (by analogy)	ASTM D 286
Decomposition temperature	> 250 °C.	
Flammability Limits in air	Not known but expected to be 1 – 8%	
Evaporation Rate	Negligible	
Density	0.84 kg/l at 20 °C.	
Solubility	Insoluble in water. Soluble in organic solvents	
Partition Coefficient (Log POW)	> 3	OECD 117
Kinematic Viscosity	19 cSt at 40 °C.	ASTM D 445
Vapour Pressure	< 0.1 kPa at 20 °C.	Reid
Vapour Density	Not established	
Explosive properties	Not explosive.	
Oxidising Properties	Not oxidising	

9.2 Other information:

None relevant.

Section 10: Stability and reactivity

10.1 Reactivity:

No hazardous reactions if stored and handled as indicated.

10.2 Chemical Stability:

Product is stable under normal conditions.

10.3 Possibility of hazardous reactions:
Unlikely to occur under normal conditions of use.

10.4 Conditions to Avoid:
Heat, flames and other sources of ignition.

10.5 Incompatible Materials:
Strong oxidising agents or strong acids.

10.6 Hazardous Decomposition Products:
Decomposition products which can be formed on heating include Carbon monoxide, Carbon dioxide and oxides of nitrogen or sulphur.

Section 11: Toxicological information (comments may be based on analogy with similar products).

11.1 Information on toxicological effects:

11.1.1 Acute Toxicity

Ingestion

Product is of low acute oral toxicity – LD50 (oral) Rat = > 2000 mg/kg. Symptoms of overexposure include nausea, vomiting or diarrhoea.

Inhalation

Unlikely to be hazardous by inhalation at ambient temperatures due to low vapour pressure. If product is inhaled at elevated temperatures or as an aerosol it may irritate respiratory tract and may cause systemic effects similar to ingestion (see above).

Aspiration

Aspiration of the product into the lungs (usually as a result of vomiting) can lead to fatal Oil Pneumoconiosis – seek medical attention immediately. Viscosity < 20.5 cSt @40 °C.

Dermal

Acute percutaneous toxicity is low LD50 (sk) Rabbit = > 2000 mg/kg. Prolonged or repeated contact with *used* oils can cause serious skin diseases such as skin cancer or dermatitis.

11.1.2 Irritation

Eye Contact Based on available data the classification criteria are not met. (Method OECD 405). May cause mild Irritation.
Skin Contact Based on available data the classification criteria are not met (Method OECD 404). Prolonged or repeated contact can cause drying or irritation. Mineral oil can block skin pores leading to Oil Acne.

11.1.3 Corrosivity

Based on available data the classification criteria are not met.

11.4 Sensitisation

Based on available data the classification criteria are not met.

11.1.5 Repeated dose toxicity

Not expected to display significant repeated dose toxicity. There are no reports of long term adverse affects in man.

11.1.6 Carcinogenicity

Based on available data the classification criteria are not met. This product contains mineral oils which are considered to be severely refined and not considered to be carcinogenic under IARC. All of the oils in this product have been shown to contain less than 3 % extractables (IP346).

11.1.7 Mutagenicity

Not known to be mutagenic

11.1.8 Toxicity for reproduction

Major ingredients have not been shown to cause significant fertility or development problems at levels which are not themselves toxic to the animal concerned.

Section 12: Ecological information

12.1 Toxicity:
Acute toxicity to aquatic or soil organisms is expected to be low, however oil spills can smother and suffocate by preventing passage of oxygen and water. Oil contamination can also foul and smother birds and marine animals.

Fish	Based on knowledge and experience of similar products not expected to be toxic
Aquatic invertebrates	Based on knowledge and experience of similar products not expected to be toxic

12.2 Persistence & Degradability:
Product is expected to be inherently but not readily biodegradable based on its ingredients. Should not be admitted into biological waste treatment plants. The product is based on highly refined mineral oils that are considered stable to hydrolysis. The product is considered stable in the presence of water.

12.3 Bioaccumulative Potential:
Base oil hydrocarbons possibly accumulative. Log POW > 6.

12.4 Mobility in soil:
Insoluble in water on which it floats. Does not evaporate from water or soil. Limited mobility in soil but some components may penetrate the soil and cause groundwater pollution.

12.5 Results of PBT and vPvB assessment:
Data not available

12.6 Other adverse effects:
Not relevant.

Section 13: Disposal considerations

13.1 Waste treatment methods:
Dispose of in accordance with local and national regulations. In the E.U. used mineral oils are classified as hazardous waste (Directive 91/689/EEC), EWC number: 13.01.10.

Controlled incineration or recycling is recommended. Under no circumstances should this product be disposed of to rains, soil or water courses. It may be advisable to seek advice from Local Waste Authority before disposal. Used mineral oils can be carcinogenic - avoid contact with skin.

Section 14: Transport information

14.1 UN No. / Class:
None

14.2 UN Proper shipping name:
N/A

14.3 Transport hazard classes:

Land Transport
ADR . . . . . Not classified
RID . . . . . Not classified
Sea Transport
IMO/IMDG . . . . . Not classified
Marine Pollutant . . . . . No

Air Transport
IATA/IACO . . . . . Not classified
Inland waterways
ADN . . . . . Not classified

14.4 Packing Group:
N/A

14.6 Special precautions for user:
None relevant

14.5 Environmental Hazards:
Not environmentally hazardous

14.7 Transport in bulk (annex ll of Marpol):
Not classified.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific to the substance or mixture:

15.1.1 Chemical Inventories

All ingredients are registered on the following inventories:

E.U. (EINECS/EILINCS) USA (TSCA) Canada (DSL/NDSL) Australia (AICS)
Japan (ENCS) China (IECSC) Korea (ECL) Philippine (PICCS)
New Zealand (NZLoC)

15.1.2 WGK Hazard class

Assessed as WGK 1 (self assessment). Slight hazard to water.

15.1.3 Other

Usage should be in accord with all local and national regulations. In the U.K. this would include (not exhaustive):

- Health and Safety at Work Act 1974
- Control of Substances Hazardous to Health regulations 2002 (COSHH.)
- Control of pollution (Oil storage) regulations 2001

15.2 Chemical safety assessment:
A chemical safety assessment has not been carried out for this product by the supplier.

Section 16: Other information

16.1 Abbreviations and acronyms used in this data sheet:

DPD	Dangerous Preparations Directive.
CLP	Classification, labelling and packaging of substances and mixtures regulation,
GHS	UN Globally Harmonised system of classification and labelling of chemicals
PBT	Persistent, Bio accumulative and Toxic.
vPvB	Very persistent and very bio accumulative.
R22	Harmful if swallowed.
R40	Limited evidence of a carcinogenic effect.
R50/53	Very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.
N51/53	Toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment
H304	May be fatal if swallowed and enters airways.
H411	Toxic to aquatic life with long lasting effects.

16.2 Revisions:
Because of the major changes, this data sheet should be read as entirely new.

16.3 Legal Disclaimer:
The information contained herein is based on the present knowledge and experience of HELLA PAGID GmbH.
It in no way constitutes the users own assessment of work place risk as required by other Health and Safety legislation.
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