Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: HL 32
HL 46
HL 68
HL 100
HL 150

Other Names: Hydraulic Oil: 32, 46, 68, 100, 150

Product Use: For application in moderately loaded power transmission and hydraulic control systems.

Company Information
LOTOS OIL S.A.
80-718 GDAŃSK, ul. Elbląska 135
tel. 058-308-72-41, fax: 058-308-73-58
www.lotos.pl
reach@grupalotos.pl

Emergency Phone Number
LOTOS Fire Brigade and Company Emergency Centre: 058-308-81-99; 058-308-81-09 (only during office hours)

2. HAZARDS IDENTIFICATION

The product is not classified as hazardous preparation. The product I classified and hazards are identified according to the classification criteria determined in section 15 point 3 and 4, on the basis of the tests results’ analysis and literature data (section 16 point 3):

- Notes L and H are assigned to the base oils therefore, they are tested by IP 346 (the method with DMSO extract) to measure the amount of polycyclic aromatic hydrocarbons (PCA). The base oil contains less than 3% of PCA, so the product is not classified as carcinogenic category 2.
- If vapour or mist is generated when the material is heated or in case of ingestion the product may cause respiratory system’s irritation. The research conducted for similar products has not shown a harmful effect on eyes or shown minimal eye irritation.
- In case of a failure in the equipment working in high temperatures and pressures there is a probability of oil penetrating subcutaneous tissues through skin.
- During work with the hot product there is a danger of thermal burns.

Complementary information concerning potential threats for human health and the environment is given in the succeeding sections of the MSDS.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Composition of base oils and additives

<table>
<thead>
<tr>
<th>Hazardous Ingredients, Concentration and Classification Numbers:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
</tr>
<tr>
<td>Registration*</td>
</tr>
<tr>
<td>not applicable</td>
</tr>
<tr>
<td>not applicable</td>
</tr>
</tbody>
</table>

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Product Name: Hydraulic Oils L-HL 32, 46, 68, 100, 150
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4. FIRST AID MEASURES

General Recommendations
In every case below if disorders do not recede, get medical attention immediately or take the victim to hospital; show the packaging or label to a physician.
If the victim is unconscious, do not give anything by mouth and place the person in a stable side position. Ensure calmness, control breath and pulse.
If the victim is conscious, do not give milk, fat or alcohol.
In each individual case act as given below.

Inhalation:
If respiratory discomfort occurs, remove the exposed person from the hazardous place to fresh air. Remove contaminated clothing. Ensure calmness and warmth (cover the victim with blankets). Control breath and pulse.
Provide oxygen if breathing is difficult. If stopped breathing, clean the oral cavity from foreign bodies and mucus and immediately give artificial respiration with the use of AMBU apparatus. If necessary, make a heart massage.

Skin Contact:
Remove contaminated clothing. Wash the contaminated area or, if necessary, even the whole body thoroughly with soap and water (if there are no burns).
For washing do not use any organic solvents such as: kerosene, light distillate or petrol.
If the material is hot, immediately submerge the injured area in cold water for at least 10 minutes.
If the product got through to subcutaneous tissues through skin, get medical attention immediately.

Eye Contact:
Immediately take off contact lenses and flush open eyes with large amounts of water for at least 15 minutes. If one eye is contaminated, protect the other one during rinsing. Avoid a strong water stream in order not to harm the cornea.
Caution: People under a risk of eye contamination should be informed about the necessity of flushing eyes immediately and taught how to do it.

Ingestion:
In case of ingestion do not induce vomiting because of the inhalation threat that might cause aspiration pneumonia requiring immediate medical treatment.
If oral cavity is contaminated, wash it thoroughly with water until the oil taste vanishes. If the victim is conscious, give him or her approximately 200 ml (1 glass) of liquid paraffin to drink.
If vomiting, put the patient with his face down, so that the substance would not get through to bronchi and lungs.
Immediately get medical attention or take the victim to hospital; show the packaging or label.

Note to physician: If the patient is unconscious, perform tracheal intubation and gastric suction through a tube. Control heart-beat rhythm. Introduce symptomatic treatment.
Basic Fire-Fighting Instructions:
- call the Fire Brigade immediately,
- inform about fire,
- secure the emergency route,
- remove everybody from the hazardous place who does not participate in extinguishing fire,
- cool the containers exposed to fire or hot temperatures with water from a safe distance,
- do not let the fire sewage flow into sewers or watercourses and secure the contaminated equipment and the agents applied to extinguish fire.

Appropriate Extinguishing Media:
Carbon Dioxide, alcohol-resistant fire foam, fire steam.

Inappropriate Extinguishing Media:
Consistent streams of water (water can only be used to cool hot surfaces).

Special Hazards Resulting from the Preparation Physical and Chemical Properties:
During contact of the hot product with water, foaming and splashing occurs. At high temperatures thermal decomposition of the preparation ingredients may occur; the characteristic of the decomposition products will depend on decomposition conditions. Gases and vapours may be generated: carbon monoxide, sulphur oxide, nitrogen oxide, hydrogen sulphide and hydrocarbons. Gases and vapours generated during fire are heavier than air, so they can gather in lower parts of the land hollows and spread just above ground in the vicinity of fire, causing re-ignition.
Physical and chemical properties are determined in section 9.

Protection of Fire-fighters:
Fire-fighters should be equipped with appropriate personal protective clothing (gas proof and anti-electrostatic), protective gloves, safety goggles sticking to face tightly, and appropriate upper air-passage protection (breathing apparatuses with the independent air source, an air cleaner with a multi-gas filter). Before and during the fire-fighting action apply an explosymeter or an indicator. If there is a danger of explosion, use temperature-resistant face protection.

6. ACCIDENTAL RELEASE MEASURES

General information:
- Secure the source of the leak immediately: stop the liquid inflow, seal up the leak,
- Secure the evacuation route.
- In case of large spills, call chemical rescue.
- Evacuate everybody from the hazardous area who does not participate in the fire-fighting action.

Personal Precautionary Measures:
- Avoid inhaling of vapours and direct contact with the liquid
- Use protective clothing (section 8).

Precautionary Environmental Measures:
- Place the damaged container in a non-leaking container,
- Limit spreading of the spill (by building the area embankments on land, by applying dams on water)
- Do not allow the spill to enter sewers and water reservoirs,
- Report water contamination to local authorities.

Spill Management:

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Caution: Materials such as rags, papers etc. soaked up with the product create a hazardous fire condition. Do not gather these materials, but destroy them safely (section 13).

Cover the surface of the spill with foam and wait for professional help. In case of small spills cover the spill with a non-flammable sorbent (for example soil, sand on the land or afloat sorbent on water) and place in a suitable container (section 13).

7. HANDLING AND STORAGE

7.1. Handling:
General industrial safety and fire protection regulations should be obeyed. Works should be executed in well-ventilated rooms avoiding contact of the liquid and skin. Avoid dump to the environment; do not let into the sewage system. Additional information and personal protection measures are given in section 8.

7.2. Storage:
Store the product only with materials of the same hazard class away from oxidizing materials, acids and bases that could cause containers corrosion. Do not store the product in the vicinity of groceries and fodders. Store according to the regulations in force only in certified and labelled containers, or in closed steel containers protecting the product against water and impurities. Put containers vertically, guard them against fall, hit or mechanical damage. Protect containers against warming up. Store-rooms should be cool, well-ventilated.

7.3. Special application of the product: no data

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

8.1. Exposure Terminal Value: (legal basis – section 15 point 13 and 14):
NDS - maximum admissible product concentration in the air at the workplace creating hazard to human health:

<table>
<thead>
<tr>
<th>Substance</th>
<th>NDS (mg/m³)</th>
<th>NDSCh (mg/m³)</th>
<th>NDSP</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral oils (aerosol liquid phase)</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>Does not applicable in conditions when vapours are nor generated.</td>
</tr>
</tbody>
</table>

- DNEL: no data
- PNEC: no data

8.2. Exposure Control:

8.2.1. Occupational Exposure Monitoring:
Act according to the regulations concerning occupational exposure monitoring and in compliance with the following Polish standards:
- PN-Z-04008-7:2002 “Principles of air sampling in the workplace and interpretation of results”.

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Do not let the preparation components concentration exceed hygienic standard values or explosive concentration limits in the air.

In case of vapours formation, apply local exhaust ventilation to remove vapours from the places of emission and the general room ventilation.

Obey health and safety-at-work legislation,
- do not eat or drink in the workplace; wash hands (or even the whole body) after work. For washing use warm water and soap. Do not use organic solvents.
- handle the product away from the sources of ignition and hot surfaces, avoid open fire,
- in the designated explosion zone wear anti-electrostatic clothing, gloves and shoes,
- keep protective clothing clean.

**Respiratory Protection:**
Respiratory protection is not required, however, do not inhale vapours of the product.
If there is a risk of contact with concentrated vapours or mist generation, wear a protective mask with the filter of A type.

**Hand and Skin Protection:**
No hand and skin protection is required, but to minimize risk wear protective clothing, oil-proof gloves (e.g. nitrile) and footwear adapted to contact with hot objects.

**Eye and Face Protection:**
Eye and face protection is not required, but wearing safety glasses is a good habit, and in case of splashing hazard – full protection of head, face and neck.

**8.2.2. Environmental Exposure Control:**
The Admissible level of crude oil derivatives in the atmospheric air and the admissible pollution of inland surface water are not determined.
Permissible content of crude oil derivatives in sewages released into water and land equals 5 mg/l for refinery wastes or 15 mg/l for other industrial wastes (section 15 point 16).

_Caution:_ The employer is obliged to acquaint with and apply in practice the acts and regulations concerning environmental protection, water law, principles of collective water supply and sewage disposal. The regulations concerning waste disposal are given in section 15.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. General Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>clear liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>typical oil</td>
</tr>
</tbody>
</table>

#### 9.2. Important information concerning health, industrial safety and the environment

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>no data available</td>
</tr>
<tr>
<td>Temperature (pressure 1013 hPa):</td>
<td></td>
</tr>
<tr>
<td>- boiling point [°C]:</td>
<td>no data available</td>
</tr>
<tr>
<td>- pour point [°C]:</td>
<td>≤ -12</td>
</tr>
<tr>
<td>- flash point [°C]:</td>
<td>&gt; 175 (open crucible)</td>
</tr>
<tr>
<td>- auto-ignition [°C]:</td>
<td>not determined</td>
</tr>
<tr>
<td>Flammability (solids, gases):</td>
<td>not applicable</td>
</tr>
<tr>
<td>Explosion Properties</td>
<td>does not have explosion properties</td>
</tr>
</tbody>
</table>

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Version Date: 19/01/2010
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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidizing Properties</td>
<td>no data available</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>no data available</td>
</tr>
<tr>
<td>Density at 15 °C [g/cm³]:</td>
<td>does not normalize (given in certificates)</td>
</tr>
<tr>
<td>Solubility:</td>
<td></td>
</tr>
<tr>
<td>- in water</td>
<td>insoluble in water</td>
</tr>
<tr>
<td>- in organic solvents</td>
<td>soluble in most organic solvents</td>
</tr>
<tr>
<td>Octanol / Water Coefficient: Log K_{ow}</td>
<td>not determined</td>
</tr>
<tr>
<td>Kinematic Viscosity at 40 °C [mm²/s]:</td>
<td>28.8 – 165.0</td>
</tr>
<tr>
<td>Vapour Density (air=1):</td>
<td>no data available</td>
</tr>
<tr>
<td>Volatility:</td>
<td>low</td>
</tr>
</tbody>
</table>

9.3. Other properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscibility:</td>
<td>no data available</td>
</tr>
<tr>
<td>Solubility in fats:</td>
<td>no data available</td>
</tr>
<tr>
<td>Electrical Conduction:</td>
<td>no data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

The product is stable under the recommended conditions.

10.1. Conditions to Avoid:
Avoid ignition sources and heat in conditions of an explosive atmosphere.

10.2. Materials to Avoid:
Avoid contact with strong oxidants.

10.3. Hazardous Decomposition Products:
Stable product. Thermal decomposition products are given in section 5 of the MSDS.

11. TOXICOLOGICAL INFORMATION

According to the regulations given in section 15 points 3 and 4 the product is not classified as hazardous.

Effect on Respiratory Tract:
The product is neutral. However, if the product forms oil mist or vapours at high temperatures it may cause irritation of air-passages.
A probability of oil suction is low (section 9.2); however, if ingested accidentally, secondary tract irritation and – as a result – vomiting may occur. There is a danger of absorption during vomiting. At large quantities it may cause severe pulmonary states.

Effect on Respiratory Tract through Inhalation:
Vapour inhalation may cause an alimentary tract irritation.

Effect on Skin:
The oil is neutral but prolonged and repeated contact may cause slight irritation, heat, drying and cracking of skin as well as various skin disorders.

Effect on Eyes:
The product is neutral, but in case of splashing or exposure to vapours it may cause eye irritation.

Remote Effects of Exposure: no data available.
Acute Toxicity: no data available.

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12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity: no specific data available
12.2. Mobility:
The product gathers on the water surface and, if in large amounts, it restrains oxygen transfer to water. According to the data (section 16 point 4), under the influence of water gyres oil bases sedimentate in water and are absorbed by deposits.
12.3. Durability and Decomposition (Biodegradation): no specific data available
12.4. Bioaccumulability:
No specific data available. The bioaccumulation coefficient (BCF) is not determined. The researches have shown that BCF for similar products is negligible because of the oil slight solubility in water.
12.5. The Results of the Assessment of PBT Properties: no data available
12.6. Other Effects Harmful to the Environment:
The product does not contain substances hazardous to the ozone layer listed in the regulations (section 15 point 17).

13. WASTE DISPOSAL INFORMATION

Caution! Empty containers retain product residue that may - at a considerable temperature rise - generate oil mist causing an explosion. Do not weld, heat, cut or drill of empty containers.

Do not release to sewage system; do not let surface and subterranean water and soil contaminate. Apply closed and labelled containers for wastes resistant to hydrocarbons.

Unusable or used oil should be taken to the nearest public used oil collection centre.

Regeneration or neutralization should comply with the rules and plans of waste managing and the requirements of the environmental protection and be conducted only in marked places, i.e. in installations or devices that meet certain demands. As a method of neutralization thermal transformation (incineration) is recommended.

Destroy disposable containers in compliance with the current regulations concerning packaging waste management. Multiple-use containers can be reused after being cleaned.

Waste Code:
13 01 10* – mineral hydraulic oils containing no halogenorganic compounds.

Caution! The waste is dangerous.
Wastes are classified according to their source; therefore, their code may change depending on the way and place of waste formation – make agree with the Environmental Protection Department or the department fulfilling such function.

Handle the product in compliance with the regulations (section 15 points 8, 9, 10, 11).

14. TRANSPORT INFORMATION

Special Precautions:
Handle the product as described in section 7.1

Product Classification:

Product Name: Hydraulic Oils L-HL 32, 46, 68, 100, 150
The product is not a subject to the regulations concerning the carriage of dangerous goods (ADR, IMDG, IATA-DGR) (section 15 points 19, 20, 21, 22, 23, 24, 25).

### 15. REGULATORY INFORMATION

The S-phrases are chosen according to the principles binding in case of products available to all consumers.

- Keep out of the reach of children (S2; obligatory)
- Do not empty into drains (S29)

The product is not dangerous and does not require additional cautionary labelling (section 15 point 5).

**Special Regulations:**

2. Act of 11 September 2001 on chemical substances and preparations (J. of L. of 2009 No.1222 item 152 with later changes);
3. Regulation of the Minister of Health of 2 September 2003 on criteria and methods of classification of chemical substances and preparations (J. of L. of 2003 No.171 item 1666 with further amendments);
4. Regulation of the Minister of Health of 28 September 2005 on a list of dangerous substances with their classification and labelling (J. of L. of 2005 No. 201 item 1674);
5. Regulation of the Minister of Health of 5 March 2009 on the labelling of packaging for dangerous substances and dangerous preparations (J. of L. of 2009 No.53 item 439);
8. Act of 27 April 2001 on waste (J. of L. of 2007 No.39 item 251 with later changes);
9. Regulation of the Minister of the Environment of 27 September 2001 on the catalogue of waste (J. of L. of 2001 No.112 item 1206);
10. Regulation of the Minister of Economy and Labour of 4 August 2004 on the procedure of waste oil management (J. of L. of 2004 No.192 item 1968);
11. Act of 11 May 2001 on packaging and packaging waste (J. of L. of 2001 No. 63 item 638 with later changes) together with appropriate regulations;
12. Regulation of the Minister of Labour and Social Policy of 26 September 1997 on general industrial safety regulations (J. of L. of 2003 No.169 item 1650 with later changes);
13. Regulation of the Minister of Labour and Social Policy of 29 November 2002 on maximum admissible concentration levels of noxious substances in the workplace (J. of L. of 2002 No.217 item 1833 with later changes);
14. Regulation of the Minister of Health of 20 April 2005 on research and measurements of factors harmful to health at a workplace (J. of L. of 2005 No.73 item 645);
15. Regulation of the Minister of Health of 30 December 2004 on industrial safety relating the presence of chemical factors at the workplace (J. of L. of 2005 No.11 item 86);

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16. OTHER INFORMATION

All substances listed in section 3 have initially been registered in compliance with the requirements of REACH Regulation.

A list of symbols indicating hazard category and the R-phrases given in section 3:
Rakotw. Kat. 2 - carcinogenic product of category 2, R45 - can be carcinogenic.

Data sources for the MSDS:
The MSDS hereby is drawn up according to the principles determined in the REACH Regulation and with the use of the information given in TDS, the data written by appropriate international organisations and the data available to us reflecting our best professional judgement. The analyses of the selected physical and chemical properties are done up-to-date in the Group LOTOS S.A.

Further Reading:
[2] Data base IUCLID.
[6] The regulations currently binding in Poland concerning hazardous substances and chemical preparations.

Product Name: Hydraulic Oils L- HL 32, 46, 68, 100, 150

**MSDS Revisions:**
Section 1 (product name), section 3 (composition) and section 13 (waste code) as well as sections 14 and 15 of the previous edition of the MSDS have been revised and updated.
The present edition cancels all previous editions.

**STATEMENT**

The information contained in this Material Safety Data Sheet reflects our best professional judgment at this time. Since the product may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume responsibility for the results of such application. Accuracy or completeness of health and safety precautions as well as - of advises on the environmental protection given in this Sheet is not guaranteed. Users should make their own investigations to determine the suitability of the information for their particular purposes and should know and comply with all applicable rules, regulations and laws relating to this product.
The regulations mentioned in the Sheet do not exempt the user from the regulations concerning his or her activity.

The present document has been worked out by the Group LOTOS S.A.

**THE MSDS SHOULD BE IMMEDIATELY SEND DOWN THE SUPPLY CHAIN**