SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Skydrol® LD4 Fire Resistant Hydraulic Fluid

Product code: 34102-00, P3410207, P3410200, P3410206, P3410204, P3410202, P3410205, P3410203, E3410201

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

Use of the Substance/Mixture: Hydraulic fluids

Recommended restrictions on use: None known.

1.3 Details of the supplier of the safety data sheet

Company: Eastman Chemical Company
200 South Wilcox Drive
37660-5280 Kingsport

Telephone: +14232292000

E-mail address of person responsible for the SDS: Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

1.4 Emergency telephone number

Emergency telephone number: For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe. For emergency transportation information, call 423-229-4511 in the United States; 800 964214 in England; or +44(0)1235 239 670 in the other European countries. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2
H315: Causes skin irritation.

Carcinogenicity, Category 2
H351: Suspected of causing cancer.

Chronic aquatic toxicity, Category 3
H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms: 

Signal word: Warning 

Hazard statements: 
- H315: Causes skin irritation. 
- H351: Suspected of causing cancer. 
- H412: Harmful to aquatic life with long lasting effects. 

Precautionary statements: 

Prevention: 
- P201: Obtain special instructions before use. 
- 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. 
- P308 + P313: IF exposed or concerned: Get medical advice/ attention. 

Disposal: 
- P501: Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations. 

Additional Labelling: 
EUH208: Contains 2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate. May produce an allergic reaction. 

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 3.231 % 

2.3 Other hazards 
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. 

SECTION 3: Composition/information on ingredients 

3.2 Mixtures 

Components 

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Registration number</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>126-73-8</td>
<td>204-800-2 / 01-2119492859-14-0002 / 01-2119967407-27-0000</td>
<td>Acute Tox. 4; H302 Skin Irrit. 2; H315 Carc. 2; H351 Aquatic Chronic 3; H412</td>
<td>55 - 65</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled : Move to fresh air. If breathing is difficult, give oxygen. Consult a physician if necessary.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse.

In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

If swallowed : Call a physician or poison control centre immediately. Do not induce vomiting without medical advice. Rinse mouth. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Risks : Causes skin irritation. Suspected of causing cancer.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray Carbon dioxide (CO2) Dry chemical Foam

Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.
5.2 Special hazards arising from the substance or mixture
Hazardous combustion products: carbon dioxide, carbon monoxide oxides of phosphorus

5.3 Advice for firefighters
Special protective equipment for firefighters: Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.
Further information: Use a water spray to cool fully closed containers. Do not allow run-off from fire fighting to enter drains or water courses.

SECTION 6: Accidental release measures
6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions: Ventilate the area. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. Material can create slippery conditions. Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

6.2 Environmental precautions
Environmental precautions: Clear up spills immediately and dispose of waste safely. Avoid release to the environment. Collect spillage.

6.3 Methods and material for containment and cleaning up
Methods for cleaning up: Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13).

6.4 Reference to other sections
For personal protection see section 8.

SECTION 7: Handling and storage
7.1 Precautions for safe handling
Advice on safe handling: Do not breathe vapours or spray mist. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. In case of insufficient ventilation, wear suitable respiratory equipment. Wear appropriate personal protective equipment. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling.
Wash contaminated clothing before reuse. Drain or remove substance from equipment prior to break-in or maintenance. Handle in accordance with good industrial hygiene and safety practice.

### 7.2 Conditions for safe storage, including any incompatibilities

**Requirements for storage areas and containers**
- Store locked up. Keep container tightly closed in a dry and well-ventilated place. Keep in a cool place away from oxidizing agents.

### 7.3 Specific end use(s)

**Specific use(s)**
- www.EastmanAviationSolutions.com

### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

**Occupational Exposure Limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>126-73-8</td>
<td>TWA</td>
<td>5 mg/m3</td>
<td>GB EH40</td>
</tr>
<tr>
<td>butylated hydroxy-toluene</td>
<td>128-37-0</td>
<td>TWA</td>
<td>10 mg/m3</td>
<td>GB EH40</td>
</tr>
</tbody>
</table>

Further information: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used.

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>Workers</td>
<td>Skin contact</td>
<td>Short-term exposure, Local effects</td>
<td>1.78 mg/cm²</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term exposure, Local effects</td>
<td>0.44 mg/cm²</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Short-term exposure, Systemic effects</td>
<td>1.78 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.44 mg/kg bw/day</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Short-term exposure, Local effects</td>
<td>12.52 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term exposure, Local effects</td>
<td>3.13 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Short-term exposure, Systemic effects</td>
<td>12.52 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term exposure, Systemic effects</td>
<td>3.13 mg/m³</td>
</tr>
</tbody>
</table>
### Systemic effects

<table>
<thead>
<tr>
<th>Population</th>
<th>Route</th>
<th>Exposure</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Population</td>
<td>Oral</td>
<td>Short-term exposure, Systemic effects</td>
<td>0.88 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Oral</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.22 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Short-term exposure, Local effects</td>
<td>0.88 mg/cm²</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Long-term exposure, Local effects</td>
<td>0.22 mg/cm²</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Short-term exposure, Systemic effects</td>
<td>0.88 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.22 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Short-term exposure, Local effects</td>
<td>3.08 mg/m³</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Long-term exposure, Local effects</td>
<td>0.77 mg/m³</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Short-term exposure, Systemic effects</td>
<td>3.08 mg/m³</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.77 mg/m³</td>
</tr>
<tr>
<td>Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate</td>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term exposure, Local effects</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term exposure, Systemic effects</td>
<td>1.39 mg/kg bw/day</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term exposure, Local effects</td>
<td>0.67 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.67 mg/m³</td>
</tr>
<tr>
<td>General Population</td>
<td>Oral</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.025 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Long-term exposure, Local effects</td>
<td>0.24 mg/cm²</td>
</tr>
<tr>
<td>General Population</td>
<td>Skin contact</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.69 mg/kg bw/day</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Long-term exposure, Local effects</td>
<td>0.167 mg/m³</td>
</tr>
<tr>
<td>General Population</td>
<td>Inhalation</td>
<td>Long-term exposure, Systemic effects</td>
<td>0.167 mg/m³</td>
</tr>
</tbody>
</table>
Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>Water</td>
<td>0.082 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>1.84 mg/kg</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.0082 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.184 mg/kg</td>
</tr>
<tr>
<td>Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate</td>
<td>Water</td>
<td>0.0106 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.00106 mg/l</td>
</tr>
<tr>
<td></td>
<td>Aqua Intermittent</td>
<td>0.014 mg/l</td>
</tr>
<tr>
<td></td>
<td>Fresh water sediment</td>
<td>1.02 mg/kg</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>0.102 mg/kg</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>10 mg/l</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>0.199 mg/kg</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Engineering measures

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Eye protection : Wear safety glasses with side shields (or goggles).

Hand protection Remarks : Wear suitable gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. After contamination with product change the gloves immedi-
Skin and body protection: Wear suitable protective clothing.

Respiratory protection: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Protective measures: Ensure that eye flushing systems and safety showers are located close to the working place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- **Appearance**: oily
- **Colour**: purple
- **Odour**: odourless
- **pH**: No data available
- **Melting point/range**: < -62 °C
- **Flash point**: 160 °C
  Method: Cleveland open cup
- **Vapour pressure**: 0.27 hPa (25 °C)
- **Relative density**: 1.004 - 1.014 (25 °C)
- **Viscosity**:
  - Viscosity, kinematic:
    - < 2000 mm2/s (-54 °C)
    - 11.15 mm2/s (38 °C)
    - 3.83 mm2/s (99 °C)
9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
None reasonably foreseeable.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions: None known.

10.4 Conditions to avoid
Conditions to avoid: None known.

10.5 Incompatible materials
Materials to avoid: Strong oxidizing agents

10.6 Hazardous decomposition products
Emits acrid smoke and fumes when heated to decomposition.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:
Acute oral toxicity: LD50 (Rat, Male and Female): 2,100 mg/kg

Acute inhalation toxicity: LC50 (Rat, male): > 5.8 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: (highest concentration tested)

Acute dermal toxicity: LD50 Dermal (Rabbit, Male and Female): > 3,160 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Components:
Tributyl phosphate:
Acute oral toxicity: LD50 Oral (Rat, Male and Female): 1,553 mg/kg
Method: Acute Oral Toxicity
Assessment: Harmful if swallowed.

Acute inhalation toxicity: LC50 (Rat, Male and Female): > 4.242 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity: LD50 Dermal (Rabbit, Male and Female): > 3,100 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Acute oral toxicity: Acute toxicity estimate (Rat, Male and Female): 2,400 - 3,000 mg/kg
Assessment: Not classified

Acute inhalation toxicity: LCLo (Rat, Male and Female): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

LC50 (Rat, Male and Female): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: Not classified

Acute dermal toxicity: LD50 Dermal (Rabbit, Male and Female): > 5,000 mg/kg
Assessment: Not classified

2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Acute oral toxicity: LD50 Oral (Rat, Male and Female): 4,470 mg/kg

Acute dermal toxicity: LD50 Dermal (Rabbit, Male and Female): > 7,940 mg/kg

butylated hydroxytoluene:
Acute oral toxicity: LD50 Oral (Rat): > 6,000 mg/kg

Acute dermal toxicity: LD50 Dermal (Guinea pig): > 20,000 mg/kg

Skin corrosion/irritation

Product:
Species: Rabbit
Exposure time: 24 h
Assessment: irritating
Result: moderate irritation

Components:
Tributyl phosphate:
Species: Rabbit
Exposure time: 4 h
Assessment: Causes skin irritation.
Method: Acute Dermal Irritation / Corrosion
Result: irritating

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Species: Rabbit
Assessment: Not classified
Result: none

Species: Humans
Exposure time: 24 h
Assessment: Not classified
Result: none

2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Species: Rabbit
Exposure time: 24 h
Assessment: Not classified as hazardous.
Result: slight to moderate irritation

butylated hydroxytoluene:
Species: Rabbit
Exposure time: 24 h
Result: very slight

Serious eye damage/eye irritation

Product:
Species: Rabbit
Exposure time: 24 h
Assessment: Not classified
Result: slight

Components:

Tributyl phosphate:
Species: Rabbit
Exposure time: 24 h
Assessment: Not classified
Method: Acute Eye Irritation / Corrosion
Result: slight irritation

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Species: Rabbit
Assessment: Not classified
Result: slight

2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Species: Rabbit
Exposure time: 24 h
Assessment: Not classified
Result: slight irritation
butylated hydroxytoluene:
Species: Rabbit
Result: none

Respiratory or skin sensitisation

Product:
Test Type: Human experience
Assessment: Not classified
Method: Human Repeat Insult Patch Test
Result: Does not cause skin sensitisation.

Components:
Tributyl phosphate:
Test Type: Skin Sensitization
Species: Guinea pig
Assessment: Not classified
Result: Does not cause skin sensitisation.

Test Type: Skin Sensitization
Species: Humans
Assessment: Not classified
Result: Does not cause skin sensitisation.

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Test Type: Human experience
Species: Humans
Assessment: Not classified
Result: non-sensitizing

2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Test Type: Skin Sensitization
Species: Guinea pig
Result: May cause sensitisation by skin contact.

butylated hydroxytoluene:
Test Type: Skin sensitisation
Species: Guinea pig
Result: non-sensitizing

Germ cell mutagenicity

Product:
Genotoxicity in vitro : Test Type: Salmonella typhimurium assay (Ames test)
Metabolic activation: +/- activation
Result: negative

 : Test Type: Mutagenicity - Mammalian
Components:

**Tributyl phosphate:**
- Genotoxicity in vitro
  - Test Type: Mutagenicity - Bacterial
  - Metabolic activation: +/- activation
  - Method: Bacterial Reverse Mutation Assay
  - Result: negative

- Genotoxicity in vivo
  - Species: Rat (Male and Female)
  - Application Route: Oral; gavage
  - Method: Mammalian Bone Marrow Chromosome Aberration Test
  - Result: negative

**Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:**
- Genotoxicity in vitro
  - Test Type: Salmonella typhimurium assay (Ames test)
  - Metabolic activation: +/- activation
  - Method: Bacterial Reverse Mutation Assay
  - Result: negative

- Test Type: Mutagenicity - Mammalian
  - Metabolic activation: +/- activation
  - Method: In vitro Mammalian Cell Gene Mutation Test
  - Result: negative

- Metabolic activation: +/- activation
  - Method: In vitro Mammalian Chromosome Aberration Test
  - Result: negative

- Test Type: Mutagenicity - Mammalian
  - Metabolic activation: - activation
  - Method: Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells In Vitro
  - Result: negative

- Genotoxicity in vivo
  - Species: Rat (Male and Female)
  - Application Route: Intraperitoneal injection
  - Result: negative

**2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:**
- Genotoxicity in vitro
  - Test Type: Salmonella typhimurium assay (Ames test)
  - Metabolic activation: +/- activation
Method: Bacterial Reverse Mutation Assay  
Result: negative

: Test Type: Mutagenicity - Mammalian  
Metabolic activation: +/- activation  
Method: In vitro Mammalian Chromosome Aberration Test  
Result: equivocal

Genotoxicity in vivo  
: Species: Rat (Male and Female)  
Application Route: intraperitoneal injection  
Method: Mammalian Bone Marrow Chromosome Aberration Test  
Result: equivocal

Carcinogenicity  

Components:
Tributyl phosphate:
Species: Rat, (Male and Female)  
Application Route: Ingestion  
Method: EPA OTS 798.3300  

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Carcinogenicity - Assessment: Limited evidence of a carcinogenic effect.

Reproductive toxicity  

Components:
Tributyl phosphate:
Effects on fertility  
: Test Type: Two Generation Reproductive Toxicity Study  
Species: Rat  
Sex: Male and Female  
Application Route: Ingestion  
NOAEL: 225 mg/kg,  
Method: EPA OTS 798.4900

Effects on foetal development  
: Species: Rat  
Application Route: Oral  
750 mg/kg  
Method: EPA OTS 798.4900

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Effects on fertility

Species: Rat
Sex: Male and Female
Application Route: Ingestion
NOAEL: 5 mg/l,
F1: Lowest observed adverse effect level 50 mg/kg,
F2: Lowest observed adverse effect level 50 mg/kg,
Method: EPA OTS 798.4900

Effects on foetal development

Species: Rat
Application Route: oral (gavage)
300 mg/kg
3 mg/kg

STOT - single exposure

Components:
Tributyl phosphate:
Assessment: Based on available data, the classification criteria are not met.

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Assessment: Not classified

STOT - repeated exposure

Components:
Tributyl phosphate:
Assessment: Based on available data, the classification criteria are not met.

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Exposure routes: inhalation (dust/mist/fume)
Target Organs: Respiratory system
Assessment: Not classified

Repeated dose toxicity

Product:
Species: Rat, Male and Female
NOAEL: 40 mg/m3
Application Route: Inhalation
Exposure time: 28 days
Target Organs: Blood, Respiratory system
Remarks: Irritating to eyes and respiratory system.

Components:
Tributyl phosphate:
Species: Mouse, Male and Female
NOEL: 75 mg/kg
Application Route: in feed
Exposure time: 90 days
Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Species: Rat, Male and Female
NOAEL: 5 mg/kg
LOAEL: 50 mg/kg
Application Route: in feed
Exposure time: 90 days

Species: Rat, Male and Female
NOAEC: 5 mg/m3
Application Route: Inhalation
Exposure time: 90 days

Species: Rabbit, Male and Female
No observed adverse effect level: 100 mg/kg bw/day
Application Route: Dermal Study
Exposure time: 21 d

Aspiration toxicity

Product:
Not applicable

Components:
2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate:
Not applicable

Experience with human exposure

Product:
Inhalation : Remarks: None known.
Skin contact : Remarks: Causes skin irritation.
Eye contact : Remarks: Contact with the eyes may be very painful but does not cause damage.
Ingestion : Remarks: None known.

SECTION 12: Ecological information

12.1 Toxicity

Product:
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 5.2 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 5.8 mg/l
Exposure time: 48 h
Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 8.2 mg/l
Exposure time: 96 h

Further information
The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 3.231 %

Components:
Tributyl phosphate:
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.2 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 mg/l
Exposure time: 48 h
Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 1.1 mg/l
Exposure time: 72 h
Toxicity to fish (Chronic toxicity) : NOEC: 0.82 mg/l
Exposure time: 95 d
Species: Oncorhynchus mykiss (rainbow trout)
1.7 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 1.3 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)

Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:
Toxicity to fish : LL50 (Cyprinus carpio (Carp)): 1.8 mg/l
Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.4 mg/l
Exposure time: 48 h
Toxicity to algae : EL50 (Selenastrum capricornutum (green algae)): 9.6 mg/l
Exposure time: 72 h
Method: EL50 method of the water accommodated fraction (W.A.F.)
Remarks: EL50 method of the water accommodated fraction (W.A.F.)
NOELR (Selenastrum capricornutum (green algae)): 3.5 mg/l
Exposure time: 72 h
Method: EL50 method of the water accommodated fraction (W.A.F.)
Remarks: EL50 method of the water accommodated fraction (W.A.F.)
Toxicity to fish (Chronic toxicity) : NOEC: > 0.11 mg/l
Exposure time: 60 d
### Ecotoxicology Assessment

#### Acute aquatic toxicity

- This product has no known ecotoxicological effects.

#### Chronic aquatic toxicity

- Harmful to aquatic life with long lasting effects.

### butylated hydroxytoluene:

#### Toxicity to fish

- LC50 (Fish): 0.199 mg/l
  - Exposure time: 96 h

#### Toxicity to daphnia and other aquatic invertebrates

- EC50 (Daphnia (water flea)): 0.48 mg/l
  - Exposure time: 48 h

#### Toxicity to algae

- EC50 (Chlorella pyrenoidosa (aglae)): 0.758 mg/l
  - Exposure time: 96 h

### 12.2 Persistence and degradability

#### Components:

- **Tributyl phosphate**
  - Biodegradability: Result: Readily biodegradable

- **Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate**
  - Biodegradability: Method: Ready Biodegradability: Manometric Respirometry Test
  - Remarks: Readily biodegradable

  - Method: Ready Biodegradability: Modified MITI Test (I)
  - Remarks: Not readily biodegradable.

- **2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate**
  - Biodegradability: Concentration: 100 mg/l
  - Method: Ready Biodegradability: Modified MITI Test (I)
  - Remarks: Readily biodegradable

---

Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

- NOEC: 0.106 mg/l
  - Exposure time: 21 d

- Species: Daphnia magna (Water flea)

- Exposure time: 21 d

Exposure time: 21 d

Exposure time: 48 h

Exposure time: 96 h
12.3 Bioaccumulative potential

**Components:**

**Tributyl phosphate:**
Bioaccumulation: Species: Cyprinus carpio (Carp)
Exposure time: 56 d
Bioconcentration factor (BCF): 20
Method: OECD Test Guideline 305

Exposure time: 38 d
Bioconcentration factor (BCF): 35

Partition coefficient: n-octanol/water: Pow: 10,100

**Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:**
Bioaccumulation: Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 35
Method: OECD Test Guideline 305

12.4 Mobility in soil

**Components:**

**Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:**
Distribution among environmental compartments: Koc: 933, log Koc: 2.97
Method: QSAR model

12.5 Results of PBT and vPvB assessment

**Product:**
Assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product:** Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number
Not regulated as a dangerous good
Skydrol® LD4 Fire Resistant Hydraulic Fluid

14.2 **UN proper shipping name**
Not regulated as a dangerous good

14.3 **Transport hazard class(es)**
Not regulated as a dangerous good

14.4 **Packing group**
Not regulated as a dangerous good

14.5 **Environmental hazards**
Not regulated as a dangerous good

14.6 **Special precautions for user**
Not applicable

14.7 **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable for product as supplied.

**SECTION 15: Regulatory information**

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

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Description</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation (EC) No 649/2012</td>
<td>of the European Parliament and the Council concerning the export and import of dangerous chemicals</td>
<td></td>
</tr>
<tr>
<td>REACH</td>
<td>Candidate List of Substances of Very High Concern for Authorisation (Article 59).</td>
<td></td>
</tr>
<tr>
<td>Regulation (EC) No 1005/2009</td>
<td>on substances that deplete the ozone layer</td>
<td></td>
</tr>
<tr>
<td>Regulation (EC) No 850/2004</td>
<td>on persistent organic pollutants</td>
<td></td>
</tr>
</tbody>
</table>

Other regulations:
Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

**The components of this product are reported in the following inventories:**

- **DSL**: All components of this product are on the Canadian DSL
- **AICS**: On the inventory, or in compliance with the inventory
- **ENCS**: On the inventory, or in compliance with the inventory
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Skydro® LD4 Fire Resistant Hydraulic Fluid

Version 2.3 Revision Date: 10.08.2016 SDS Number: 150000093409 Date of last issue: 21.01.2016

SDSGB / PRD / 0001

KECI : Not listed
PICCS : Not listed
IECSC : On the inventory, or in compliance with the inventory
TSCA : On TSCA Inventory

15.2 Chemical safety assessment
For the following substances of this mixture a chemical safety assessment has been carried out:
- tributyl phosphate
- Reaction mass of dibutyl phenyl phosphate, butyl diphenyl phosphate and tributyl phosphate

SECTION 16: Other information

Full text of H-Statements
H302 : Harmful if swallowed.
H315 : Causes skin irritation.
H317 : May cause an allergic skin reaction.
H351 : Suspected of causing cancer.
H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.
H412 : Hazard to aquatic life with long lasting effects.

Full text of other abbreviations
Acute Tox. : Acute toxicity
Aquatic Acute : Acute aquatic toxicity
Aquatic Chronic : Chronic aquatic toxicity
Carc. : Carcinogenicity
Skin Irrit. : Skin irritation
Skin Sens. : Skin sensitisation

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organization for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New...
Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Sources of key data used to compile the Safety Data Sheet:

www.EastmanAviationSolutions.com

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GB / EN