Material Safety Data Sheet

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

Product name  
SKYDROL™ PE-5

Product code  
80004

Recommended Use  
Aviation
Hydraulic fluids

Manufacturer  
Solutia Inc.
A subsidiary of Eastman Chemical Company
575 Maryville Centre Drive
St. Louis, Missouri 63141 U.S.A.
Telephone: +1-314-674-6661

Emergency Phone Number  
Chemtrec: 1-800-424-9300 - Direct Dial: 1-703-527-3887

SECTION 2: Hazards identification

Signal word - Warning

EMERGENCY OVERVIEW
Irritating to skin
Harmful if swallowed
Limited evidence of a carcinogenic effect
Contains material which may cause urinary bladder damage based on animal data

Appearance  
Clear Oily

Physical State  
Liquid

Odor  
Odorless

Potential health effects

Acute toxicity

<table>
<thead>
<tr>
<th>Eyes</th>
<th>Contact with the eyes may be very painful but does not cause damage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Irritating to skin.</td>
</tr>
</tbody>
</table>

Inhalation  
Not expected to produce significant adverse health effects when recommended use instructions are followed.

Ingestion  
Harmful if swallowed.

Chronic effects  
Repeated exposure may cause skin dryness or cracking.

Aggravated Medical Conditions  
Skin disorders.

Environmental Hazard  
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. See Section 12 for additional Ecological Information.

SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>126-73-8</td>
<td>58 - 68</td>
</tr>
<tr>
<td>Phosphoric acid, tris(2-methylpropyl) ester</td>
<td>126-71-6</td>
<td>8 - 10</td>
</tr>
<tr>
<td>2-ethylhexyl[7-oxabicyclo[4.1.0]heptane-3-carboxylate]</td>
<td>62256-00-2</td>
<td>5.5 - 6.5</td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>115-86-6</td>
<td>1.3 - 1.9</td>
</tr>
</tbody>
</table>

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### SECTION 4: First aid measures

**General advice**
When symptoms persist or in all cases of doubt seek medical advice. If unconscious, place in recovery position and get medical attention immediately. Show this material safety data sheet to the doctor in attendance.

**Eye contact**
Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention immediately if symptoms occur.

**Skin contact**
Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. In the case of skin irritation or allergic reactions see a physician. Wash contaminated clothing before reuse. Discard contaminated shoes.

**Inhalation**
Remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Call a physician. Keep victim warm and quiet. Loosen tight clothing such as a collar, tie, belt or waistband. Maintain an open airway. If unconscious, place in recovery position and get medical attention immediately. Persons who have inhaled vapors or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

**Ingestion**
If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Keep victim warm and quiet. Loosen tight clothing such as a collar, tie, belt or waistband. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Do NOT induce vomiting unless directed to do so by a physician. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Maintain an open airway. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

**Notes to physician**
Treat symptomatically. Persons who have inhaled vapors or smoke fumes have to be put under medical observation for at least 48 hours, due to the delayed appearance of poisoning.

### SECTION 5: Firefighting measures

**Flash point**
173.8 °C

**Method**
Cleveland Open Cup, ASTM D-92

**Suitable extinguishing media**
Water spray, Foam, Dry powder, Carbon dioxide (CO₂)

**Hazardous combustion products**
Carbon monoxide, Phosphorus oxides

**Explosion Data**

**Sensitivity to Mechanical Impact**
None

**Sensitivity to static discharge**
None

**Protective equipment and precautions for firefighters**
As in any fire, wear self-contained breathing apparatus and full protective gear.

### SECTION 6: Accidental release measures

**Personal precautions**
No action shall be taken involving any personal risk or without suitable training. Large Spill: Approach release from upwind. Do not touch or walk through spilled material. Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Wear personal protective equipment. See also section 8.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Clean up spill immediately. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike to collect large liquid spills.

Methods for cleaning up
Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Clean contaminated surface thoroughly.

SECTION 7: Handling and storage

Advice on safe handling
Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists. Use in well ventilated areas. Wear personal protective equipment. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.

Technical measures/Storage conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Keep away from contact with oxidizing materials. Keep in properly labeled containers. Use appropriate containment to avoid environmental contamination. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store in accordance with local regulations. Keep away from food, drink and animal feeding stuffs.

SECTION 8: Exposure controls/personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>TWA: 0.2 ppm</td>
<td>TWA: 5 mg/m³</td>
<td>IDLH: 30 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 0.2 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 2.5 mg/m³</td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>TWA: 3 mg/m³</td>
<td>TWA: 3 mg/m³</td>
<td>IDLH: 1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 3 mg/m³</td>
</tr>
</tbody>
</table>

Engineering measures
Good general ventilation should be sufficient to control worker exposure to airborne contaminants. Apply technical measures to comply with the occupational exposure limits. If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Personal protective equipment

Eye/face protection
Tightly fitting safety goggles. Face-shield.

Skin and body protection
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State
Liquid

Appearance
Clear Oily

Odor
Odorless

Color
Purple

Odor threshold
No information available
SECTION 10: Stability and reactivity

Stability
Stable under recommended storage and handling conditions (see section 7).

Incompatible products
Strong oxidizing agents.

Conditions to avoid
None known based on information supplied

Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization
Hazardous polymerization does not occur.

SECTION 11: Toxicological information

Acute toxicity

Product Information
The product itself has not been tested.

Inhalation
Not expected to produce significant adverse health effects when recommended use instructions are followed.
Eyes
Contact with the eyes may be very painful but does not cause damage.

Skin
Irritating to skin.

Ingestion
Harmful if swallowed.

Component Information

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>1553 mg/kg (Rat)</td>
<td>&gt; 3100 mg/kg (Rabbit)</td>
<td>4.242 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td>Phosphoric acid, tris(2-methylpropyl) ester</td>
<td>&gt; 5000 mg/kg (Rat)</td>
<td>5000 mg/kg (Rabbit)</td>
<td>5.14 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td>2-ethylhexyl 7-oxabicyclo[4.1.0]heptane-3-carboxylate</td>
<td>4470 mg/kg b.w.</td>
<td>&gt; 7940 mg/kg</td>
<td>No data available</td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>3,500 mg/kg (Rat)</td>
<td>&gt; 7900 mg/kg (Rabbit)</td>
<td>&gt; 200 mg/l /1h</td>
</tr>
</tbody>
</table>

Chronic Toxicity

Chronic Toxicity
Repeated exposure may cause skin dryness or cracking.

Carcinogenicity
Limited evidence of a carcinogenic effect. Component tributyl phosphate produced tumors in laboratory animals at dose levels that exceed the maximum tolerated dose.

Sensitization
Did not cause sensitization on laboratory animals. OECD Test No. 429: Skin Sensitisation: Local Lymph Node Assay.

Germ cell mutagenicity
The weight of the evidence indicates that this material is not mutagenic in in-vitro assays.

Target organ effects
Contains material which may cause urinary bladder damage based on animal data.

SECTION 12: Ecological information

Acute aquatic toxicity

Product Information
Note
The product itself has not been tested. The statement is derived from products of similar structure or composition.

<table>
<thead>
<tr>
<th>Property</th>
<th>Result</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>96-hour LC50 - Fish</td>
<td>5.2 mg/l</td>
<td>Oncorhynchus mykiss (rainbow trout)</td>
</tr>
<tr>
<td>48-hour EC50 - Aquatic invertebrates</td>
<td>5.8 mg/l</td>
<td>Daphnia magna (Water flea)</td>
</tr>
<tr>
<td>72-hour EC50 - Algae/aquatic plants</td>
<td>10 mg/l</td>
<td>Selenastrum capricornutum</td>
</tr>
</tbody>
</table>

Harmful to aquatic life with long lasting effects.

Ecotoxicity

Persistence and degradability
All ingredients of this material have some potential to biodegrade.

Bioaccumulation
Bioaccumulation is unlikely.
SECTION 13: Disposal considerations

Waste disposal methods
This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). Dispose of in accordance with federal, state, and local regulations.

Contaminated packaging
Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Other information
This product meets the criteria for synthetic used oil under the U.S. EPA Standards for the Management of Used Oil (40 CFR 279). Those standards govern recycling and disposal in lieu of 40 CFR 260-272 of the Federal hazardous waste program in states that have adopted these used oil regulations. Consult your attorney or appropriate regulatory official to be sure these standards have been adopted in your state. Recycle or burn in accordance with the applicable standards.

SECTION 14: Transport information

DOT
UN/ID no
UN 3082
Proper shipping name
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (triphenyl phosphate)
Hazard Class
9
Packing group
III
Marine pollutant
This product contains a chemical which is listed as a marine pollutant according to DOT
Note
 Applies only to packages which contain greater than 119 gallons or for shipments moving via water transportation. This product does not meet the IMDG/IMO criteria for being a marine pollutant.

IMDG
Not regulated
IATA
Not regulated
TDG
Not regulated

SECTION 15: Regulatory information

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>yes</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>no</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>no</td>
</tr>
<tr>
<td>Sudden release of pressure hazard</td>
<td>no</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>no</td>
</tr>
</tbody>
</table>

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)
CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

International Regulations

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Carcinogen Status</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributyl phosphate</td>
<td></td>
<td>Mexico: TWA 0.2 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: TWA 2.5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: STEL 0.4 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: STEL 5 mg/m³</td>
</tr>
<tr>
<td>Triphenyl phosphate</td>
<td></td>
<td>Mexico: TWA 3 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: STEL 6 mg/m³</td>
</tr>
</tbody>
</table>

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class
D2B  Toxic materials
Materials causing other toxic effects

International Inventories

<table>
<thead>
<tr>
<th>International Inventories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA (US)</td>
<td>Complies</td>
</tr>
<tr>
<td>DSL/NDSL (Canada)</td>
<td>Complies</td>
</tr>
<tr>
<td>EINECS/ELINCS (EU)</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS (Japan)</td>
<td>Complies</td>
</tr>
<tr>
<td>IECSC (China)</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL (Korea)</td>
<td>-</td>
</tr>
<tr>
<td>PICCS (Philippines)</td>
<td>-</td>
</tr>
<tr>
<td>AICS (Australia)</td>
<td>Complies</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazard</th>
<th>Flammability</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health hazard</th>
<th>Flammability</th>
<th>Physical hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Prepared By
Solutia Inc.
A subsidiary of Eastman Chemical Company
575 Maryville Centre Drive
St. Louis, Missouri 63141 U.S.A.
Telephone: +1-314-674-6661

Revision date
11-Sep-2013
Revision Note
New SDS format. SDS sections updated: All.
Date of the previous version:
Not available

Disclaimer
The information provided in this Material 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.

End of Material Safety Data Sheet