

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

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

#### 1.1 Product identifier

Trade name : Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Product code : 34101-00, P3410105, P3410100, P3410101, P3410103, P3410102, P3410104

#### 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](http://www.EASTMAN.com) or email [emnmsds@eastman.com](mailto:emnmsds@eastman.com)

#### 1.4 Emergency telephone number

For emergency health, safety, and environmental information: NHS 111: 111 (England, Wales), NHS 24: 111 (Scotland)  
Email: [director.birmingham.unit@npis.org](mailto:director.birmingham.unit@npis.org) 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.

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### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

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)


# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version 2.2 PRD      Revision Date: 23.01.2018      SDS Number: 150000093408      Date of last issue: 21.01.2016  
SDSGB / EN / 0001      Date of first issue: 18.09.2013

- Hazard pictograms : 
- Signal word : Warning
- Hazard statements : H351 Suspected of causing cancer.  
H412 Harmful to aquatic life with long lasting effects.
- Precautionary statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- Response:**  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
- Disposal:**  
P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:

Tributyl phosphate

### Additional Labelling

EUH208 Contains 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester. May produce an allergic reaction.

### 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

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Tributyl phosphate	126-73-8 204-800-2	Acute Tox. 4; H302 Skin Irrit. 2; H315 Carc. 2; H351	5 - 20

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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Version 2.2 PRD      Revision Date: 23.01.2018      SDS Number: 150000093408      Date of last issue: 21.01.2016  
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SDSGB / EN / 0001

	015-014-00-2 01-2119492859-14-0002 01-2119967407-27-0000	Aquatic Chronic 3; H412	
Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate	907-672-2 01-2119967407-27-0000	Carc. 2; H351 Aquatic Chronic 3; H412	50 - 90
7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester	62256-00-2 263-471-3	Skin Sens. 1; H317	< 10
butylated hydroxytoluene	128-37-0 204-881-4	Aquatic Acute 1; H400 Aquatic Chronic 1; H410	0 - 1

For explanation of abbreviations see section 16.

### 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

None known.

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

Treatment : Treat symptomatically.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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---

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

Suitable extinguishing media : Water spray  
Carbon dioxide (CO<sub>2</sub>)  
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).

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
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### 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) : See section 15 for more information.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Tributyl phosphate	126-73-8	TWA	5 mg/m <sup>3</sup>	GB EH40
		STEL	5 mg/m <sup>3</sup>	GB EH40
butylated hydroxy-toluene	128-37-0	TWA	10 mg/m <sup>3</sup>	GB EH40
Further information	Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used			

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according to Regulation (EC) No. 1907/2006

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Version 2.2 PRD      Revision Date: 23.01.2018      SDS Number: 150000093408      Date of last issue: 21.01.2016  
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**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

Substance name	End Use	Exposure routes	Potential health effects	Value
tributyl phosphate	Workers	Skin contact	Short-term exposure, Local effects	1.78 mg/cm <sup>2</sup>
	Workers	Skin contact	Long-term exposure, Local effects	0.44 mg/cm <sup>2</sup>
	Workers	Skin contact	Short-term exposure, Systemic effects	1.78 mg/kg bw/day
	Workers	Skin contact	Long-term exposure, Systemic effects	0.44 mg/kg bw/day
	Workers	Inhalation	Short-term exposure, Local effects	12.52 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term exposure, Local effects	3.13 mg/m <sup>3</sup>
	Workers	Inhalation	Short-term exposure, Systemic effects	12.52 mg/m <sup>3</sup>
	Workers	Inhalation	Long-term exposure, Systemic effects	3.13 mg/m <sup>3</sup>
	General Population	Oral	Short-term exposure, Systemic effects	0.88 mg/kg bw/day
	General Population	Oral	Long-term exposure, Systemic effects	0.22 mg/kg bw/day
	General Population	Skin contact	Short-term exposure, Local effects	0.88 mg/cm <sup>2</sup>
	General Population	Skin contact	Long-term exposure, Local effects	0.22 mg/cm <sup>2</sup>
	General Population	Skin contact	Short-term exposure, Systemic effects	0.88 mg/kg bw/day
	General Population	Skin contact	Long-term exposure, Systemic effects	0.22 mg/kg bw/day
	General Population	Inhalation	Short-term exposure, Local effects	3.08 mg/m <sup>3</sup>
	General Population	Inhalation	Long-term exposure, Local effects	0.77 mg/m <sup>3</sup>
	General Population	Inhalation	Short-term exposure, Systemic effects	3.08 mg/m <sup>3</sup>
	General Population	Inhalation	Long-term exposure, Systemic effects	0.77 mg/m <sup>3</sup>

**Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:**

Substance name	Environmental Compartment	Value
tributyl phosphate	Water	0.082 mg/l
	Fresh water sediment	1.84 mg/kg
Remarks:	dry	
	Marine water	0.0082 mg/l
	Marine sediment	0.184 mg/kg
	dry	
	Sewage treatment plant	1 mg/l
	Soil	3.63 mg/kg

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

dry

### 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

Material : Rubber gloves  
Break through time : 80 min  
Rate of permeability : 108 min  
Glove thickness : 0.2 mm

Material : Nitrile rubber  
Break through time : 213 min  
Rate of permeability : 120 min  
Glove thickness : 0.46 mm

Material : Neoprene  
Break through time : 287 min  
Rate of permeability : 108 min  
Glove thickness : 0.2 mm

Material : Rubber gloves  
Break through time : 290 min  
Rate of permeability : 144 min  
Glove thickness : 0.61 mm

Remarks : 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 immediately and dispose of them according to relevant national and local regulations. The breakthrough time of the glove material, with regard to the amount and duration of dermal exposure: 1 to 4 hours.

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 concentra-

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

tions 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	:	liquid, oily
Colour	:	purple
Odour	:	odourless
Odour Threshold	:	not determined
pH	:	No data available
Melting point/range	:	< -62 °C
Boiling point/boiling range	:	not determined
Flash point	:	> 177 °C Method: Cleveland open cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapour pressure	:	0.27 hPa (25 °C)
Relative vapour density	:	No data available
Relative density	:	1.052 - 1.060 (25 °C)
Density	:	1,052 - 1,060 kg/m <sup>3</sup> (25 °C)
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	not determined



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
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---

Decomposition temperature : not determined

Viscosity

Viscosity, dynamic : not determined

Viscosity, kinematic : < 2900 mm<sup>2</sup>/s (-54 °C)

11.4 - 12.4 mm<sup>2</sup>/s (38 °C)

3.68 - 4 mm<sup>2</sup>/s (99 °C)

Explosive properties : Not classified

Oxidizing properties : Not classified

### 9.2 Other information

Self-ignition : 398 °C  
Method: ASTM D2155

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## 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.

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

#### Product:

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

- Acute oral toxicity : LD50 Oral (Rat, Male and Female): 2,200 mg/kg  
Target Organs: Liver, Lungs  
Assessment: Not classified
- Acute inhalation toxicity : LC50 (Rat, Male and Female): > 4.5 mg/l  
Exposure time: 4 h  
Assessment: Not classified  
Remarks: (highest concentration tested)
- Acute dermal toxicity : LD50 Dermal (Rabbit, Male and Female): > 7,940 mg/kg  
Assessment: Not classified

### Components:

#### **Tributyl phosphate:**

- Acute oral toxicity : LD50 Oral (Rat, Male and Female): 1,553 mg/kg  
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

#### **7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:**

- Acute oral toxicity : LD50 Oral (Rat, Male and Female): 4,470 mg/kg

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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: Not classified as hazardous.  
Result: No skin irritation

#### **Components:**

##### **Tributyl phosphate:**

Species: Rabbit  
Exposure time: 4 h  
Assessment: Causes skin irritation.  
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

##### **7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:**

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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

### Serious eye damage/eye irritation

#### Product:

Species: Rabbit  
Exposure time: 24 h  
Assessment: Not classified

#### Components:

##### **Tributyl phosphate:**

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

##### **Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:**

Species: Rabbit  
Assessment: Not classified  
Result: slight

##### **7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:**

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: Skin Sensitization  
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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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

### 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:

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  
Method: Bacterial Reverse Mutation Assay  
Result: negative

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

#### Components:

##### **Tributyl phosphate:**

Genotoxicity in vitro : Test Type: Mutagenicity - Bacterial  
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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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, Un-scheduled DNA Synthesis in Mammalian Cells In Vitro  
Result: negative

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

### 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:

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

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

Genotoxicity in vivo : Species: Rat (Male and Female)  
Application Route: intraperitoneal injection

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

Method: Mammalian Bone Marrow Chromosome Aberration Test  
Result: equivocal

### Carcinogenicity

**Product:**

Remarks: This information is not available.

**Components:**

**Tributyl phosphate:**

Species: Rat, (Male and Female)  
Application Route: Ingestion  
Method: EPA OTS 798.3300  
Remarks: Limited evidence of a carcinogenic effect.  
May cause cancer.

**Reaction mass of butyl diphenyl phosphate and dibutyl phenyl phosphate and tributyl phosphate:**

Carcinogenicity - Assessment : Limited evidence of a carcinogenic effect.

### Reproductive toxicity

**Product:**

Effects on fertility : Remarks: No data available

### STOT - single exposure

**Product:**

Exposure routes: Inhalation  
Assessment: Not classified

**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

**Product:**

Exposure routes: Inhalation

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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PRD		SDSGB / EN / 0001	

---

Target Organs: Blood, Liver  
Assessment: Not classified

### **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: 100 mg/m<sup>3</sup>  
Exposure time: 90 days  
Target Organs: Blood, Liver

### **Components:**

#### **Tributyl phosphate:**

Species: Mouse, Male and Female  
: 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  
: 5 mg/m<sup>3</sup>  
Application Route: Inhalation  
Exposure time: 90 days

Species: Rabbit, Male and Female  
NOAEL: 100 mg/kg bw/day  
Application Route: Dermal Study  
Exposure time: 21 d



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

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### Aspiration toxicity

**Product:**

Not applicable

**Components:**

**7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:**

Not applicable

### Information on likely routes of exposure

**Product:**

Inhalation	:	Remarks: None known.
Skin contact	:	Remarks: None known.
Eye contact	:	Remarks: None known.
Ingestion	:	Remarks: None known.

---

## SECTION 12: Ecological information

### 12.1 Toxicity

**Product:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 2.6 mg/l Exposure time: 96 h Test Type: EPA-660/3-75-009 Methods for Acute Toxicity Tests with Fish, Macroinvertebrates, and Amphibians, April 1975  EC50 (Pimephales promelas (fathead minnow)): 3.0 mg/l Exposure time: 96 h Test Type: EPA-660/3-75-009 Methods for Acute Toxicity Tests with Fish, Macroinvertebrates, and Amphibians, April 1975
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 6.5 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Selenastrum capricornutum (green algae)): 7.8 mg/l Exposure time: 72 h

**Components:**

**Tributyl phosphate:**

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 4.2 mg/l Exposure time: 96 h
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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

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Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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 (green algae)): 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  
Remarks: EL50 method of the water accommodated fraction (W.A.F.)  
NOELR (Selenastrum capricornutum (green algae)): 3.5 mg/l  
Exposure time: 72 h  
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  
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)

### 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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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

M-Factor (Acute aquatic toxicity) : 1

### 12.2 Persistence and degradability

#### Product:

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Chemical Oxygen Demand (COD) : Remarks: No data available

#### 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.

##### **7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester:**

Biodegradability : Concentration: 100 mg/l  
Method: Ready Biodegradability: Modified MITI Test (I)  
Remarks: Readily biodegradable

### 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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

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

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Dispose of in accordance with local regulations.

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## SECTION 14: Transport information

### 14.1 UN number

Not regulated as a dangerous good

### 14.2 UN proper shipping name

Not regulated as a dangerous good

### 14.3 Transport hazard class(es)

Not regulated as a dangerous good

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

---

### 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 and the IBC Code

Not applicable for product as supplied.

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## SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.  
Not applicable

Volatile organic compounds : Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)  
Not applicable

#### 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

KECI : Not listed

PICCS : Not listed

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

### 15.2 Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out:  
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 : Harmful 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

GB EH40 : UK. EH40 WEL - Workplace Exposure Limits

GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)

GB EH40 / STEL : Short-term exposure limit (15-minute reference period)

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 Organisation 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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**EASTMAN**

## Skydrol® 500B-4 Fire Resistant Hydraulic Fluid

Version	Revision Date:	SDS Number:	Date of last issue: 21.01.2016
2.2	23.01.2018	150000093408	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

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 : [www.EastmanAviationSolutions.com](http://www.EastmanAviationSolutions.com)  
compile the Safety Data Sheet

### Classification of the mixture:

Carc. 2	H351
Aquatic Chronic 3	H412

### Classification procedure:

Calculation method
Calculation method

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.

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