

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

EASTMAN

Skydrol® PE-5

Version	Revision Date:	SDS Number:	Date of last issue: 30.01.2019
5.0	01.05.2019	150000093410	Date of first issue: 18.09.2013
PRD		SDSGB / EN / 0001	

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

1.1 Product identifier

Trade name	: Skydrol® PE-5
Product code	: 34103-00, P3410305, P3410304, P3410302, P3410301, P3410306, P3410307, P3410303, P3410311, P3410309, E3410301

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

Tel. 111 NCEC +44 (0)1235 239 670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity , Category 4	H302: Harmful if swallowed.
Skin irritation , Category 2	H315: Causes skin irritation.
Skin sensitization , Category 1	H317: May cause an allergic skin reaction.
Carcinogenicity , Category 2	H351: Suspected of causing cancer.
Reproductive toxicity , Category 2	H361: Suspected of damaging fertility or the unborn child if swallowed.

Long-term (chronic) aquatic hazard , Category 2	H411: Toxic to aquatic life with long lasting effects.
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2.2 Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms	:	
Signal Word	:	Warning
Hazard Statements	:	H302 Harmful if swallowed. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H351 Suspected of causing cancer. H361 Suspected of damaging fertility or the unborn child if swallowed. H411 Toxic to aquatic life with long lasting effects.
Precautionary Statements	:	Prevention: P201 Obtain special instructions before use. P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. P264 Wash skin thoroughly after handling. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. Response: P391 Collect spillage.

Hazardous ingredients which must be listed on the label:

Tributyl phosphate

Triisobutyl phosphate

Phenol, isopropylated, phosphate (3:1)

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

Additional Labeling

The following percentage of the mixture consists of ingredient(s) with unknown acute oral toxicity: 2.85 %

The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 2.85 %

The following percentage of the mixture consists of ingredient(s) with unknown acute inhalation toxicity: 2.85 %

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 2.85 %

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.

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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	126-73-8 204-800-2 015-014-00-2 01-2119492859-14-0002	Acute Tox. 4; H302 Skin Irrit. 2; H315 Carc. 2; H351 Aquatic Chronic 3; H412	58 - 68
Triisobutyl phosphate	126-71-6 204-798-3 01-2119957118-xxx	Skin Sens. 1; H317	8 - 10
Phenol, isopropylated, phosphate (3:1)	68937-41-7 273-066-3 01-2119535109-14-xxxx	Repr. 2; H361 STOT RE 2; H373 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	5 - < 10
triphenylphosphate	115-86-6	Aquatic Acute 1; H400 Aquatic Chronic 2; H411 M-Factor (Acute aquatic toxicity): 1	1.3 - 1.9
7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 2-ethylhexyl ester	62256-00-2 263-471-3 01-2120767056-51-xxxx	Skin Sens. 1; H317	5.5 - 6.5
butylated hydroxytoluene	128-37-0 204-881-4 01-2119565113-46-xxxx	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1	0.1 - 1

For explanation of abbreviations see section 16.

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SECTION 4: First aid measures

4.1 Description of first-aid measures

- | | | |
|-------------------------|---|--|
| If inhaled | : | Move to fresh air.
Call a physician or poison control center immediately. |
| In case of skin contact | : | Wash off with soap and plenty of water.
Wash contaminated clothing before re-use.
Get medical attention.
Thoroughly clean shoes before reuse. |
| In case of eye contact | : | In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |
| If swallowed | : | Seek medical advice. |

4.2 Most important symptoms and effects, both acute and delayed

- | | | |
|----------|---|--|
| Symptoms | : | Health injuries may be delayed.
Irritation
Pain
Rash
Redness
toxic effects for reproduction |
|----------|---|--|

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 | : | Carbon dioxide (CO2)
Dry chemical
Water spray |
| Unsuitable extinguishing media | : | Do not use a solid water stream as it may scatter and spread fire.
Do NOT use water jet. |

5.2 Special hazards arising from the substance or mixture

- | | | |
|---------------------------------------|---|--|
| Specific hazards during fire fighting | : | None known. |
| Hazardous combustion products | : | No hazardous combustion products are known |

5.3 Advice for firefighters

- | | | |
|------------------------------|---|---|
| Special protective equipment | : | Wear an approved positive pressure self-contained breathing |
|------------------------------|---|---|

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Further information : None known.

6.1 Personal precautions, protective equipment and emergency procedures

6.2 Environmental precautions

6.3 Methods and material for containment and cleaning up

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

7.1 Precautions for safe handling

Hygiene measures : 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 : Keep tightly closed.

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7.3 Specific end use(s)

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/m3	GB EH40
		STEL	5 mg/m3	GB EH40
triphenylphosphate	115-86-6	TWA	3 mg/m3	GB EH40
		STEL	6 mg/m3	GB EH40
butylated hydroxy-toluene	128-37-0	TWA	10 mg/m3	GB EH40
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:

Substance name	End Use	Routes of exposure	Potential health effects	Value
Tributyl phosphate	Workers	Skin contact	Short-term exposure, Local effects	1.78 mg/cm2
	Workers	Skin contact	Long-term exposure, Local effects	0.44 mg/cm2
	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/m3
	Workers	Inhalation	Long-term exposure, Local effects	3.13 mg/m3
	Workers	Inhalation	Short-term exposure, Systemic effects	12.52 mg/m3
	Workers	Inhalation	Long-term exposure, Systemic effects	3.13 mg/m3
	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/cm2
	General Population	Skin contact	Long-term exposure, Local effects	0.22 mg/cm2
	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/m3

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	General Population	Inhalation	Long-term exposure, Local effects	0.77 mg/m3
	General Population	Inhalation	Short-term exposure, Systemic effects	3.08 mg/m3
	General Population	Inhalation	Long-term exposure, Systemic effects	0.77 mg/m3
Triisobutyl phosphate	Workers	Skin contact	Long-term exposure, Systemic effects	1.71 mg/kg bw/day
	Workers	Inhalation	Long-term exposure, Systemic effects	6.03 mg/m3
	General Population	Oral	Long-term exposure, Systemic effects	0.86 mg/kg bw/day
	General Population	Skin contact	Long-term exposure, Systemic effects	0.86 mg/kg bw/day
	General Population	Inhalation	Long-term exposure	1.49 mg/m3

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
	dry	
Remarks:	Marine water	0.0082 mg/l
	Marine sediment	0.184 mg/kg
	dry	
	Sewage treatment plant	1 mg/l
	Soil	3.63 mg/kg
	dry	
Triisobutyl phosphate	Fresh water	0.011 mg/l
	Marine water	0.0011 mg/l
	Fresh water sediment	1.58 mg/l
Remarks:	dry	
	Marine sediment	0.158 mg/l
	dry	
	Aqua Intermittent	0.11 mg/l
	Soil	0.308 mg/kg
	dry	
	Sewage treatment plant	3.72 mg/l

8.2 Exposure controls

Engineering measures

Good general ventilation (typically 10 air changes per hour) should be sufficient to control airborne levels.

Ensure adequate ventilation.

Personal protective equipment

Eye protection : Safety glasses

Hand protection
Remarks : Wear suitable gloves.

Respiratory protection : Use respiratory protection unless adequate local exhaust

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ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.
Ensure that eye flushing systems and safety showers are located close to the working place.
Use personal protective equipment as required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: oily
Color	: purple
Odor	: odourless
Odor Threshold	: not determined
pH	: not determined
Melting point/range	: < -62 °C
Boiling point/boiling range	: not determined
Flash point	: 173.8 °C Method: Cleveland open cup
Evaporation rate	: not determined
Flammability (solid, gas)	: Not applicable
Upper explosion limit / Upper flammability limit	: not determined
Lower explosion limit / Lower flammability limit	: not determined
Vapor pressure	: 0.4 hPa (25 °C)
Relative vapor density	: not determined
Relative density	: 0.995 (25 °C)
Density	: 995 kg/m ³ (25 °C)
Autoignition temperature	: not determined
Decomposition temperature	: not determined
Viscosity	

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Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	9.02 - 10.02 mm ² /s (38 °C)
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified

9.2 Other information

Self-ignition	:	426.6 °C
		Method: ASTM D2155

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	:	Stable
		None known.

10.4 Conditions to avoid

Conditions to avoid	:	None known.
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10.5 Incompatible materials

Materials to avoid	:	Strong oxidizing agents
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10.6 Hazardous decomposition products

Carbon dioxide (CO₂)
Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate: 751.5 mg/kg
		Method: Calculation method

Remarks: Harmful if swallowed.

Acute inhalation toxicity	:	Remarks: No significant adverse effects were reported
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Acute dermal toxicity : Remarks: No significant adverse effects were reported

Components:

Tributyl phosphate:

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

Triisobutyl phosphate:

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 5.14 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): > 5,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Phenol, isopropylated, phosphate (3:1):

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 200 mg/m3
Exposure time: 1 h
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 Dermal (Rabbit): > 10,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

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

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

triphenylphosphate:

Acute oral toxicity : LD50 Oral (Rat, male): > 6,400 mg/kg

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Acute dermal toxicity : LD50 Dermal (Guinea pig, male): > 5,000 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:

Remarks : Causes skin irritation.

Components:

Tributyl phosphate:

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

Triisobutyl phosphate:

Species : Rabbit
Exposure time : 4 h
Result : Mild skin irritation

Phenol, isopropylated, phosphate (3:1):

Species : Rabbit
Assessment : Not classified

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

triphenylphosphate:

Species : Guinea pig
Remarks : Non-irritating to the skin.

butylated hydroxytoluene:

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

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Serious eye damage/eye irritation

Components:

Tributyl phosphate:

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

Triisobutyl phosphate:

Species	:	Rabbit
Assessment	:	Not classified
Result	:	slight

Phenol, isopropylated, phosphate (3:1):

Species	:	Rabbit
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
Result	:	slight irritation

triphenylphosphate:

Species	:	Rabbit
Result	:	slight

butylated hydroxytoluene:

Species	:	Rabbit
Result	:	none

Respiratory or skin sensitization

Product:

Remarks : May cause an allergic skin reaction.

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

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Assessment : Not classified
Result : Does not cause skin sensitisation.

Triisobutyl phosphate:

Test Type : OECD 406: Guinea pig sensitization
Species : Guinea pig
Method : OECD 406: Guinea pig sensitization
Result : May cause sensitization by skin contact.

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

Test Type : Skin Sensitization
Species : Guinea pig
Result : May cause sensitization by skin contact.

butylated hydroxytoluene:

Test Type : Skin sensitization
Species : Guinea pig
Result : non-sensitizing

Germ cell mutagenicity

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

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

Triisobutyl phosphate:

Genotoxicity in vitro : Test Type: Salmonella typhimurium assay (Ames test)
Metabolic activation: +/- activation
Method: Bacterial Reverse Mutation Assay
Result: negative

Genotoxicity in vivo : Result: negative

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

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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
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
Remarks : Limited evidence of a carcinogenic effect.
May cause cancer.

Reproductive toxicity

Components:

Phenol, isopropylated, phosphate (3:1):

Effects on fertility : Species: Rat, male and female
Application Route: Oral
General Toxicity Parent: NOAEL: 25 milligram per kilogram
Remarks: Suspected of damaging fertility or the unborn child.

triphenylphosphate:

Reproductive toxicity - Assessment : Based on available data, the classification criteria are not met.

STOT-single exposure

Components:

Tributyl phosphate:

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

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Triisobutyl phosphate:

Assessment : Not classified

Phenol, isopropylated, phosphate (3:1):

Remarks : Not classified due to data which are conclusive although insufficient for classification.

STOT-repeated exposure

Components:

Tributyl phosphate:

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

Triisobutyl phosphate:

Assessment : Not classified

Phenol, isopropylated, phosphate (3:1):

Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Tributyl phosphate:

Species : Mouse, Male and Female
: 75 mg/kg
Application Route : in feed
Exposure time : 90 days

Triisobutyl phosphate:

Species : Rat, male
: 68.4 mg/kg
Application Route : Oral Study
Exposure time : 90 days

Aspiration toxicity

Product:

No aspiration toxicity classification

Components:

Triisobutyl phosphate:

Not classified

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

Not applicable

Further information

Product:

Remarks : None known.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Components:

Tributyl phosphate:

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

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 1.8 mg/l
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : EC50 (Desmodesmus subspicatus (green algae)): 1.1 mg/l
plants Exposure time: 72 h

Toxicity to fish (Chronic tox- : NOEC: 0.82 mg/l
icity) Exposure time: 95 d
Species: Oncorhynchus mykiss (rainbow trout)
1.7 mg/l

Toxicity to daphnia and other : NOEC: 1.3 mg/l
aquatic invertebrates (Chron- Exposure time: 21 d
ic toxicity) Species: Daphnia magna (Water flea)

Triisobutyl phosphate:

Toxicity to fish : EC50 (Leuciscus idus (Golden orfe)): 17.8 - 21.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 11 mg/l
aquatic invertebrates Exposure time: 48 h

Toxicity to algae/aquatic : ErC50 (Scenedesmus subspicatus): 34.1 mg/l
plants Exposure time: 72 h

Toxicity to microorganisms : EC50 (Bacteria): 37.2 mg/l
Exposure time: 28 d

Phenol, isopropylated, phosphate (3:1):

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Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.36 mg/l Exposure time: 96 h LC50 (Cyprinodon variegatus (sheepshead minnow)): > 1.3 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 1 mg/l Exposure time: 48 h LC50 (Mysidopsis bahia (opossum shrimp)): > 1 mg/l
Toxicity to algae/aquatic plants	:	NOEC (Desmodesmus subspicatus (green algae)): 0.25 - 2.5 mg/l Exposure time: 72 h Test Type: Alga, Growth Inhibition Test
M-Factor (Acute aquatic toxicity)	:	1
M-Factor (Chronic aquatic toxicity)	:	1

triphenylphosphate:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.4 mg/l Exposure time: 96 h
M-Factor (Acute aquatic toxicity)	:	1

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/aquatic plants	:	EC50 (Chlorella pyrenoidosa (aglae)): 0.758 mg/l Exposure time: 96 h
M-Factor (Acute aquatic toxicity)	:	1

12.2 Persistence and degradability

Components:

Tributyl phosphate:

Biodegradability	:	Result: Readily biodegradable.
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Triisobutyl phosphate:

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Biodegradability : Result: Readily biodegradable.
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: Ready Biodegradability: CO2 Evolution Test

Phenol, isopropylated, phosphate (3:1):

Biodegradability : 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

triphenylphosphate:

Biodegradability : Result: 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

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

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

Triisobutyl phosphate:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 3.72

Phenol, isopropylated, phosphate (3:1):

Bioaccumulation : Remarks: Potential bioaccumulation

triphenylphosphate:

Partition coefficient: n-octanol/water : log Pow: 4.63

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12.4 Mobility in soil

Components:

Phenol, isopropylated, phosphate (3:1):

Distribution among environmental compartments : log K_{oc}: 3.43 - 3.93

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

ADN	: UN 3082
ADR	: UN 3082
IMDG	: UN 3082
IATA	: UN 3082

14.2 UN proper shipping name

ADN	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (triphenyl phosphate)
ADR	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (triphenyl phosphate)
IMDG	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (triphenyl phosphate)
IATA	: Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate)

14.3 Transport hazard class(es)

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ADN	:	9
ADR	:	9
IMDG	:	9
IATA	:	9

14.4 Packing group

ADN	
Packing group	: III
Classification Code	: M6
Labels	: 9
ADR	
Packing group	: III
Classification Code	: M6
Hazard Identification Number	: 90
Labels	: 9
Tunnel restriction code	: (-)
IMDG	
Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
Remarks	: Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

IATA (Cargo)	
Packing instruction (cargo aircraft)	: 964
Packing instruction (LQ)	: Y964
Packing group	: III
Labels	: Miscellaneous
Remarks	: Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

IATA_P (Passenger)	
Packing instruction (passenger aircraft)	: 964
Packing instruction (LQ)	: Y964
Packing group	: III
Labels	: Miscellaneous
Remarks	: Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

14.5 Environmental hazards

ADN	
Environmentally hazardous	: yes
ADR	
Environmentally hazardous	: yes
IMDG	

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Marine pollutant : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol 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

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

REACH - List of substances subject to authorisation (Annex XIV) : 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

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : 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.

E2 ENVIRONMENTAL HAZARDS

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 ingredients 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

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ENCS	: On the inventory, or in compliance with the inventory
ISHL	: Not listed
KECI	: Not listed
PICCS	: Not listed
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory

15.2 Chemical Safety Assessment

None.

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.
H361	: Suspected of damaging fertility or the unborn child if swallowed.
H373	: May cause damage to organs through prolonged or repeated exposure.
H400	: Very toxic to aquatic life.
H410	: Very toxic to aquatic life with long lasting effects.
H411	: 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	: Short-term (acute) aquatic hazard
Aquatic Chronic	: Long-term (chronic) aquatic hazard
Carc.	: Carcinogenicity
Repr.	: Reproductive toxicity
Skin Irrit.	: Skin irritation
Skin Sens.	: Skin sensitization
STOT RE	: Specific target organ systemic toxicity - repeated exposure
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

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- 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 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; SVHC - substance of very high concern; 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

Classification of the mixture:

Acute Tox. 4	H302
Skin Irrit. 2	H315
Skin Sens. 1	H317
Carc. 2	H351
Repr. 2	H361

Classification procedure:

Calculation method
Calculation method
Calculation method
Calculation method
Calculation method

Aquatic Chronic 2	H411	Calculation method
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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.

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