



# Putoline Drytec Race Chainlube

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878  
Issue date: 31-10-2018 Revision date: 6-1-2023 Supersedes version of: 11-11-2022 Version: 2.3

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

#### 1.1. Product identifier

Product form : Mixture  
Trade name : Putoline Drytec Race Chainlube  
UFI : NR40-E0DE-4003-2MCH  
Product code : PO.10.08  
Vaporizer : Aerosol  
Product group : Trade product

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

##### 1.2.1. Relevant identified uses

Intended for general public  
Main use category : Industrial use, Professional use, Consumer use  
Use of the substance/mixture : Chain lubricant  
Function or use category : Lubricant

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

Putoline Oil  
Dollegoorweg, 15  
NL- 7602 EC Almelo  
Netherlands  
T 0031 (0)546 81 81 65  
[vib@putoline.com](mailto:vib@putoline.com)

#### 1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	National Poisons Information Service (Cardiff Centre) University Hospital Llandough	Penlan Road CF64 2XX Cardiff	0344 892 0111	Only for healthcare professionals

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Aerosol, Category 1 H222;H229  
Specific target organ toxicity – Single exposure, Category 3, Narcosis H336  
Aspiration hazard, Category 1 H304  
Hazardous to the aquatic environment – Chronic Hazard, Category 2 H411  
Full text of H- and EUH-statements: see section 16

##### Adverse physicochemical, human health and environmental effects

May cause damage to organs through prolonged or repeated exposure. Pressurised container: May burst if heated. Extremely flammable aerosol. May cause drowsiness or dizziness. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

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### 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS02

GHS07

GHS09

Signal word (CLP)

: Danger

Contains

: Pentane, Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics

Hazard statements (CLP)

: H222 - Extremely flammable aerosol.  
H229 - Pressurised container: May burst if heated.  
H336 - May cause drowsiness or dizziness.  
H411 - Toxic to aquatic life with long lasting effects.  
Precautionary statements (CLP) : P101 - If medical advice is needed, have product container or label at hand.  
P102 - Keep out of reach of children.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P211 - Do not spray on an open flame or other ignition source.  
P251 - Do not pierce or burn, even after use.  
P271 - Use only outdoors or in a well-ventilated area.  
P301+P310+P331 - IF SWALLOWED: Immediately call a doctor. Do NOT induce vomiting.  
P410+P412 - Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.  
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.  
EUH-statements : EUH066 - Repeated exposure may cause skin dryness or cracking.  
EUH208 - Contains Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched). May produce an allergic reaction.

### 2.3. Other hazards

Contains no PBT/vPvB substances  $\geq 0.1\%$  assessed in accordance with REACH Annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Pentane substance with national workplace exposure limit(s) (GB, IE); substance with a Community workplace exposure limit	CAS-No.: 109-66-0 EC-No.: 203-692-4 EC Index-No.: 601-006-00-1 REACH-no: 01-2119459286-30	25 – 50	Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 EUH066
Butane substance with national workplace exposure limit(s) (GB, IE) (Note K)	CAS-No.: 106-97-8 EC-No.: 203-448-7 EC Index-No.: 601-004-00-0 REACH-no: 01-2119474691-32	10 – 25	Flam. Gas 1A, H220 Press. Gas (Comp.), H280

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Propane substance with a Community workplace exposure limit (Note U)	CAS-No.: 74-98-6 EC-No.: 200-827-9 EC Index-No.: 601-003-00-5 REACH-no: 01-2119486944-21	10 – 25	Flam. Gas 1A, H220 Press. Gas (Comp.), H280
isobutane substance with national workplace exposure limit(s) (IE) (Note C)(Note U)	CAS-No.: 75-28-5 EC-No.: 200-857-2 EC Index-No.: 601-004-00-0 REACH-no: 01-2119485395-27	2,5 – 10	Flam. Gas 1A, H220 Press. Gas (Comp.), H280
Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics substance with a Community workplace exposure limit	CAS-No.: 64742-48-9 EC-No.: 919-857-5 REACH-no: 01-2119463258-33	2,5 – 10	Flam. Liq. 3, H226 STOT SE 3, H336 Asp. Tox. 1, H304 EUH066
Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)	EC-No.: 931-384-6 REACH-no: 01-2119493620-38	0,1 – 1	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Skin Sens. 1B, H317 Aquatic Chronic 2, H411
Oleylamine	CAS-No.: 112-90-3 EC-No.: 204-015-5 EC Index-No.: 612-283-00-3	< 0,1	Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410

### Specific concentration limits:

Name	Product identifier	Specific concentration limits
Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics	CAS-No.: 64742-48-9 EC-No.: 919-857-5 REACH-no: 01-2119463258-33	( 25 ≤C < 100) EUH066

Note C : Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

Note K : The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w 1,3- butadiene (Einecs No 203-450-8), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P210-P403 shall apply.

Note U (Table 3): When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case. The following codes are assigned: Press. Gas (Comp.), Press. Gas (Liq.), Press. Gas (Ref. Liq.), Press. Gas (Diss.).

Aerosols shall not be classified as gases under pressure (See Annex I, Part 2, Section 2.3.2.1, Note 2)

Product subject to CLP Article 1.1.3.7. The disclosure rules of the components is modified in this case.

Full text of H- and EUH-statements: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.  
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

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First-aid measures after skin contact	: Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Do not induce vomiting. Call a physician immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	: May cause drowsiness or dizziness.
Symptoms/effects after skin contact	: Repeated exposure may cause skin dryness or cracking.
Symptoms/effects after ingestion	: Risk of lung oedema.

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

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: Extremely flammable aerosol.
Explosion hazard	: Pressurised container: May burst if heated.
Hazardous decomposition products in case of fire	: Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases.

### 5.3. Advice for firefighters

Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Emergency procedures	: Ventilate spillage area. Do not breathe dust/fume/gas/mist/vapours/spray. No open flames, no sparks, and no smoking.
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#### 6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

For containment	: Collect spillage.
Methods for cleaning up	: Mechanically recover the product.
Other information	: Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

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### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling	: Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapours/spray. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Use only outdoors or in a well-ventilated area.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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

Storage conditions	: Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Storage temperature	: 5 – 40 °C

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### 8.1.1 National occupational exposure and biological limit values

Pentane (109-66-0)	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	Pentane
IOEL TWA	3000 mg/m <sup>3</sup> 3000 mg/m <sup>3</sup>
IOEL TWA [ppm]	1000 ppm
Regulatory reference	COMMISSION DIRECTIVE 2006/15/EC COMMISSION DIRECTIVE 2006/15/EC
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Pentane
OEL TWA [1]	3000 mg/m <sup>3</sup>
OEL TWA [2]	1000 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2021
<b>United Kingdom - Occupational Exposure Limits</b>	
Local name	Pentane
WEL TWA (OEL TWA) [1]	1800 mg/m <sup>3</sup>
WEL TWA (OEL TWA) [2]	600 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
<b>Butane (106-97-8)</b>	
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Butane, all isomers: Butane
OEL STEL [ppm]	1000 ppm

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<b>Butane (106-97-8)</b>	
Regulatory reference	Chemical Agents Code of Practice 2021
<b>United Kingdom - Occupational Exposure Limits</b>	
Local name	Butane
WEL TWA (OEL TWA) [1]	1450 mg/m <sup>3</sup>
WEL TWA (OEL TWA) [2]	600 ppm
WEL STEL (OEL STEL)	1810 mg/m <sup>3</sup>
WEL STEL (OEL STEL) [ppm]	750 ppm
Remark	Carc (Capable of causing cancer and/or heritable genetic damage, only applies if Butane contains more than 0.1% of buta-1,3-diene)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
<b>Propane (74-98-6)</b>	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
IOEL TWA [ppm]	1000 ppm
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Aliphatic hydrocarbon gases Alkanes (C1-C3): Propane
Remark	Asphx. (Gaseous chemical substances which may not produce significant physiological effects in the exposed employee, but when present in high concentrations will act as simple asphyxiants)
Regulatory reference	Chemical Agents Code of Practice 2021
<b>isobutane (75-28-5)</b>	
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Butane, all isomers: Isobutane
OEL STEL [ppm]	1000 ppm
Regulatory reference	Chemical Agents Code of Practice 2021
<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	White spirit Type 3
IOEL TWA	116 mg/m <sup>3</sup>
IOEL TWA [ppm]	20 ppm
IOEL STEL	290 mg/m <sup>3</sup>
IOEL STEL [ppm]	50 ppm
Remark	Skin. (Year of adoption 2007)
Regulatory reference	SCOEL Recommendations

### 8.1.2. Recommended monitoring procedures

No additional information available

### 8.1.3. Air contaminants formed

No additional information available

### 8.1.4. DNEL and PNEC

No additional information available

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### 8.1.5. Control banding

No additional information available

## 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

### 8.2.2. Personal protection equipment

#### Personal protective equipment symbol(s):



#### 8.2.2.1. Eye and face protection

##### Eye protection:

Safety glasses

Eye protection			
Type	Field of application	Characteristics	Standard
Safety glasses	Droplet	clear	EN 166

#### 8.2.2.2. Skin protection

##### Skin and body protection:

Wear suitable protective clothing

##### Hand protection:

Protective gloves

Hand protection					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Reusable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	≥0.35		EN ISO 374

#### 8.2.2.3. Respiratory protection

##### Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

#### 8.2.2.4. Thermal hazards

No additional information available

### 8.2.3. Environmental exposure controls

#### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless to Amber.
Appearance	: Aerosol.
Odour	: characteristic.
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available

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Boiling point	: -44 °C
Flammability	: Extremely flammable aerosol.
Explosive properties	: Pressurised container: May burst if heated.
Explosive limits	: Not available
Lower explosion limit	: 1,4 vol %
Upper explosion limit	: 10,9 vol %
Flash point	: -97 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: < 20,5 mm <sup>2</sup> /s (40 °C) - ASTM D7279
Solubility	: Water: Insoluble / Slightly miscible
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: 8300 hPa at 20 °C
Vapour pressure at 50°C	: Not available
Density	: 0,632 g/cm <sup>3</sup> at 20 °C
Relative density	: Not available
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

% of flammable ingredients	: 120,09999999999994
Critical temperature	: 285 °C

#### 9.2.2. Other safety characteristics

VOC content	: 578,8 g/l
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Extremely flammable aerosol. Pressurised container: May burst if heated.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

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

## SECTION 11: Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified



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<b>Pentane (109-66-0)</b>	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Guideline: EU Method B.1 (Acute Toxicity (Oral))
LC50 Inhalation - Rat	> 25,3 mg/l Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)
<b>Oleylamine (112-90-3)</b>	
LD50 oral rat	1689 mg/kg
<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
LD50 oral rat	> 5000 mg/kg (OECD 401 method)
LD50 dermal rabbit	> 5000 mg/kg (OECD 402 method)
LC50 Inhalation - Rat	> 5000 mg/m <sup>3</sup> (OECD 403 method)
<b>Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)</b>	
LD50 oral rat	2000 mg/kg (OECD 401 method)
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: May cause drowsiness or dizziness.
<b>Pentane (109-66-0)</b>	
STOT-single exposure	May cause drowsiness or dizziness.
<b>Oleylamine (112-90-3)</b>	
STOT-single exposure	May cause respiratory irritation.
<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
STOT-single exposure	May cause drowsiness or dizziness.
STOT-repeated exposure	: Not classified
<b>Pentane (109-66-0)</b>	
NOAEC (inhalation, rat, vapour, 90 days)	30 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Guideline: other., Guideline: EPA OTS 798.2450 (90-Day Inhalation Toxicity), Guideline: other., Guideline: other:
<b>Oleylamine (112-90-3)</b>	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
<b>Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)</b>	
NOAEL (oral, rat, 90 days)	150 mg/kg bodyweight Animal: rat
Aspiration hazard	: May be fatal if swallowed and enters airways.
<b>Putoline Drytec Race Chainlube</b>	
Vaporizer	Aerosol
Viscosity, kinematic	< 20,5 mm <sup>2</sup> /s (40 °C) - ASTM D7279
<b>Pentane (109-66-0)</b>	
Viscosity, kinematic	0,356 mm <sup>2</sup> /s

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### Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)

Viscosity, kinematic	1,33 mm <sup>2</sup> /s
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### 11.2. Information on other hazards

No additional information available

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Toxic to aquatic life with long lasting effects.  
Hazardous to the aquatic environment, short-term (acute) : Not classified  
Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

### Pentane (109-66-0)

LC50 - Fish [1]	4,26 mg/l 96h
EC50 - Crustacea [1]	2,7 mg/l 48h

### Oleylamine (112-90-3)

LC50 - Fish [1]	0,11 mg/l (96h)
EC50 - Crustacea [1]	0,011 mg/l (48h)
ErC50 algae	0,3 mg/l (96h)

### Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)

LC50 - Fish [1]	> 1000 mg/l (Oncorhynchus mykiss, 96h) [OCDE 203]
EC50 - Crustacea [1]	> 1000 mg/l (Daphnia magna, 48h) [OCDE 202]
ErC50 algae	> 1000 mg/l (Pseudokirchnerella subcapitata, 72h) [OCDE 201]

### Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)

LC50 - Fish [1]	24 mg/l (Oncorhynchus mykiss, 96h) (OECD 203 method)
LC50 - Fish [2]	8,5 mg/l (Pimephales promelas, 96h) (OECD 203 method)
EC50 - Crustacea [1]	91,4 mg/l (Daphnia magna, 48h) (OECD 202 method)
EC50 72h - Algae [1]	6,4 mg/l (Pseudokirchnerella subcapitata, 96h) (OECD 201 method)
EC50 96h - Algae [1]	6,4 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 96h - Algae [2]	15 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC chronic crustacea	0,12 mg/l (Daphnia magna, 21d) (OECD 211 method)
NOEC chronic algae	1,7 mg/l (Pseudokirchnerella subcapitata, 96h) (OECD 201 method)

### 12.2. Persistence and degradability

### Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)

Persistence and degradability	Readily biodegradable, according to appropriate OECD test.
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### Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)

Biodegradation	3,6 % Sturm (28 d) [ASTM D-5864-95]
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### 12.3. Bioaccumulative potential

#### Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)

Bioconcentration factor (BCF REACH)	≥ 500
Partition coefficient n-octanol/water (Log Kow)	≥ 4 Octanol/water coefficient

### Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched)

Partition coefficient n-octanol/water (Log Pow)	< 0,3 (40°C) (OECD 117 method)
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### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

No additional information available

### 12.6. Endocrine disrupting properties

No additional information available

### 12.7. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Do not remove as household garbage. Do not discharge waste into drains.
European List of Waste (LoW) code	: 20 01 13* - solvents
HP Code	: HP3 - "Flammable:" – flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and ≤ 75 °C; – flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air; – flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction; – flammable gaseous waste: gaseous waste which is flammable in air at 20 °C and a standard pressure of 101.3 kPa; – water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities; – other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste. HP5 - "Specific Target Organ Toxicity (STOT)/Aspiration Toxicity:" waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration. HP14 - "Ecotoxic:" waste which presents or may present immediate or delayed risks for one or more sectors of the environment

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

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ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number or ID number</b>				
UN 1950	UN 1950	UN 1950	UN 1950	UN 1950
<b>14.2. UN proper shipping name</b>				
AEROSOLS (Pentane)	AEROSOLS (Pentane)	Aerosols, flammable (Pentane)	AEROSOLS (Pentane)	AEROSOLS (Pentane)
<b>Transport document description</b>				
UN 1950 AEROSOLS (Pentane), 2.1, (D), ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane), 2.1, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 1950 Aerosols, flammable (Pentane), 2.1, ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane), 2.1, ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane), 2.1, ENVIRONMENTALLY HAZARDOUS
<b>14.3. Transport hazard class(es)</b>				
2.1	2.1	2.1	2.1	2.1
<b>14.4. Packing group</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>				
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
No supplementary information available				

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR)	: 5F
Special provisions (ADR)	: 190, 327, 344, 625
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E0
Packing instructions (ADR)	: P207
Special packing provisions (ADR)	: PP87, RR6, L2
Mixed packing provisions (ADR)	: MP9
Transport category (ADR)	: 2
Special provisions for carriage - Packages (ADR)	: V14
Special provisions for carriage - Loading, unloading and handling (ADR)	: CV9, CV12
Special provisions for carriage - Operation (ADR)	: S2
Tunnel restriction code (ADR)	: D

#### Transport by sea

Special provisions (IMDG)	: 63, 190, 277, 327, 344, 381, 959
Limited quantities (IMDG)	: SP277
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P207, LP200
Special packing provisions (IMDG)	: PP87, L2
EmS-No. (Fire)	: F-D
EmS-No. (Spillage)	: S-U
Stowage category (IMDG)	: None
Stowage and handling (IMDG)	: SW1, SW22
Segregation (IMDG)	: SG69

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### Air transport

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Y203
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 203
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 203
CAO max net quantity (IATA)	: 150kg
Special provisions (IATA)	: A145, A167, A802
ERG code (IATA)	: 10L

### Inland waterway transport

Classification code (ADN)	: 5F
Special provisions (ADN)	: 190, 327, 344, 625
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E0
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01, VE04
Number of blue cones/lights (ADN)	: 1

### Rail transport

Classification code (RID)	: 5F
Special provisions (RID)	: 190, 327, 344, 625
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E0
Packing instructions (RID)	: P207, LP200
Special packing provisions (RID)	: PP87, RR6, L2
Mixed packing provisions (RID)	: MP9
Transport category (RID)	: 2
Special provisions for carriage – Packages (RID)	: W14
Special provisions for carriage - Loading, unloading and handling (RID)	: CW9, CW12
Colis express (express parcels) (RID)	: CE2
Hazard identification number (RID)	: 23

### 14.7. Maritime transport in bulk according to IMO instruments

Not applicable

## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

##### REACH Annex XVII (Restriction List)

Contains no substance(s) listed on REACH Annex XVII (Restriction Conditions)

##### REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

##### REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

##### PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

##### POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

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### Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

### VOC Directive (2004/42)

VOC content : 578,8 g/l

### Biocide Regulation (528/2012)

Child-resistant fastening : Not applicable

Tactile warning : Not applicable

### Seveso Directive (Disaster Risk Reduction)

Seveso III Part I (Categories of dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
P3a FLAMMABLE AEROSOLS 'Flammable' aerosols Category 1 or 2, containing flammable gases Category 1 or 2 or flammable liquids Category 1	150	500
E2 Hazardous to the Aquatic Environment in Category Chronic 2	200	500

### Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

### Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

#### 15.1.2. National regulations

No additional information available

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

## SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
	Limited quantities (IMDG)	Added	
	Excepted quantities (IMDG)	Added	
1.2	Function or use category	Added	
1.2	Use of the substance/mixture	Added	
2.1	Adverse physicochemical, human health and environmental effects	Modified	
3	Composition/information on ingredients	Modified	
6.1	Emergency procedures	Modified	
7.1	Precautions for safe handling	Modified	
13.1	Waste disposal recommendations	Added	
16	Abbreviations and acronyms	Modified	

### Abbreviations and acronyms:

BCF	Bioconcentration factor
IARC	International Agency for Research on Cancer

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Abbreviations and acronyms:	
OECD	Organisation for Economic Co-operation and Development
STP	Sewage treatment plant
TLM	Median Tolerance Limit
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
ATE	Acute Toxicity Estimate
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
ThOD	Theoretical oxygen demand (ThOD)
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Full text of H- and EUH-statements:	
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2

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Full text of H- and EUH-statements:	
Asp. Tox. 1	Aspiration hazard, Category 1
EUH066	Repeated exposure may cause skin dryness or cracking.
EUH208	Contains Reaction products of bis(4-methylpentan-2-yl)dithiophosphoric acid with phosphorus oxide, propylene oxide and amines, C12-14-alkyl (branched). May produce an allergic reaction.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Liq. 1	Flammable liquids, Category 1
Flam. Liq. 3	Flammable liquids, Category 3
H220	Extremely flammable gas.
H222	Extremely flammable aerosol.
H224	Extremely flammable liquid and vapour.
H226	Flammable liquid and vapour.
H229	Pressurised container: May burst if heated.
H280	Contains gas under pressure; may explode if heated.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
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.
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
Skin Sens. 1B	Skin sensitisation, category 1B
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.