



# Putoline Tech Chain

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878  
Issue date: 8-10-2018 Revision date: 6-1-2023 Supersedes version of: 9-11-2022 Version: 1.9

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

#### 1.1. Product identifier

Product form : Mixture  
Trade name : Putoline Tech Chain  
UFI : Y850-F0HS-Y002-1NUW  
Product code : PO.10.00  
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  
Skin corrosion/irritation, Category 2 H315  
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

Pressurised container: May burst if heated. Extremely flammable aerosol. May cause drowsiness or dizziness. Causes skin irritation. 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)



Signal word (CLP)

Contains

Hazard statements (CLP)

Precautionary statements (CLP)

EUH-statements

- : Danger
- : Pentane, Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics, Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane
- : H222 - Extremely flammable aerosol.  
H229 - Pressurised container: May burst if heated.  
H315 - Causes skin irritation.  
H336 - May cause drowsiness or dizziness.  
H411 - Toxic to aquatic life with long lasting effects.
- : 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.  
P280 - Wear protective gloves, eye protection.  
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.  
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.
- : EUH211 - Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist.

### 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

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
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
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
Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane	CAS-No.: 92128-66-0 EC-No.: 921-024-6 REACH-no: 01-2119475514-35	10 – 25	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
isobutane substance with national workplace exposure limit(s) (IE) (Note K)	CAS-No.: 75-28-5 EC-No.: 200-857-2 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
Titanium dioxide substance with national workplace exposure limit(s) (GB, IE)	CAS-No.: 13463-67-7 EC-No.: 236-675-5 EC Index-No.: 022-006-00-2 REACH-no: 01-2119489379-17	1 – 2,5	Carc. 2, H351

### 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 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.

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First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention.
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	: Irritation. 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 water jet.

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

Fire hazard	: Extremely flammable aerosol. Combustible liquid.
Explosion hazard	: Pressurised container: May burst if heated.
Hazardous decomposition products in case of fire	: Toxic fumes may be released. 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. No open flames, no sparks, and no smoking. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes.
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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 : 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. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes. Wear personal protective equipment.
- Hygiene measures : Wash contaminated clothing before reuse. 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 : < 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

Putoline Tech Chain	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Exposure limits/standards for materials that can be formed when handling this product. When mists/aerosols can occur the following is recommended	5 mg/m <sup>3</sup> - ACGIH TLV (inhalable fraction).
<b>Titanium dioxide (13463-67-7)</b>	
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Titanium dioxide
OEL TWA [1]	10 mg/m <sup>3</sup> total inhalable dust 4 mg/m <sup>3</sup> respirable dust
Regulatory reference	Chemical Agents Code of Practice 2021
<b>United Kingdom - Occupational Exposure Limits</b>	
Local name	Titanium dioxide
WEL TWA (OEL TWA) [1]	4 mg/m <sup>3</sup> respirable 10 mg/m <sup>3</sup> total inhalable
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
<b>Pentane (109-66-0)</b>	
<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

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<b>Pentane (109-66-0)</b>	
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
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

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isobutane (75-28-5)	
OEL STEL [ppm]	1000 ppm
Regulatory reference	Chemical Agents Code of Practice 2021
Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
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

### 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

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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	: white.
Appearance	: Aerosol.
Odour	: characteristic.
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available
Boiling point	: -44 °C
Flammability	: Extremely flammable aerosol.
Explosive properties	: Pressurised container: May burst if heated.
Explosive limits	: Not available
Lower explosion limit	: 0,7 vol %
Upper explosion limit	: 10,9 vol %
Flash point	: -97 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: substance/mixture is non-polar/aprotic
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 (20°C)
Vapour pressure at 50°C	: Not available
Density	: 0,654 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	: 144,99999999999994
Critical temperature	: > 200 °C

#### 9.2.2. Other safety characteristics

VOC content	: 548,1 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. Reacts violently with (strong) oxidizers.

#### 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

Titanium dioxide (13463-67-7)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 425 (Acute Oral Toxicity: Up-and-Down Procedure), Guideline: EPA OPPTS 870.1100 (Acute Oral Toxicity)
LD50 oral	> 5000 mg/kg bodyweight
LD50 dermal	> 10000 mg/kg bodyweight
LC50 Inhalation - Rat (Dust/Mist)	> 6820 mg/l

Pentane (109-66-0)	
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)

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

Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane (92128-66-0)	
LD50 oral rat	> 5840 mg/kg
LD50 dermal rat	2800 – 3100 mg/kg bodyweight Animal: rat, Remarks on results: other:
LD50 dermal rabbit	> 2920 mg/kg

Skin corrosion/irritation : Causes skin irritation.  
pH: substance/mixture is non-polar/aprotic

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### Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane (92128-66-0)

pH	2,3 <= medium score <= 4.0
Serious eye damage/irritation	: Not classified pH: substance/mixture is non-polar/aprotic

### Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane (92128-66-0)

pH	2,3 <= medium score <= 4.0
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.

### Pentane (109-66-0)

STOT-single exposure	May cause drowsiness or dizziness.
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### Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, <2% aromatics (64742-48-9)

STOT-single exposure	May cause drowsiness or dizziness.
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### Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane (92128-66-0)

STOT-single exposure	May cause drowsiness or dizziness.
STOT-repeated exposure	: Not classified

### Pentane (109-66-0)

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:
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Aspiration hazard	: May be fatal if swallowed and enters airways.
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### Putoline Tech Chain

Vaporizer	Aerosol
Viscosity, kinematic	≤ 20,5 mm <sup>2</sup> /s (40 °C) - ASTM D7279

### Pentane (109-66-0)

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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### Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane (92128-66-0)

Viscosity, kinematic	0,7 mm <sup>2</sup> /s Temp.: '20°C' Parameter: 'kinematic viscosity (in 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.

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<b>Titanium dioxide (13463-67-7)</b>	
LC50 - Fish [1]	> 10000 mg/l
EC50 - Other aquatic organisms [1]	> 10000 mg/l waterflea
EC50 - Other aquatic organisms [2]	> 10000 mg/l
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
LOEC (chronic)	5 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
<b>Pentane (109-66-0)</b>	
LC50 - Fish [1]	4,26 mg/l 96h
EC50 - Crustacea [1]	2,7 mg/l 48h
<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
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]
<b>Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, &lt;5% n-hexane (92128-66-0)</b>	
LC50 - Fish [1]	11,4 mg/l (Oncorhynchus mykiss, 96h) [OCDE 203]
LC50 - Fish [2]	2,04 mg/l (Oncorhynchus mykiss, 96h)
EC50 - Crustacea [1]	3 mg/l (Daphnia magna, 48h) [OCDE 202]
EC50 - Crustacea [2]	1 mg/l (Daphnia magna, 48h) [OCDE 211]
ErC50 algae	10 mg/l (Pseudokirchnerella subcapitata, 72h) [OCDE 201]
ErC50 other aquatic plants	3 mg/l (Algae, Pseudokirchnerella subcapitata, 72h)
LOEC (chronic)	0,32 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	0,17 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

### 12.2. Persistence and degradability

<b>Putoline Tech Chain</b>	
Persistence and degradability	Not readily biodegradable.
<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
Persistence and degradability	Readily biodegradable, according to appropriate OECD test.
<b>Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, &lt;5% n-hexane (92128-66-0)</b>	
Persistence and degradability	Readily biodegradable, according to appropriate OECD test.

### 12.3. Bioaccumulative potential

<b>Hydrocarbons, C9-C11, n-alkanes, isoalkanes, cyclics, &lt;2% aromatics (64742-48-9)</b>	
Bioconcentration factor (BCF REACH)	≥ 500
Partition coefficient n-octanol/water (Log Kow)	≥ 4 Octanol/water coefficient
<b>Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, &lt;5% n-hexane (92128-66-0)</b>	
Bioconcentration factor (BCF REACH)	≥ 500
Partition coefficient n-octanol/water (Log Kow)	≥ 4 Octanol/water coefficient

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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. HP7 - "Carcinogenic:" waste which induces cancer or increases its incidence 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

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 ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)	AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)	Aerosols, flammable (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)	AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)	AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane)

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ADR	IMDG	IATA	ADN	RID
<b>Transport document description</b>				
UN 1950 AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n- hexane), 2.1, (D), ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n- hexane), 2.1, MARINE POLLUTANT/ENVIRONME NTALLY HAZARDOUS	UN 1950 Aerosols, flammable (Pentane ; Hydrocarbons, C6-C7, n- alkanes, isoalkanes, cyclics, <5% n-hexane), 2.1, ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n- hexane), 2.1, ENVIRONMENTALLY HAZARDOUS	UN 1950 AEROSOLS (Pentane ; Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n- hexane), 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

#### Air transport

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Y203

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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)

##### 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 : 548,1 g/l

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### 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
	Excepted quantities (IMDG)	Added	
	Limited quantities (IMDG)	Added	
1.2	Use of the substance/mixture	Added	
1.2	Function or use category	Added	
5.1	Unsuitable extinguishing media	Modified	
5.2	Fire hazard	Modified	
8.1	Generic OEL data	Added	
9.1	Viscosity, kinematic	Modified	
9.1	pH	Added	
9.2	VOC content	Modified	
12.2	Persistence and degradability	Added	
13.1	Waste disposal recommendations	Added	
15.1	VOC content	Modified	

### Abbreviations and acronyms:

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

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Abbreviations and acronyms:	
BCF	Bioconcentration factor
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
IARC	International Agency for Research on Cancer
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
OECD	Organisation for Economic Co-operation and Development
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
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
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:	
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 2	Carcinogenicity, Category 2
EUH066	Repeated exposure may cause skin dryness or cracking.
EUH211	Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist.



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Full text of H- and EUH-statements:	
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Liq. 1	Flammable liquids, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
H220	Extremely flammable gas.
H222	Extremely flammable aerosol.
H224	Extremely flammable liquid and vapour.
H225	Highly 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.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H411	Toxic to aquatic life with long lasting effects.
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Skin Irrit. 2	Skin corrosion/irritation, 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.