



# SAFETY DATA SHEET

DuPont Specialty Products GmbH & Co. KG

Safety Data Sheet according to Regulation (EC) No 1907/2006 - Annex II

**Product name:** MOLYKOTE® D-321 R Anti-Friction Coating  
Spray

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DuPont Specialty Products GmbH & Co. KG encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

**Product name:** MOLYKOTE® D-321 R Anti-Friction Coating Spray

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

**Identified uses:** Lubricants and lubricant additives

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

#### COMPANY IDENTIFICATION

DuPont Specialty Products GmbH & Co. KG  
Hugenottenallee 175,  
63263 NEU-ISENBURG  
GERMANY

**Manufacturer** DuPont Specialty Products GmbH & Co. KG

**Customer Information Number:** 00800-3876-6838  
SDSQuestion-EU@dupont.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +(49)- 69643508409

**Local Emergency Contact:** +(45)-69918573

**Danish Emergency Center:** +45 82 12 12 12

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008:**

Aerosols - Category 1 - H222, H229

Specific target organ toxicity - repeated exposure - Category 2 - H373

Long-term (chronic) aquatic hazard - Category 3 - H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

### Labelling according to Regulation (EC) No 1272/2008:

#### Hazard pictograms



Signal word: **DANGER**

#### Hazard statements

- |      |   |
|------|---|
| H222 | Extremely flammable aerosol.  |
| H229 | Pressurised container: May burst if heated.   |
| H373 | May cause damage to organs (Central nervous system) through prolonged or repeated exposure. |
| H412 | Harmful to aquatic life with long lasting effects.  |

#### Precautionary statements

- |             |  |
|-------------|--|
| 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.   |
| P260        | Do not breathe dust or mist.   |
| P273        | Avoid release to the environment.  |
| P410 + P412 | Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F.                  |

**Contains** naphtha (petroleum), hydrodesulphurized heavy

## 2.3 Other hazards

Endocrine disrupting properties (human health):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine disrupting properties (environment):

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

PBT and vPvB 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.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical nature:** Molybdenum disulfide, aerosol

#### 3.2 Mixtures

This product is a mixture.

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
<b>CASRN</b> 123-86-4 <b>EC-No.</b> 204-658-1 <b>Index-No.</b> 607-025-00-1 <b>REACH No</b> –	n-butyl acetate	Flam. Liq. 3 - H226 STOT SE 3 - H336 EUH066	Oral ATE: 12 789 mg/kg Dermal ATE: > 14 112 mg/kg	>= 10,0 - < 20,0 %
<b>CASRN</b> 64742-82-1 <b>EC-No.</b> 265-185-4 <b>Index-No.</b> 649-330-00-2 <b>REACH No</b> –	naphtha (petroleum), hydrodesulphurized heavy	Flam. Liq. 3 - H226 STOT SE 3 - H336 STOT RE 1 - H372 Asp. Tox. 1 - H304 Aquatic Chronic 2 - H411	Oral ATE: > 5 000 mg/kg Inhalation ATE: > 13,1 mg/l (vapour) Dermal ATE: > 4 000 mg/kg	>= 2,5 - < 10,0 %
<b>CASRN</b> 9022-96-2 <b>EC-No.</b> Polymer <b>Index-No.</b> – <b>REACH No</b> –	Polybutyl titanate	Flam. Liq. 3 - H226 Eye Irrit. 2 - H319	Oral ATE: > 2 000 mg/kg Dermal ATE: > 5 000 mg/kg	>= 1,0 - < 10,0 %
<b>CASRN</b> 1314-13-2 <b>EC-No.</b> 215-222-5 <b>Index-No.</b> 030-013-00-7 <b>REACH No</b> 01-2119463881-32	zinc oxide	Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	M-Factor: 1[Acute] 1[Chronic] Oral ATE: > 5 000 mg/kg Inhalation ATE: > 5 mg/l (dust/mist)	>= 0,1 - < 0,25 %

Substances with a workplace exposure limit

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	Specific Concentration Limits/ M-Factors/ Acute Toxicity Estimate	%
<b>CASRN</b> 106-97-8 <b>EC-No.</b> 203-448-7 <b>Index-No.</b> 601-004-00-0 <b>REACH No</b> –	butane	Flam. Gas 1 - H220 Press. Gas Compr. Gas - H280	Inhalation ATE: 658 mg/l (vapour)	>= 50,0 - < 60,0 %

<b>CASRN</b> 74-98-6 <b>EC-No.</b> 200-827-9 <b>Index-No.</b> 601-003-00-5 <b>REACH No</b> —	propane	Flam. Gas 1 - H220 Press. Gas Compr. Gas - H280	Inhalation ATE: > 425000 ppm (vapour)	>= 10,0 - < 20,0 %
<b>CASRN</b> 1317-33-5 <b>EC-No.</b> 215-263-9 <b>Index-No.</b> — <b>REACH No</b> —	Molybdenum disulfide	Not classified	Oral ATE: > 2 000 mg/kg Dermal ATE: > 2 000 mg/kg	>= 1,0 - < 10,0 %
<b>CASRN</b> 7782-42-5 <b>EC-No.</b> 231-955-3 <b>Index-No.</b> — <b>REACH No</b> 01-2119486977-12	Graphite	Not classified	Oral ATE: > 2 000 mg/kg Inhalation ATE: > 2 mg/l (dust/mist)	>= 1,0 - < 10,0 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

*Note*

naphtha (petroleum), hydrodesulphurized heavy:

The classification as a carcinogen or mutagen need not to apply because the substance contains less than 0.1% w/w benzene (EINECS No 200-753-7). Note P of Annex VI to Regulation (EC) 1272/2008.

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

**General advice:**

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Wash off with plenty of water.

**Eye contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** No emergency medical treatment necessary.

#### **4.2 Most important symptoms and effects, both acute and delayed:**

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

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

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Repeated excessive exposure may aggravate preexisting lung disease.

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## **SECTION 5: FIREFIGHTING MEASURES**

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### **5.1 Extinguishing media**

**Suitable extinguishing media:** Water spray Alcohol-resistant foam Carbon dioxide (CO<sub>2</sub>) Dry chemical

**Unsuitable extinguishing media:** Do not use direct water stream.

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

**Hazardous combustion products:** Carbon oxides Sulphur oxides

**Unusual Fire and Explosion Hazards:** Flash back possible over considerable distance. May form explosive mixtures in air. Exposure to combustion products may be a hazard to health. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure. Vapours may form explosive mixtures with air.

### **5.3 Advice for firefighters**

**Fire Fighting Procedures:** Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. **EXPLOSION HAZARD.** Fight advanced fires from a protected location. Do not use a solid water stream as it may scatter and spread fire.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Fight fire remotely due to the risk of explosion. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.

**Special protective equipment for firefighters:** In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Remove all sources of ignition. Use personal protective equipment. Follow safe handling advice and personal protective equipment recommendations.

**6.2 Environmental precautions:** Do not release the product to the aquatic environment above defined regulatory levels. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and materials for containment and cleaning up:** Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbant. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

**6.4 Reference to other sections:**

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Avoid inhalation of vapour or mist. Do not swallow. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Close valve after each use and when empty. Do NOT change or force fit connections. Open the valves slowly to prevent pressure surges. Handle in accordance with good industrial hygiene and safety practice. Do not spray on an open flame or other ignition source.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

**7.2 Conditions for safe storage, including any incompatibilities:** Keep in a cool, well-ventilated place. Keep away from direct sunlight. Store in accordance with the particular national regulations. Do not pierce or burn, even after use. Keep cool. Protect from sunlight.

Do not store with the following product types: Oxidizing agents. Self-reactive substances and mixtures. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives.

Unsuitable materials for containers: None known.

**7.3 Specific end use(s):** Information on specific end use(s) of this product may be provided in a technical data sheet/annex to the SDS (if available).

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
n-butyl acetate	ACGIH	TWA	50 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation		
	ACGIH	STEL	150 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation		
	DK OEL	GV	241 mg/m3 50 ppm
	Further information: Guiding list of organic solvents.		
	2019/1831/EU	STEL	723 mg/m3 150 ppm
	Further information: Indicative		
	2019/1831/EU	TWA	241 mg/m3 50 ppm
	Further information: Indicative		
zinc oxide	ACGIH	TWA Respirable particulate matter	2 mg/m3
	ACGIH	STEL Respirable particulate matter	10 mg/m3
	DK OEL	GV	4 mg/m3 , Zinc
	DK OEL	GV Fumes	4 mg/m3 , Zinc
butane	ACGIH	STEL	1 000 ppm
	Further information: EX: Explosion hazard: the substance is a flammable asphyxiant or excursions above the TLV® could approach 10% of the lower explosive limit.; CNS impair: Central Nervous System impairment		
	DK OEL	GV	1 200 mg/m3 500 ppm
propane	ACGIH		See Further information
	Further information: See Appendix F: Minimal Oxygen Content; EX: Explosion hazard: the substance is a flammable asphyxiant or excursions above the TLV® could approach 10% of the lower explosive limit.; asphyxia: Asphyxia; D: Simple asphyxiant; see discussion covering Minimal Oxygen Content found in the 'Definitions and Notations' section following the NIC tables		
	DK OEL	GV	1 800 mg/m3 1 000 ppm
Molybdenum disulfide	ACGIH	TWA Inhalable particulate matter	10 mg/m3 , Molybdenum
	ACGIH	TWA Respirable particulate matter	3 mg/m3 , Molybdenum
	DK OEL	GV	10 mg/m3 , Molybdenum
Graphite	ACGIH	TWA Respirable particulate matter	2 mg/m3
	Further information: pneumoconiosis: Pneumoconiosis		
	DK OEL	GV Respirable dust	2,5 mg/m3
	Further information: List of limit values for dust.		

This material contains a simple asphyxiant which may displace oxygen. Insure adequate ventilation to prevent an oxygen deficient atmosphere.

The following substance(s), which have Occupational Exposure Limit(s) (OEL), may be formed during handling or processing:

butanol

**Derived No Effect Level**

n-butyl acetate

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	600 mg/m3	11 mg/kg bw/day	600 mg/m3	11 mg/kg bw/day	300 mg/m3	n.a.	300 mg/m3

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
6 mg/kg bw/day	300 mg/m3	2 mg/kg bw/day	n.a.	300 mg/m3	6 mg/kg bw/day	35,7 mg/m3	2 mg/kg bw/day	n.a.	35,7 mg/m3

naphtha (petroleum), hydrodesulphurized heavy

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	570 mg/m3	n.a.	330 mg/m3	44 mg/kg bw/day	330 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	570 mg/m3	n.a.	n.a.	n.a.	26 mg/kg bw/day	71 mg/m3	26 mg/kg bw/day	n.a.	n.a.

zinc oxide

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	83 mg/kg bw/day	5 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	83 mg/kg bw/day	2,5 mg/m3	0,83 mg/kg bw/day	n.a.	n.a.

Graphite

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
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Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,2 mg/m3

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	813 mg/kg bw/day	n.a.	0,3 mg/m3

**Predicted No Effect Concentration**

n-butyl acetate

Compartment	PNEC
Fresh water	0,18 mg/l
Marine water	0,018 mg/l
Intermittent use/release	0,36 mg/l
Fresh water sediment	0,981 mg/kg dry weight (d.w.)
Marine sediment	0,0981 mg/kg dry weight (d.w.)
Soil	0,09 mg/kg dry weight (d.w.)
Sewage treatment plant	35,6 mg/l

zinc oxide

Compartment	PNEC
Fresh water	20,6 µg/l
Marine water	6,1 µg/l
Sewage treatment plant	52 µg/l
Fresh water sediment	117,8 mg/kg
Marine sediment	56,5 mg/kg
Soil	35,6 mg/kg

**8.2 Exposure controls**

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

**Individual protection measures**

**Eye/face protection:** Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator (meeting standard EN 136) with organic vapor cartridge (meeting standard EN 14387).

**Skin protection**

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR").

Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Wear clean, body-covering clothing.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	aerosol (20 °C, )
	<b>Form</b> Aerosol containing a dissolved gas
<b>Colour</b>	black
<b>Odour</b>	solvent-like
	<b>Odour Threshold</b> No data available
<b>Melting point/freezing point</b>	Melting point/range: No data available

<b>Boiling point or initial boiling point and boiling range</b>	Boiling point/boiling range: Not applicable
<b>Flammability</b>	<b>Gases/Solids</b> Extremely flammable aerosol.  <b>Liquids</b> No data available
<b>Lower explosion limit and upper explosion limit / flammability limit</b>	<b>Lower explosion limit / Lower flammability limit</b> No data available  <b>Upper explosion limit / Upper flammability limit</b> No data available
<b>Flash point</b>	Not applicable
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	<b>Thermal decomposition</b> No data available
<b>pH</b>	Not applicable
<b>Viscosity</b>	<b>Viscosity, kinematic</b> Not applicable  <b>Viscosity, dynamic</b> Not applicable
<b>Solubility(ies)</b>	<b>Water solubility</b> No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Vapour pressure</b>	No data available
<b>Density and / or relative density</b>	<b>Relative density</b> 1,05
<b>Relative vapour density</b>	No data available
<b>Particle characteristics</b>	<b>Particle size</b> Not applicable

## 9.2 Other information

<b>Oxidizing properties</b>	The substance or mixture is not classified as oxidizing.
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<b>Aerosols</b>	Extremely flammable aerosol.
<b>Evaporation rate</b>	Not applicable
<b>Molecular weight</b>	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** Not classified as a reactivity hazard.

**10.2 Chemical stability:** Stable under normal conditions.

**10.3 Possibility of hazardous reactions:** Can react with strong oxidizing agents. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure. Vapours may form explosive mixture with air. Extremely flammable aerosol.

**10.4 Conditions to avoid:** Heat, flames and sparks.

**10.5 Incompatible materials:** Oxidizing agents

**10.6 Hazardous decomposition products:** Butanol.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

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

#### Acute toxicity

##### **Acute toxicity (Acute oral toxicity)**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### **Acute toxicity (Acute dermal toxicity)**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

##### **Acute toxicity (Acute inhalation toxicity)**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Skin corrosion/irritation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Serious eye damage/eye irritation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Respiratory or skin sensitisation**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Germ cell mutagenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Carcinogenicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**Reproductive toxicity**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Toxicity to reproduction assessment :

Product test data not available. Refer to component data.

Assessment Teratogenicity:

Product test data not available. Refer to component data.

**STOT - single exposure**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**STOT - repeated exposure**

Specific target organ toxicity - repeated exposure, Category 2

H373: May cause damage to organs through prolonged or repeated exposure.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

**Aspiration Hazard**

Not classified

Not classified due to lack of data. / Not classified due to data which are conclusive although insufficient for classification.

Product test data not available. Refer to component data.

**COMPONENTS INFLUENCING TOXICOLOGY:**

**n-butyl acetate**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, male, 12 789 mg/kg

LD50 Oral, Rat, female, 10 760 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Rabbit, male and female, > 14 112 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

The LC50 has not been determined.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause severe skin irritation with local redness and discomfort.

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause moderate eye irritation.

Corneal injury is unlikely.

Vapor may cause eye irritation experienced as mild discomfort and redness.

**Respiratory or skin sensitisation**

Did not cause allergic skin reactions when tested in guinea pigs.

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. In animal studies, did not interfere with fertility. No toxicity to reproduction

Assessment Teratogenicity:

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

**STOT - single exposure**

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Nervous system

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Aspiration Hazard**

Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

**naphtha (petroleum), hydrodesulphurized heavy****Acute toxicity (Acute oral toxicity)**

Based on data from similar materials LD50, Rat, male and female, > 5 000 mg/kg

**Acute toxicity (Acute dermal toxicity)**

Based on data from similar materials LD50, Rat, male and female, > 4 000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute inhalation toxicity)**

Based on data from similar materials LC50, Rat, 4 Hour, vapour, > 13,1 mg/l

**Skin corrosion/irritation**

Brief contact may cause slight skin irritation with local redness.

Prolonged or repeated skin contact can cause the following:

May cause drying and flaking of the skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Respiratory or skin sensitisation**

For skin sensitization:

For similar material(s):

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**Germ cell mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

For similar material(s): In animal studies, did not interfere with fertility.

Assessment Teratogenicity:

For similar material(s): Has caused birth defects in laboratory animals only at doses toxic to the mother. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**STOT - single exposure**

May cause drowsiness or dizziness.

**STOT - repeated exposure**

For similar material(s):

In humans, effects have been reported on the following organs:

Central nervous system.

**Aspiration Hazard**

May be fatal if swallowed and enters airways.

**Polybutyl titanate**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2 000 mg/kg

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, > 5 000 mg/kg

**Acute toxicity (Acute inhalation toxicity)**

The LC50 has not been determined.

**Skin corrosion/irritation**

Essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause severe eye irritation.

**Respiratory or skin sensitisation**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.



**Germ cell mutagenicity**

No relevant data found.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**zinc oxide**

**Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 5 000 mg/kg

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, dust/mist, > 5 mg/l No deaths occurred at this concentration.

**Skin corrosion/irritation**

Prolonged contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Respiratory or skin sensitisation**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative in some cases and positive in other cases.

**Carcinogenicity**

Available data are inadequate to evaluate carcinogenicity.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Available data are inadequate to determine single exposure specific target organ toxicity.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**butane**

**Acute toxicity (Acute oral toxicity)**

Single dose oral LD50 has not been determined.

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, 4 Hour, vapour, 658 mg/l

**Skin corrosion/irritation**

No hazard from gas.

**Serious eye damage/eye irritation**

No hazard from gas.

**Respiratory or skin sensitisation**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**propane****Acute toxicity (Acute oral toxicity)**

Single dose oral LD50 has not been determined.

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

LC50, Rat, male and female, 4 Hour, vapour, > 425000 ppm

**Skin corrosion/irritation**

No hazard from gas.

Liquid may cause frostbite upon skin contact.

Effects may be delayed.

**Serious eye damage/eye irritation**

Essentially nonirritating to eyes.

Liquid may cause frostbite.

**Respiratory or skin sensitisation**

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Assessment Teratogenicity:

Screening studies suggest that this material does not affect fetal development.

**STOT - single exposure**

Available data are inadequate to determine single exposure specific target organ toxicity.

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Molybdenum disulfide****Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2 000 mg/kg No deaths occurred at this concentration.

**Acute toxicity (Acute dermal toxicity)**

LD50, Rat, male and female, > 2 000 mg/kg No deaths occurred at this concentration.

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**Respiratory or skin sensitisation**

For skin sensitization:

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Germ cell mutagenicity**

For similar material(s): In vitro genetic toxicity studies were negative.

**Carcinogenicity**

No relevant data found.

**Reproductive toxicity**

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

**STOT - single exposure**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**STOT - repeated exposure**

No relevant data found.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Graphite****Acute toxicity (Acute oral toxicity)**

LD50, Rat, > 2 000 mg/kg OECD Test Guideline 423

**Acute toxicity (Acute dermal toxicity)**

The dermal LD50 has not been determined.

**Acute toxicity (Acute inhalation toxicity)**

An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. LC50, Rat, 4 Hour, dust/mist, > 2 mg/l OECD Test Guideline 403

**Skin corrosion/irritation**

Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**

May cause slight temporary eye irritation.

**Respiratory or skin sensitisation**

Did not demonstrate the potential for contact allergy in mice.

**Germ cell mutagenicity**

In vitro genetic toxicity studies were negative.

**Reproductive toxicity**

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Did not cause birth defects or any other fetal effects in laboratory animals.

**STOT - single exposure**

The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**Aspiration Hazard**

No aspiration toxicity classification

## 11.2. Information on other hazards

### Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### Further information

No data available

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## SECTION 12: ECOLOGICAL INFORMATION

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*Ecotoxicological information appears in this section when such data is available.*

## 12.1 Toxicity

### n-butyl acetate

#### **Acute toxicity to fish**

Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 18 mg/l

#### **Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 48 Hour, 44 mg/l

#### **Acute toxicity to algae/aquatic plants**

ErC50, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 648 mg/l

#### **Toxicity to bacteria**

EC50, Bacteria, 16 Hour, > 1 000 mg/l

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, 23 mg/l

### naphtha (petroleum), hydrodesulphurized heavy

#### **Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

Based on data from similar materials

LL50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 10 - 30 mg/l, OECD Test Guideline 203

#### **Acute toxicity to aquatic invertebrates**

Based on data from similar materials

EL50, Daphnia magna (Water flea), 48 Hour, 10 - 22 mg/l, OECD Test Guideline 202

#### **Acute toxicity to algae/aquatic plants**

Based on data from similar materials

EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 4,6 - 10 mg/l, OECD Test Guideline 201

Based on data from similar materials

NOELR, Pseudokirchneriella subcapitata (green algae), 72 Hour, 0,22 mg/l, OECD Test Guideline 201

#### **Chronic toxicity to aquatic invertebrates**

Based on data from similar materials

NOELR, Daphnia magna (Water flea), 21 d, 0,097 mg/l

### Polybutyl titanate

#### **Acute toxicity to fish**

Not expected to be acutely toxic to aquatic organisms.

### zinc oxide

#### **Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 0,14 - 1,1 mg/l  
LC50, Danio rerio (zebra fish), 96 Hour, 1 - 10 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, 1 - 10 mg/l

**Acute toxicity to algae/aquatic plants**

IC50, Selenastrum capricornutum (green algae), 72 Hour, Growth rate, 0,136 mg/l

**Toxicity to bacteria**

Based on data from similar materials

EC50, 3 Hour, 5,2 mg/l, OECD Test Guideline 209

**Chronic toxicity to fish**

NOEC, Danio rerio (zebra fish), 32 d, mortality,  $\geq 0,540$  mg/l

**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 0,04 mg/l

**butane****Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

**propane****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms.

**Molybdenum disulfide****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

For similar material(s):

LC50, Fish, 96 Hour,  $> 100$  mg/l

**Acute toxicity to aquatic invertebrates**

Based on data from similar materials

EC50, Daphnia magna (Water flea), 48 Hour,  $> 100$  mg/l

**Acute toxicity to algae/aquatic plants**

Based on data from similar materials

ErC50, algae, 72 Hour, Growth rate,  $> 100$  mg/l

**Toxicity to bacteria**

EC50, 30 Hour, Respiration rates.,  $> 100$  mg/l

**Chronic toxicity to fish**

Based on data from similar materials

NOEC, Fish, 34 d,  $> 10$  mg/l

**Chronic toxicity to aquatic invertebrates**

Based on data from similar materials

NOEC, Daphnia magna, 21 d,  $> 10$  mg/l

**Graphite****Acute toxicity to fish**

No toxicity at the limit of solubility

LC50, Danio rerio (zebra fish), 96 Hour, &gt; 100 mg/l, OECD Test Guideline 203

**Acute toxicity to aquatic invertebrates**

No toxicity at the limit of solubility

EC50, Daphnia magna (Water flea), 48 Hour, &gt; 100 mg/l, OECD Test Guideline 202

**Acute toxicity to algae/aquatic plants**

EC50, Raphidocelis subcapitata (freshwater green alga), 72 Hour, &gt; 100 mg/l, OECD Test Guideline 201

NOEC, Raphidocelis subcapitata (freshwater green alga), 72 Hour, &gt;= 100 mg/l, OECD Test Guideline 201

**Toxicity to bacteria**

EC50, 3 Hour, &gt; 1 012,5 mg/l, OECD Test Guideline 209

**12.2 Persistence and degradability****n-butyl acetate****Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

**Biodegradation:** 83 %**Exposure time:** 28 d**Method:** OECD Test Guideline 301D or Equivalent**naphtha (petroleum), hydrodesulphurized heavy****Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Based on data from similar materials 10-day Window: Pass

**Biodegradation:** 74,7 %**Exposure time:** 28 d**Method:** OECD Test Guideline 301F**Polybutyl titanate****Biodegradability:** Biodegradability is not applicable to inorganic substances.**zinc oxide****Biodegradability:** Biodegradability is not applicable to inorganic substances.**butane****Biodegradability:** Material is expected to be readily biodegradable.**propane****Biodegradability:** No relevant data found.**Molybdenum disulfide****Biodegradability:** Biodegradability is not applicable to inorganic substances.**Graphite**



**Biodegradability:** Not applicable

### 12.3 Bioaccumulative potential

#### n-butyl acetate

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** Pow: 3,2 at 25 °C Measured

**Bioconcentration factor (BCF):** 15 Fish Estimated.

#### naphtha (petroleum), hydrodesulphurized heavy

**Bioaccumulation:** Based on data from similar materials

**Partition coefficient: n-octanol/water(log Pow):** > 4

#### Polybutyl titanate

**Bioaccumulation:** No relevant data found.

#### zinc oxide

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

**Bioconcentration factor (BCF):** 177 Fish

#### butane

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 2,89 Measured

#### propane

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 2,36 Measured

#### Molybdenum disulfide

**Bioaccumulation:** Partitioning from water to n-octanol is not applicable.

#### Graphite

**Bioaccumulation:** Not applicable Not applicable

### 12.4 Mobility in soil

#### n-butyl acetate

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 19 - 70 Estimated.

#### naphtha (petroleum), hydrodesulphurized heavy

No relevant data found.

#### Polybutyl titanate

No relevant data found.

#### zinc oxide

No relevant data found.

#### butane

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 44 - 900 Estimated.

**propane**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 24 - 460 Estimated.

**Molybdenum disulfide**

No relevant data found.

**Graphite**

No relevant data found.

**12.5 Results of PBT and vPvB 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.

**n-butyl acetate**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**naphtha (petroleum), hydrodesulphurized heavy**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Polybutyl titanate**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**zinc oxide**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**butane**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**propane**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Molybdenum disulfide**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Graphite**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**12.6 Endocrine disrupting properties**

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**12.7 Other adverse effects**

**n-butyl acetate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**naphtha (petroleum), hydrodesulphurized heavy**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Polybutyl titanate**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**zinc oxide**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**butane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**propane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Molybdenum disulfide**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Graphite**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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## **SECTION 13: DISPOSAL CONSIDERATIONS**

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### **13.1 Waste treatment methods**

Do not dump into any sewers, on the ground, or into any body of water. This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

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## **SECTION 14: TRANSPORT INFORMATION**

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### **Classification for ROAD and Rail transport (ADR/RID):**

<b>14.1 UN number or ID number</b>	UN 1950
<b>14.2 UN proper shipping name</b>	AEROSOLS
<b>14.3 Transport hazard class(es)</b>	2.1
<b>14.4 Packing group</b>	Not applicable
<b>14.5 Environmental hazards</b>	Not considered environmentally hazardous based on available data.
<b>14.6 Special precautions for user</b>	No data available.

**Classification for SEA transport (IMO-IMDG):**

14.1	UN number or ID number	UN 1950
14.2	UN proper shipping name	AEROSOLS
14.3	Transport hazard class(es)	2.1
14.4	Packing group	Not applicable
14.5	Environmental hazards	Not considered as marine pollutant based on available data.
14.6	Special precautions for user	EmS: F-D, S-U
14.7	Maritime transport in bulk according to IMO instruments	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

14.1	UN number or ID number	UN 1950
14.2	UN proper shipping name	Aerosols, flammable
14.3	Transport hazard class(es)	2.1
14.4	Packing group	Not applicable
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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**SECTION 15: REGULATORY INFORMATION**

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**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). Polymers are exempted from registration under REACH. All relevant starting materials and additives have been either registered, or are exempt from registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

**Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.**

Listed in Regulation: FLAMMABLE AEROSOLS

Number in Regulation: P3a

150 t

500 t

Listed in Regulation: Liquefied flammable gases (including LPG) and natural gas

Number in Regulation: 18

50 t

200 t

Listed in Regulation: Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams), (d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)

Number in Regulation: 34

2 500 t

25 000 t

**Reference to occupational restriction**

MAL Code: 3-6 (1993)

Product contains low-boiling liquids. Respiratory protective equipment must be air supplied respirators.

**Further information**

When evaluating a workplace, measures must be taken to ensure that employees are not exposed to conditions that may pose a risk during pregnancy or breastfeeding (cf. The Danish Working Environment Authority's Executive Order on The Performance of Work)

Young people under the age of 18 are not allowed to use or be exposed to the product professionally. Young people above the age of 15 are, however, except from this rule if the product is a necessary part of their education.

**15.2 Chemical safety assessment**

No Chemical Safety Assessment has been carried out for this substance/mixture.

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**SECTION 16: OTHER INFORMATION**

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**Full text of H-Statements referred to under sections 2 and 3.**

H220	Extremely flammable gas.
H222	Extremely flammable aerosol.
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.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H372	Causes damage to organs through prolonged or repeated exposure.
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.

#### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008

Aerosol - 1 - H222 - Based on product data or assessment

STOT RE - 2 - H373 - Calculation method

Aquatic Chronic - 3 - H412 - Calculation method

#### Revision

Identification Number: 4045681 / A940 / Issue Date: 2022/10/04 / Version: 3.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

#### Legend

2019/1831/EU	Europe. Commission Directive 2019/1831/EU establishing a fifth list of indicative occupational exposure limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
DK OEL	Denmark. Occupational Exposure Limits
GV	Long term exposure limit
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Eye Irrit.	Eye irritation
Flam. Gas	Flammable gases
Flam. Liq.	Flammable liquids
Press. Gas	Gases under pressure
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

#### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population

(Median Lethal 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; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

### **Information Source and References**

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