SAFETY DATA SHEET

SPECIALTY ELECTRONIC MATERIALS UK LIMITED

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

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

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SPECIALTY ELECTRONIC MATERIALS UK LIMITED 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

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
SPECIALTY ELECTRONIC MATERIALS UK
LIMITED
KINGS COURT, LONDON ROAD
STEVENAGE
England
SG1 2NG
UNITED KINGDOM

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: +(44)-870-8200418
Local Emergency Contact: +(44)-870-8200418

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:
Flammable liquids - Category 3 - H226

Eye irritation - Category 2 - H319
Specific target organ toxicity - single exposure - Category 3 - H336
Specific target organ toxicity - repeated exposure - Category 1 - H372
Aspiration hazard - Category 1 - H304
Long-term (chronic) aquatic hazard - Category 2 - H411
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

H226	Flammable liquid and vapour.
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 (Central nervous system) through prolonged or repeated exposure.
H411	Toxic 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.
P260	Do not breathe mist or vapours.
P273	Avoid release to the environment.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331	Do NOT induce vomiting.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage.

Supplemental information

EUH066 Repeated exposure may cause skin dryness or cracking.
The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 4.656 %

Contains n-butyl acetate; naphtha (petroleum), hydrodesulphurized heavy; butan-1-ol

2.3 Other hazards

Static-accumulating flammable liquid.

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: Inorganic and organic compounds, in mineral oil
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	%
CASRN 123-86-4 **EC-No.** 204-658-1 **Index-No.** 607-025-00-1 **REACH No** –	n-butyl acetate	Flam. Liq. 3 - H226 STOT SE 3 - H336 EUH066	Oral ATE: 12,789 mg/kg Dermal ATE: > 14,112 mg/kg	>= 30.0 - < 40.0 %
CASRN 64742-82-1 **EC-No.** 265-185-4 **Index-No.** 649-330-00-2 **REACH No** –	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	>= 30.0 - < 40.0 %
CASRN 9022-96-2 **EC-No.** Polymer **Index-No.** – **REACH No** –	Polybutyl titanate	Flam. Liq. 3 - H226 Eye Irrit. 2 - H319	Oral ATE: > 2,000 mg/kg Dermal ATE: > 5,000 mg/kg	>= 10.0 - < 20.0 %
CASRN 71-36-3 **EC-No.** 200-751-6 **Index-No.**	butan-1-ol	Flam. Liq. 3 - H226 Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 STOT SE 3 - H335	Oral ATE: 500 mg/kg Dermal ATE: 3,430 mg/kg	>= 1.0 - < 3.0 %

603-004-00-6 **REACH No** 01-2119484630-38		STOT SE 3 - H336		
CASRN 1314-13-2 **EC-No.** 215-222-5 **Index-No.** 030-013-00-7 **REACH No** 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)	>= 0.25 - < 1.0 %

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	%
CASRN 1317-33-5 **EC-No.** 215-263-9 **Index-No.** – **REACH No** –	Molybdenum disulfide	Not classified	Oral ATE: > 2,000 mg/kg Dermal ATE: > 2,000 mg/kg	>= 10.0 - < 20.0 %

CASRN 7782-42-5 **EC-No.** 231-955-3 **Index-No.** – **REACH No** 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. Suitable emergency safety shower facility should be available in work area.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.

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. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media: Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical

Unsuitable extinguishing media: High volume water jet 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. Exposure to combustion products may be a hazard to health. 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. 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. 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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

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.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Do not get on skin or clothing. Do not breathe vapours or spray mist. Do not swallow. Do not get in eyes. Keep container tightly closed. 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. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice.
Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity. Ground and bond container and receiving equipment.

7.2 Conditions for safe storage, including any incompatibilities: Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Do not store with the following product types: Strong oxidizing agents. 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. Gases.
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		
	GB EH40	TWA	724 mg/m3 150 ppm
	GB EH40	STEL	966 mg/m3 200 ppm
	2019/1831/EU	STEL	723 mg/m3 150 ppm
	Further information: Indicative		
	2019/1831/EU	TWA	241 mg/m3 50 ppm
	Further information: Indicative		
butan-1-ol	ACGIH	TWA	20 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation		
	GB EH40	STEL	154 mg/m3 50 ppm
	Further information: Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.		
zinc oxide	ACGIH	TWA Respirable particulate matter	2 mg/m3
	ACGIH	STEL Respirable particulate matter	10 mg/m3
Molybdenum disulfide	ACGIH	TWA Inhalable particulate matter	10 mg/m3 , Molybdenum
	ACGIH	TWA Respirable particulate matter	3 mg/m3 , Molybdenum
	GB EH40	TWA	10 mg/m3 , Molybdenum
	GB EH40	STEL	20 mg/m3 , Molybdenum
Graphite	ACGIH	TWA Respirable particulate matter	2 mg/m3
	Further information: pneumoconiosis: Pneumoconiosis		
	GB EH40	TWA inhalable dust	10 mg/m3
	GB EH40	TWA Respirable dust	4 mg/m3

Derived No Effect Level
n-butyl acetate
Workers

Acute systemic effects		*Acute local effects*		*Long-term systemic effects*		*Long-term local effects*	
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

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
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

Acute systemic effects		***Acute local effects***		***Long-term systemic effects***		***Long-term local effects***	
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

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
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.

butan-1-ol

Workers

Acute systemic effects		***Acute local effects***		***Long-term systemic effects***		***Long-term local effects***	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	310 mg/m3

Consumers

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.125 mg/kg bw/day	n.a.	55 mg/m3

zinc oxide

Workers

Acute systemic effects		***Acute local effects***		***Long-term systemic effects***		***Long-term local effects***	
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

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
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

Acute systemic effects		***Acute local effects***		***Long-term systemic effects***		***Long-term local effects***	
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

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
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

butan-1-ol

Compartment	**PNEC**
Fresh water	0.082 mg/l
Marine water	0.008 mg/l
Intermittent use/release	2.25 mg/l
Sewage treatment plant	2476 mg/l
Fresh water sediment	0.178 mg/kg
Marine sediment	0.018 mg/kg
Soil	0.015 mg/kg

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.

Individual protection measures
Eye/face protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.
Skin protection
Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. 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: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.
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.

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid (20 °C,)
Colour	dark grey
Odour	solvent-like
	Odour Threshold No data available
Melting point/freezing point	Melting point/range: No data available
Boiling point or initial boiling point and boiling range	Boiling point/boiling range: > 100 °C
Flammability	**Gases/Solids** Not applicable

	Liquids No data available
Lower explosion limit and upper explosion limit / flammability limit	**Lower explosion limit** / **Lower flammability limit** No data available
	Upper explosion limit / **Upper flammability limit** No data available
Flash point	23 °C Method: (closed cup)
Auto-ignition temperature	No data available
Decomposition temperature	**Thermal decomposition** No data available
pH	No data available
Viscosity	**Viscosity, kinematic** < 20.5 mm2/s (25 °C)
Solubility(ies)	**Water solubility** No data available
Partition coefficient: n-octanol/water	No data available
Vapour pressure	No data available
Density and / or relative density	**Relative density** 1.07
Relative vapour density	No data available
Particle characteristics	**Particle size** Not applicable

9.2 Other information

Oxidizing properties	The substance or mixture is not classified as oxidizing.
Self-heating substances	The substance or mixture is not classified as self heating.
Substances and mixtures, which in contact with water,	The substance or mixture does not emit flammable gases in contact with water.

emit flammable gases	
Corrosive to metals	Not corrosive to metals
Evaporation rate	No data available
Molecular weight	No data available

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

SECTION 10: STABILITY AND REACTIVITY

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. Vapours may form explosive mixture with air. Flammable liquid and vapour.

10.4 Conditions to avoid: Heat, flames and sparks.

10.5 Incompatible materials: Oxidizing agents

10.6 Hazardous decomposition products: Butanol.

SECTION 11: TOXICOLOGICAL INFORMATION

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.

Acute toxicity estimate, > 2,000 mg/kg Calculation method

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
Eye irritation, Category 2
H319: Causes serious eye irritation.
Classification procedure: Calculation method

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
Specific target organ toxicity - single exposure, Category 3
H336: May cause drowsiness or dizziness.
Classification procedure: Calculation method

Product test data not available. Refer to component data.

STOT - repeated exposure
Specific target organ toxicity - repeated exposure, Category 1
H372: Causes damage to organs through prolonged or repeated exposure.
Classification procedure: Calculation method

Product test data not available. Refer to component data.

Aspiration Hazard
Aspiration hazard, Category 1
H304: May be fatal if swallowed and enters airways.
Classification procedure: Calculation method

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.

butan-1-ol

Acute toxicity (Acute oral toxicity)
LD50, Rat, female, 2,292 mg/kg OECD 401 or equivalent

Acute toxicity estimate, 500 mg/kg Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Acute toxicity (Acute dermal toxicity)
LD50, Rabbit, male, 3,430 mg/kg OECD Test Guideline 402

Skin corrosion/irritation
Brief contact may cause skin irritation with local redness.
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 severe eye irritation.
May cause moderate corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Respiratory or skin sensitisation
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
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Carcinogenicity
No relevant data found.

Reproductive toxicity
Toxicity to reproduction assessment :
In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:
n-Butanol has caused birth defects and has been toxic to the fetus in laboratory animals at doses nontoxic to the mother. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

STOT - single exposure
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Nervous system

May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory Tract

STOT - repeated exposure
Butanol has been reported to cause eye effects (tearing, blurred vision, sensitivity to light, temporary corneal effects), hearing loss and vertigo.

Aspiration Hazard
May be harmful if swallowed and enters airways.

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.

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

SECTION 12: ECOLOGICAL INFORMATION

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.

butan-1-ol

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).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 1,376 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 1,328 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 225 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria
EC50, Pseudomonas putida, static test, 17 Hour, Growth inhibition, > 1,000 mg/l, DIN 38412

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, 4.1 mg/l

Toxicity to Above Ground Organisms
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

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, >= 0.540 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 0.04 mg/l

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, > 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, > 100 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
EC50, Raphidocelis subcapitata (freshwater green alga), 72 Hour, > 100 mg/l, OECD Test Guideline 201
NOEC, Raphidocelis subcapitata (freshwater green alga), 72 Hour, >= 100 mg/l, OECD Test Guideline 201

Toxicity to bacteria
EC50, 3 Hour, > 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.

butan-1-ol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 98 %
Exposure time: 19 d
Method: OECD Test Guideline 301E or Equivalent

zinc oxide

Biodegradability: Biodegradability is not applicable to inorganic substances.

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.

butan-1-ol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1 at 25 °C OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
Bioconcentration factor (BCF): 3.16 Fish Estimated.

zinc oxide
Bioaccumulation: Partitioning from water to n-octanol is not applicable.
Bioconcentration factor (BCF): 177 Fish

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.

butan-1-ol
Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 2.4 Estimated.

zinc oxide
No relevant data found.

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).

butan-1-ol
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).

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

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.

butan-1-ol
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.

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.

SECTION 13: DISPOSAL CONSIDERATIONS

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.

SECTION 14: TRANSPORT INFORMATION

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

14.1	**UN number or ID number**	UN 1993
14.2	**UN proper shipping name**	FLAMMABLE LIQUID, N.O.S.(n-Butyl acetate, Naphtha (petroleum), hydrodesulfurized heavy)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Naphtha (petroleum), hydrodesulfurized heavy, Zinc oxide
14.6	**Special precautions for user**	Hazard Identification Number: 30

Classification for SEA transport (IMO-IMDG):

14.1	**UN number or ID number**	UN 1993
14.2	**UN proper shipping name**	FLAMMABLE LIQUID, N.O.S.(n-Butyl acetate, Naphtha (petroleum), hydrodesulfurized heavy)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Naphtha (petroleum), hydrodesulfurized heavy, Zinc oxide
14.6	**Special precautions for user**	EmS: F-E, S-E
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 1993
14.2	**UN proper shipping name**	Flammable liquid, n.o.s.(n-Butyl acetate, Naphtha (petroleum), hydrodesulfurized heavy)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
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.

SECTION 15: REGULATORY INFORMATION

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)., 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., 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).

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 LIQUIDS
Number in Regulation: P5c
5,000 t
50,000 t
Listed in Regulation: ENVIRONMENTAL HAZARDS
Number in Regulation: E2
200 t
500 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

Further information
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical safety assessment

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

SECTION 16: OTHER INFORMATION

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

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H372	Causes 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.

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

Flam. Liq. - 3 - H226 - Based on product data or assessment
Eye Irrit. - 2 - H319 - Calculation method
STOT SE - 3 - H336 - Calculation method
STOT RE - 1 - H372 - Calculation method
Asp. Tox. - 1 - H304 - Calculation method
Aquatic Chronic - 2 - H411 - Calculation method

Revision

Identification Number: 2287978 / A670 / Issue Date: 04.01.2023 / Version: 8.0
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)
GB EH40	UK. EH40 WEL - Workplace Exposure Limits
STEL	Short-term exposure limit (15-minute reference period)
TWA	Long-term exposure limit (8-hour TWA reference period)
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Skin Irrit.	Skin irritation
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
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

SPECIALTY ELECTRONIC MATERIALS UK LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
GB