SAFETY DATA SHEET

SPECIALTY ELECTRONIC MATERIALS UK LIMITED

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

Product name: MOLYKOTE® D-3484 Anti-Friction Coating

Revision Date: 2026-02-27
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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-3484 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, importer, supplier 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)-2038850382

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

Skin irritation - Category 2 - H315
Serious eye damage - Category 1 - H318
Specific target organ toxicity - single exposure - Category 3 - H336
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.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H336	May cause drowsiness or dizziness.

Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, eye protection and face protection.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Supplemental information

EUH208 Contains: formaldehyde. May produce an allergic reaction.
The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 7.1 %

Contains n-butyl acetate; butan-1-ol; 2-ethoxy-1-methylethyl acetate

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: Organic/Inorganic Coating
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	>= 40.0 - < 50.0 %
CASRN 71-36-3 **EC-No.** 200-751-6 **Index-No.** 603-004-00-6 **REACH No.** 01-2119484630-38	butan-1-ol	Flam. Liq. 3 - H226 Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 STOT SE 3 - H335 STOT SE 3 - H336	Oral ATE: 500 mg/kg Dermal ATE: 3,430 mg/kg	>= 10.0 - < 20.0 %
CASRN 54839-24-6 **EC-No.** 259-370-9 **Index-No.** 603-177-00-8 **REACH No.** –	2-ethoxy-1-methylethyl acetate	Flam. Liq. 3 - H226 STOT SE 3 - H336	Oral ATE: > 5,000 mg/kg Dermal ATE: 20,000 mg/kg	>= 10.0 - < 20.0 %
CASRN 64-17-5 **EC-No.**	ethanol	Flam. Liq. 2 - H225 Eye Irrit. 2 - H319	2; H319:C >= 50 % Oral ATE: 10,470 mg/kg	>= 1.0 - < 10.0 %

200-578-6 **Index-No.** 603-002-00-5 **REACH No.** 01-2119457610-43			Inhalation ATE: 124.7 mg/l (vapour)	
CASRN 78-83-1 **EC-No.** 201-148-0 **Index-No.** 603-108-00-1 **REACH No.** –	2-methylpropan-1-ol	Flam. Liq. 3 - H226 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 STOT SE 3 - H335 STOT SE 3 - H336	Oral ATE: 3,350 mg/kg Dermal ATE: > 2,000 mg/kg	>= 1.0 - < 3.0 %
CASRN 108-95-2 **EC-No.** 203-632-7 **Index-No.** 604-001-00-2 **REACH No.** 01-2119471329-32	phenol	Acute Tox. 3 - H301 Acute Tox. 3 - H331 Acute Tox. 3 - H311 Skin Corr. 1B - H314 Muta. 2 - H341 STOT RE 2 - H373 Aquatic Chronic 2 - H411	Skin Corr.1B; H314:C >= 3 % Skin Irrit.2; H315:C 1 - < 3 % Eye Irrit.2; H319:C 1 - < 3 % Oral ATE: 100 mg/kg Inhalation ATE: 0.5 mg/l (dust/mist) Dermal ATE: 660 mg/kg	0.43%
CASRN 50-00-0 **EC-No.** 200-001-8 **Index-No.** 605-001-00-5 **REACH No.** –	formaldehyde	Acute Tox. 4 - H302 Acute Tox. 2 - H330 Acute Tox. 3 - H311 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1A - H317 Muta. 2 - H341 Carc. 1B - H350 STOT SE 3 - H335 EUH071	Skin Corr.1B; H314:C >= 25 % Skin Irrit.2; H315:C 5 - < 25 % Eye Irrit.2; H319:C 5 - < 25 % STOT SE3; H335:C >= 5 % Eye Dam.1; H318:C >= 25 % Oral ATE: 500 mg/kg Inhalation ATE: 100 ppm (gas) Dermal ATE: 270 mg/kg	0.04%
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 71-36-3 **EC-No.** 200-751-6 **Index-No.** 603-004-00-6 **REACH No.** 01-2119484630-38	butan-1-ol	Flam. Liq. 3 - H226 Acute Tox. 4 - H302 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 STOT SE 3 - H335 STOT SE 3 - H336	Oral ATE: 500 mg/kg Dermal ATE: 3,430 mg/kg	>= 10.0 - < 20.0 %
CASRN 54839-24-6 **EC-No.** 259-370-9 **Index-No.** 603-177-00-8 **REACH No.** –	2-ethoxy-1-methylethyl acetate	Flam. Liq. 3 - H226 STOT SE 3 - H336	Oral ATE: > 5,000 mg/kg Dermal ATE: 20,000 mg/kg	>= 1.0 - < 10.0 %

CASRN 64-17-5 **EC-No.** 200-578-6 **Index-No.** 603-002-00-5 **REACH No.** 01-2119457610-43	ethanol	Flam. Liq. 2 - H225 Eye Irrit. 2 - H319	2; H319:C >= 50 % Oral ATE: 10,470 mg/kg Inhalation ATE: 124.7 mg/l (vapour)	>= 1.0 - < 10.0 %
CASRN 108-95-2 **EC-No.** 203-632-7 **Index-No.** 604-001-00-2 **REACH No.** 01-2119471329-32	phenol	Acute Tox. 3 - H301 Acute Tox. 3 - H331 Acute Tox. 3 - H311 Skin Corr. 1B - H314 Muta. 2 - H341 STOT RE 2 - H373 Aquatic Chronic 2 - H411	Skin Corr.1B; H314:C >= 3 % Skin Irrit.2; H315:C 1 - < 3 % Eye Irrit.2; H319:C 1 - < 3 % Oral ATE: 100 mg/kg Inhalation ATE: 0.5 mg/l (dust/mist) Dermal ATE: 660 mg/kg	>= 0.25 - < 1.0 %
CASRN 50-00-0 **EC-No.** 200-001-8 **Index-No.** 605-001-00-5 **REACH No.** –	formaldehyde	Acute Tox. 4 - H302 Acute Tox. 2 - H330 Acute Tox. 3 - H311 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1A - H317 Muta. 2 - H341 Carc. 1B - H350 STOT SE 3 - H335 EUH071	Skin Corr.1B; H314:C >= 25 % Skin Irrit.2; H315:C 5 - < 25 % Eye Irrit.2; H319:C 5 - < 25 % STOT SE3; H335:C >= 5 % Eye Dam.1; H318:C >= 25 % Oral ATE: 500 mg/kg Inhalation ATE: 100 ppm (gas) Dermal ATE: 270 mg/kg	< 0.1 %

Substances with a workplace exposure limit

Identification number	Component	Classification according to Regulation (EU) 1272/2008 (CLP)	specific concentration limit/ 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	>= 20.0 - < 30.0 %
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.

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: If inhaled Move person to fresh air; if effects occur, consult a physician.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation occurs: Get medical advice/ attention.

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. Suitable emergency eye wash facility should be available in work area.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel. Consult a physician if 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: 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 Metal oxides Silicon 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.

Advice on general occupational hygiene
Handle in accordance with good industrial hygiene and safety practice. Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Ensure that eye flushing systems and safety showers are located close to the working place.

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	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	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.		
ethanol	GB EH40	TWA	1,920 mg/m3 1,000 ppm
2-methylpropan-1-ol	GB EH40	TWA	154 mg/m3 50 ppm
	GB EH40	STEL	231 mg/m3 75 ppm
phenol	GB EH40	TWA	7.8 mg/m3 2 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.		
	GB EH40	STEL	16 mg/m3 4 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.		
	2009/161/EU	TWA	8 mg/m3 2 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin;		

	Indicative		
	2009/161/EU	STEL	16 mg/m3 4 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin; Indicative		
formaldehyde	GB EH40	TWA	2.5 mg/m3 2 ppm
	Further information: Carc: Capable of causing cancer and/or heritable genetic damage.		
	GB EH40	STEL	2.5 mg/m3 2 ppm
	Further information: Carc: Capable of causing cancer and/or heritable genetic damage.		
	2004/37/EC	TWA	0.37 mg/m3 0.3 ppm
	Further information: Dermal sensitisation; Carcinogens or mutagens		
	2004/37/EC	STEL	0.74 mg/m3 0.6 ppm
	Further information: Dermal sensitisation; Carcinogens or mutagens		
n-butyl acetate	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	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.		
ethanol	GB EH40	TWA	1,920 mg/m3 1,000 ppm
phenol	GB EH40	TWA	7.8 mg/m3 2 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.		
	GB EH40	STEL	16 mg/m3 4 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.		
	2009/161/EU	TWA	8 mg/m3 2 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin; Indicative		
	2009/161/EU	STEL	16 mg/m3 4 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin; Indicative		
formaldehyde	GB EH40	TWA	2.5 mg/m3 2 ppm
	Further information: Carc: Capable of causing cancer and/or heritable genetic damage.		
	GB EH40	STEL	2.5 mg/m3 2 ppm
	Further information: Carc: Capable of causing cancer and/or heritable genetic damage.		
	2004/37/EC	TWA	0.37 mg/m3 0.3 ppm
	Further information: Dermal sensitisation; Carcinogens or mutagens		
	2004/37/EC	STEL	0.74 mg/m3 0.6 ppm
	Further information: Dermal sensitisation; Carcinogens or mutagens		
Molybdenum disulfide	GB EH40	TWA	10 mg/m3 , Molybdenum
	GB EH40	STEL	20 mg/m3 , Molybdenum
Graphite	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

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

2-ethoxy-1-methylethyl 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.	608 mg/m3	n.a.	n.a.	103 mg/kg bw/day	302 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.	365 mg/m3	n.a.	n.a.	n.a.	62 mg/kg bw/day	181 mg/m3	13.1 mg/kg bw/day	n.a.	n.a.

ethanol

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.	1900 mg/m3	343 mg/kg bw/day	950 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.	950 mg/m3	206 mg/kg bw/day	114 mg/m3	87 mg/kg bw/day	n.a.	n.a.

2-methylpropan-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.	n.a.	n.a.	55 mg/m3

phenol

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.	16 mg/m3	1.23 mg/kg bw/day	8 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.	0.4 mg/kg bw/day	1.32 mg/m3	0.4 mg/kg bw/day	n.a.	n.a.

formaldehyde

Workers

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

				effects			
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	0.75 mg/m3	240 mg/kg bw/day	9 mg/m3	0.037 mg/cm2	0.375 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.	102 mg/kg bw/day	3.2 mg/m3	4.1 mg/kg bw/day	0.012 mg/cm2	0.1 mg/m3

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

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

2-ethoxy-1-methylethyl 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.	608 mg/m3	n.a.	n.a.	103 mg/kg bw/day	302 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.	365 mg/m3	n.a.	n.a.	n.a.	62 mg/kg bw/day	181 mg/m3	13.1 mg/kg bw/day	n.a.	n.a.

ethanol

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.	1900 mg/m3	343 mg/kg bw/day	950 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.	950 mg/m3	206 mg/kg bw/day	114 mg/m3	87 mg/kg bw/day	n.a.	n.a.

phenol

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.	16 mg/m3	1.23 mg/kg bw/day	8 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.	0.4 mg/kg bw/day	1.32 mg/m3	0.4 mg/kg bw/day	n.a.	n.a.

formaldehyde

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.	0.75 mg/m3	240 mg/kg bw/day	9 mg/m3	0.037 mg/cm2	0.375 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.	102 mg/kg bw/day	3.2 mg/m3	4.1 mg/kg bw/day	0.012 mg/cm2	0.1 mg/m3

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

2-ethoxy-1-methylethyl acetate

Compartment	**PNEC**
Fresh water	1.3 mg/l
Marine water	0.13 mg/l
Intermittent use/release	1.3 mg/l
Sewage treatment plant	62.5 mg/l
Fresh water sediment	6.4 mg/kg
Marine sediment	0.64 mg/kg
Soil	1.34 mg/kg
Oral (Secondary Poisoning)	117 mg/kg food

ethanol

Compartment	**PNEC**
Fresh water	0.96 mg/l
Marine water	0.79 mg/l
Intermittent use/release	2.75 mg/l
Sewage treatment plant	580 mg/l
Fresh water sediment	3.6 mg/kg
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Oral (Secondary Poisoning)	720 mg/kg food

2-methylpropan-1-ol

Compartment	**PNEC**
Fresh water	0.4 mg/l
Marine water	0.04 mg/l
Intermittent use/release	11 mg/l
Sewage treatment plant	10 mg/l
Soil	0.0699 mg/kg dry weight (d.w.)
Fresh water sediment	1.52 mg/kg dry weight (d.w.)
Marine sediment	0.152 mg/kg dry weight (d.w.)

phenol

Compartment	**PNEC**
Fresh water	0.0077 mg/l
Marine water	0.00077 mg/l
Intermittent use/release	0.031 mg/l
Sewage treatment plant	2.1 mg/l
Fresh water sediment	0.0915 mg/kg dry weight (d.w.)
Marine sediment	0.00915 mg/kg dry weight (d.w.)

Soil	0.136 mg/kg dry weight (d.w.)

formaldehyde

Compartment	**PNEC**
Fresh water	0.44 mg/l
Marine water	0.44 mg/l
Intermittent use/release	4.44 mg/l
Sewage treatment plant	0.19 mg/l
Fresh water sediment	2.3 mg/kg
Marine sediment	2.3 mg/kg
Soil	0.2 mg/kg

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

2-ethoxy-1-methylethyl acetate

Compartment	**PNEC**
Fresh water	1.3 mg/l
Marine water	0.13 mg/l
Intermittent use/release	1.3 mg/l
Sewage treatment plant	62.5 mg/l
Fresh water sediment	6.4 mg/kg
Marine sediment	0.64 mg/kg
Soil	1.34 mg/kg
Oral (Secondary Poisoning)	117 mg/kg food

ethanol

Compartment	PNEC
Fresh water	0.96 mg/l
Marine water	0.79 mg/l
Intermittent use/release	2.75 mg/l
Sewage treatment plant	580 mg/l
Fresh water sediment	3.6 mg/kg
Marine sediment	2.9 mg/kg
Soil	0.63 mg/kg
Oral (Secondary Poisoning)	720 mg/kg food

phenol

Compartment	PNEC
Fresh water	0.0077 mg/l
Marine water	0.00077 mg/l
Intermittent use/release	0.031 mg/l
Sewage treatment plant	2.1 mg/l
Fresh water sediment	0.0915 mg/kg dry weight (d.w.)
Marine sediment	0.00915 mg/kg dry weight (d.w.)
Soil	0.136 mg/kg dry weight (d.w.)

formaldehyde

Compartment	PNEC
Fresh water	0.44 mg/l
Marine water	0.44 mg/l
Intermittent use/release	4.44 mg/l
Sewage treatment plant	0.19 mg/l
Fresh water sediment	2.3 mg/kg
Marine sediment	2.3 mg/kg
Soil	0.2 mg/kg

8.2 Exposure controls
Engineering measures: 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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process.

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,) liquid (40 °C,)
Colour	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: > 35 °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	25.5 °C Method: (Pensky-Martens closed cup)
Auto-ignition temperature	No data available
Decomposition temperature	**Thermal decomposition** No data available
pH	Substance/mixture is non-soluble (in water). Substance/mixture is non-soluble (in water).
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** 1.16
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, emit flammable gases	The substance or mixture does not emit flammable gases in contact with water.
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. When heated to temperatures above 150 °C (300 °F) in the presence of air, product can form formaldehyde vapours. Safe handling conditions may be maintained by keeping vapour concentrations within the occupational exposure limit for formaldehyde. 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: Phenol. Formaldehyde. Acetic acid. Benzene.

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.

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

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.

Acute toxicity estimate, 4 Hour, dust/mist, > 5 mg/l Calculation method

Skin corrosion/irritation
Skin irritation, Category 2
H315: Causes skin irritation.
Classification procedure: Calculation method

Product test data not available. Refer to component data.

Serious eye damage/eye irritation
Serious eye damage, Category 1
H318: Causes serious eye damage.
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
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.

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.

butan-1-ol

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

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

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.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Respiratory or skin sensitisation
Did not demonstrate the potential for contact allergy in mice.

Germ cell mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Carcinogenicity
Animal testing did not show any carcinogenic effects.

Reproductive toxicity
Toxicity to reproduction assessment :
In animal studies, did not interfere with reproduction. Information given is based on data obtained from similar substances.

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

STOT - single exposure
May cause drowsiness or dizziness.
May cause respiratory irritation.
Target Organs: Central nervous system, Respiratory system

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

Aspiration Hazard
The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

2-ethoxy-1-methylethyl acetate

Acute toxicity (Acute oral toxicity)
LD50, Rat, > 5,000 mg/kg

Acute toxicity (Acute dermal toxicity)
For similar material(s): LD50, Rabbit, 20,000 mg/kg

Acute toxicity (Acute inhalation toxicity)
Prolonged excessive exposure may cause adverse effects.

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.
Corneal injury is unlikely.

Respiratory or skin sensitisation
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 predominantly negative.

No relevant data found.

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

Aspiration Hazard
May be harmful if swallowed and enters airways.

ethanol

Acute toxicity (Acute oral toxicity)
LD50, Rat, 10,470 mg/kg OECD Test Guideline 401

Acute toxicity (Acute dermal toxicity)
The dermal LD50 has not been determined.

Acute toxicity (Acute inhalation toxicity)
LC50, Rat, 4 Hour, vapour, 124.7 mg/l OECD Test Guideline 403

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.

Respiratory or skin sensitisation
Did not cause allergic skin reactions when tested in guinea pigs.
Information given is based on data obtained from similar substances.

Did not cause allergic respiratory reaction in animal tests.

Germ cell mutagenicity
Animal genetic toxicity studies were negative in some cases and positive in other cases. In vitro genetic toxicity studies were predominantly negative. Information given is based on data obtained from similar substances.

Carcinogenicity
Animal testing did not show any carcinogenic effects. For similar material(s):

Reproductive toxicity
Toxicity to reproduction assessment :
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

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 additional significant adverse effects.

Aspiration Hazard
The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

2-methylpropan-1-ol

Acute toxicity (Acute oral toxicity)
LD50, Rat, female, 3,350 mg/kg OECD 401 or equivalent

Acute toxicity (Acute dermal toxicity)
In animals, effects have been reported on the following organs: Central nervous system.
LD50, Rabbit, male and female, > 2,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute toxicity (Acute inhalation toxicity)

Prolonged excessive exposure may cause adverse effects. Vapor may cause irritation of the upper respiratory tract (nose and throat). Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. May cause central nervous system effects.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.
May cause drying and flaking of the skin.
May cause more severe response on covered skin (under clothing, gloves).

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause moderate corneal injury.

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 predominantly negative. Animal genetic toxicity studies were negative.

Carcinogenicity
Available data are inadequate to evaluate carcinogenicity.

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

Assessment Teratogenicity:
Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

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
In animals, effects have been reported on the following organs:
Liver.
Central nervous system.
Observations in animals include:
Anesthetic or narcotic effects.

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

phenol

Acute toxicity (Acute oral toxicity)
Respiratory effects. Central nervous system effects. Acute toxicity estimate, human, 100 mg/kg Expert judgement

Acute toxicity estimate, human, 100 mg/kg Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Acute toxicity (Acute dermal toxicity)
LD50, Rat, 660 mg/kg OECD Test Guideline 402

Acute toxicity (Acute inhalation toxicity)
Acute toxicity estimate, dust/mist, 0.5 mg/l Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

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

Germ cell mutagenicity
Animal genetic toxicity studies were negative in some cases and positive in other cases. In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Carcinogenicity
Animal testing did not show any carcinogenic effects.

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

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

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

STOT - repeated exposure
In animals, effects have been reported on the following organs:
Kidney
Liver
Skin.
Nervous system.

Aspiration Hazard
No aspiration toxicity classification

formaldehyde

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

Acute toxicity (Acute dermal toxicity)
LD50, Rabbit, 270 mg/kg

Acute toxicity (Acute inhalation toxicity)
Acute toxicity estimate, gas, 100 ppm Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Respiratory or skin sensitisation
Has caused allergic skin reactions when tested in guinea pigs.

Did not cause allergic respiratory reaction in animal tests.

Germ cell mutagenicity
In vitro genetic toxicity studies were negative in some cases and positive in other cases.
Animal genetic toxicity studies were negative in some cases and positive in other cases.

Carcinogenicity
Animal experiments showed a statistically significant number of tumours.

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
May cause respiratory irritation.
Target Organs: Respiratory system

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

Aspiration Hazard
No aspiration toxicity classification

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.

butan-1-ol

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

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

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.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Respiratory or skin sensitisation
Did not demonstrate the potential for contact allergy in mice.

Germ cell mutagenicity
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Carcinogenicity
Animal testing did not show any carcinogenic effects.

Reproductive toxicity
Toxicity to reproduction assessment :
In animal studies, did not interfere with reproduction. Information given is based on data obtained from similar substances.

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

STOT - single exposure
May cause drowsiness or dizziness.
May cause respiratory irritation.
Target Organs: Central nervous system, Respiratory system

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

Aspiration Hazard
The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

2-ethoxy-1-methylethyl acetate

Acute toxicity (Acute oral toxicity)
LD50, Rat, > 5,000 mg/kg

Acute toxicity (Acute dermal toxicity)
For similar material(s): LD50, Rabbit, 20,000 mg/kg

Acute toxicity (Acute inhalation toxicity)
Prolonged excessive exposure may cause adverse effects.

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.
Corneal injury is unlikely.

Respiratory or skin sensitisation
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 predominantly negative.

No relevant data found.

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

Aspiration Hazard
May be harmful if swallowed and enters airways.

ethanol

Acute toxicity (Acute oral toxicity)
LD50, Rat, 10,470 mg/kg OECD Test Guideline 401

Acute toxicity (Acute dermal toxicity)
The dermal LD50 has not been determined.

Acute toxicity (Acute inhalation toxicity)
LC50, Rat, 4 Hour, vapour, 124.7 mg/l OECD Test Guideline 403

Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.

Respiratory or skin sensitisation
Did not cause allergic skin reactions when tested in guinea pigs.
Information given is based on data obtained from similar substances.

Did not cause allergic respiratory reaction in animal tests.

Germ cell mutagenicity
Animal genetic toxicity studies were negative in some cases and positive in other cases. In vitro genetic toxicity studies were predominantly negative. Information given is based on data obtained from similar substances.

Carcinogenicity
Animal testing did not show any carcinogenic effects. For similar material(s):

Reproductive toxicity
Toxicity to reproduction assessment :
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

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 additional significant adverse effects.

Aspiration Hazard
The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

phenol

Acute toxicity (Acute oral toxicity)
Respiratory effects. Central nervous system effects. Acute toxicity estimate, human, 100 mg/kg Expert judgement

Acute toxicity estimate, human, 100 mg/kg Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Acute toxicity (Acute dermal toxicity)
LD50, Rat, 660 mg/kg OECD Test Guideline 402

Acute toxicity (Acute inhalation toxicity)
Acute toxicity estimate, dust/mist, 0.5 mg/l Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

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

Germ cell mutagenicity
Animal genetic toxicity studies were negative in some cases and positive in other cases. In vitro genetic toxicity studies were negative in some cases and positive in other cases.

Carcinogenicity
Animal testing did not show any carcinogenic effects.

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

Assessment Teratogenicity:
Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

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

STOT - repeated exposure
In animals, effects have been reported on the following organs:
Kidney
Liver
Skin.
Nervous system.

Aspiration Hazard
No aspiration toxicity classification

formaldehyde

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

Acute toxicity (Acute dermal toxicity)
LD50, Rabbit, 270 mg/kg

Acute toxicity (Acute inhalation toxicity)
Acute toxicity estimate, gas, 100 ppm Acute toxicity estimate according to Regulation (EC) No. 1272/2008

Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Serious eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Respiratory or skin sensitisation
Has caused allergic skin reactions when tested in guinea pigs.

Did not cause allergic respiratory reaction in animal tests.

Germ cell mutagenicity
In vitro genetic toxicity studies were negative in some cases and positive in other cases.
Animal genetic toxicity studies were negative in some cases and positive in other cases.

Carcinogenicity
Animal experiments showed a statistically significant number of tumours.

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
May cause respiratory irritation.
Target Organs: Respiratory system

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

Aspiration Hazard
No aspiration toxicity classification

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.

n-butyl acetate
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

butan-1-ol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

2-ethoxy-1-methylethyl acetate
No data available

ethanol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

2-methylpropan-1-ol
Not classified due to inconclusive data.

phenol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

formaldehyde
Not classified due to inconclusive data.

n-butyl acetate
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

butan-1-ol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

2-ethoxy-1-methylethyl acetate
No data available

ethanol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

phenol
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

formaldehyde
Not classified due to inconclusive data.

Molybdenum disulfide
No data available

Graphite
Does not have endocrine disrupting properties.

Adverse effects: No adverse effects expected.

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

butan-1-ol

Acute toxicity to fish
Pimephales promelas (fathead minnow), 96 Hour, 1,376 mg/l, OECD Test Guideline 203 or Equivalent

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

Acute toxicity to algae/aquatic plants
EC50, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 225 mg/l, OECD Test Guideline 201
EC10, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 134 mg/l, OECD Test Guideline 201

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), 21 d, 4.1 mg/l

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

2-ethoxy-1-methylethyl acetate

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, Rainbow trout (Salmo gairdneri), semi-static test, 96 Hour, 140 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
Daphnia magna (Water flea), 48 Hour, 96 - 130 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Algae (Scenedesmus subspicatus), Static, 72 Hour, > 1,000 mg/l, OECD Test Guideline 201

Chronic toxicity to aquatic invertebrates
Based on data from similar materials
NOEC, Daphnia magna (Water flea), 21 d, >= 100 mg/l

ethanol

Acute toxicity to fish
LC50, Pimephales promelas (fathead minnow), 96 Hour, 15,300 mg/l

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), 48 Hour, 5,012 mg/l

Acute toxicity to algae/aquatic plants
EC50, Chlorella vulgaris (Fresh water algae), 96 Hour, 675 mg/l, OECD Test Guideline 201
NOEC, Chlorella vulgaris (Fresh water algae), 96 Hour, 86 mg/l, OECD Test Guideline 201

Chronic toxicity to fish
NOEC, Danio rerio (zebra fish), 120 Hour, 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), 10 d, 9.6 mg/l

2-methylpropan-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, 1,430 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia pulex (Water flea), static test, 48 Hour, 1,100 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 1,799 mg/l

Toxicity to bacteria
IC50, activated sludge, static test, 16 Hour, Growth inhibition, > 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, number of offspring, 20 mg/l
MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), 21 d, number of offspring, 28 mg/l

phenol

Acute toxicity to fish

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 8.9 mg/l

Acute toxicity to aquatic invertebrates
EC50, Ceriodaphnia dubia (water flea), 48 Hour, 3.1 mg/l

Acute toxicity to algae/aquatic plants
EC50, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 61.1 mg/l
NOEC, Skeletonema costatum (marine diatom), 120 Hour, 13 mg/l

Chronic toxicity to fish
NOEC, Fish, 60 d, 0.077 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 16 d, 0.16 mg/l

formaldehyde

Acute toxicity to fish
LC50, Pimephales promelas (fathead minnow), 96 Hour, 24.1 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia pulex (Water flea), 48 Hour, 5.8 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
EC50, Desmodesmus subspicatus (green algae), 72 Hour, 4.89 mg/l, OECD Test Guideline 201
NOEC, Raphidocelis subcapitata (freshwater green alga), 48 Hour, 1.06 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 1.04 mg/l

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

butan-1-ol

Acute toxicity to fish

Pimephales promelas (fathead minnow), 96 Hour, 1,376 mg/l, OECD Test Guideline 203 or Equivalent

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

Acute toxicity to algae/aquatic plants
EC50, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 225 mg/l, OECD Test Guideline 201
EC10, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 134 mg/l, OECD Test Guideline 201

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), 21 d, 4.1 mg/l

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

2-ethoxy-1-methylethyl acetate

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, Rainbow trout (Salmo gairdneri), semi-static test, 96 Hour, 140 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
Daphnia magna (Water flea), 48 Hour, 96 - 130 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Algae (Scenedesmus subspicatus), Static, 72 Hour, > 1,000 mg/l, OECD Test Guideline 201

Chronic toxicity to aquatic invertebrates
Based on data from similar materials
NOEC, Daphnia magna (Water flea), 21 d, >= 100 mg/l

ethanol

Acute toxicity to fish
LC50, Pimephales promelas (fathead minnow), 96 Hour, 15,300 mg/l

Acute toxicity to aquatic invertebrates
LC50, Ceriodaphnia dubia (water flea), 48 Hour, 5,012 mg/l

Acute toxicity to algae/aquatic plants
EC50, Chlorella vulgaris (Fresh water algae), 96 Hour, 675 mg/l, OECD Test Guideline 201
NOEC, Chlorella vulgaris (Fresh water algae), 96 Hour, 86 mg/l, OECD Test Guideline 201

Chronic toxicity to fish
NOEC, Danio rerio (zebra fish), 120 Hour, 1,000 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Ceriodaphnia dubia (water flea), 10 d, 9.6 mg/l

phenol

Acute toxicity to fish
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 8.9 mg/l

Acute toxicity to aquatic invertebrates
EC50, Ceriodaphnia dubia (water flea), 48 Hour, 3.1 mg/l

Acute toxicity to algae/aquatic plants
EC50, Raphidocelis subcapitata (freshwater green alga), 96 Hour, 61.1 mg/l
NOEC, Skeletonema costatum (marine diatom), 120 Hour, 13 mg/l

Chronic toxicity to fish
NOEC, Fish, 60 d, 0.077 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 16 d, 0.16 mg/l

formaldehyde

Acute toxicity to fish
LC50, Pimephales promelas (fathead minnow), 96 Hour, 24.1 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EC50, Daphnia pulex (Water flea), 48 Hour, 5.8 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
EC50, Desmodesmus subspicatus (green algae), 72 Hour, 4.89 mg/l, OECD Test Guideline 201
NOEC, Raphidocelis subcapitata (freshwater green alga), 48 Hour, 1.06 mg/l

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 1.04 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

butan-1-ol

Biodegradability: Readily biodegradable.

Biodegradation: 92 %
Exposure time: 20 d

2-ethoxy-1-methylethyl acetate

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

ethanol

Biodegradability: Readily biodegradable.

Biodegradation: 84 %
Exposure time: 20 d

2-methylpropan-1-ol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
10-day Window: Not applicable
Biodegradation: 90 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

phenol

Biodegradability: Readily biodegradable.

Biodegradation: 62 %
Exposure time: 4 d
Method: OECD Test Guideline 301C

formaldehyde

Biodegradability: Readily biodegradable.
Biodegradation: 99 %
Exposure time: 28 d
Method: OECD Test Guideline 301A

Theoretical Oxygen Demand: 1.07 mg/mg

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

butan-1-ol

Biodegradability: Readily biodegradable.

Biodegradation: 92 %
Exposure time: 20 d

2-ethoxy-1-methylethyl acetate

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

ethanol

Biodegradability: Readily biodegradable.

Biodegradation: 84 %
Exposure time: 20 d

phenol

Biodegradability: Readily biodegradable.

Biodegradation: 62 %
Exposure time: 4 d
Method: OECD Test Guideline 301C

formaldehyde

Biodegradability: Readily biodegradable.
Biodegradation: 99 %
Exposure time: 28 d
Method: OECD Test Guideline 301A

Theoretical Oxygen Demand: 1.07 mg/mg

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.

butan-1-ol

Bioaccumulation: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water(log Pow): 1 at 25 °C

2-ethoxy-1-methylethyl acetate

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.76 Calculated.
Bioconcentration factor (BCF): 3.16 Fish

ethanol

Bioaccumulation: Bioaccumulation is unlikely. Information given is based on data obtained from similar substances.
Partition coefficient: n-octanol/water(log Pow): ca.-0.35 at 24 °C OECD Test Guideline 107

2-methylpropan-1-ol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1 Measured
Bioconcentration factor (BCF): 2 Fish Estimated.

phenol

Bioaccumulation: Does not bioaccumulate.
Partition coefficient: n-octanol/water(log Pow): 1.5 at 25 °C
OECD Test Guideline 305C

formaldehyde

Bioaccumulation: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water(log Pow): 0.35 at 25 °C
Bioconcentration factor (BCF): < 1 estimated

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.

butan-1-ol

Bioaccumulation: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water(log Pow): 1 at 25 °C

2-ethoxy-1-methylethyl acetate

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.76 Calculated.
Bioconcentration factor (BCF): 3.16 Fish

ethanol

Bioaccumulation: Bioaccumulation is unlikely. Information given is based on data obtained from similar substances.
Partition coefficient: n-octanol/water(log Pow): ca.-0.35 at 24 °C OECD Test Guideline 107

phenol

Bioaccumulation: Does not bioaccumulate.
Partition coefficient: n-octanol/water(log Pow): 1.5 at 25 °C
OECD Test Guideline 305C

formaldehyde

Bioaccumulation: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water(log Pow): 0.35 at 25 °C
Bioconcentration factor (BCF): < 1 estimated

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

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Koc: 19 - 70
Method: Estimated.

butan-1-ol

No data available

2-ethoxy-1-methylethyl acetate

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Koc: 10
Method: OECD 121: HPLC Method

ethanol

No data available

2-methylpropan-1-ol

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Koc: 2
Method: Estimated.

phenol

No data available

formaldehyde

Mobility in soil: Substance is very mobile in soil (Log Koc < 2).
log Koc: 1.2
Method: estimated

n-butyl acetate

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Koc: 19 - 70
Method: Estimated.

butan-1-ol
No data available

2-ethoxy-1-methylethyl acetate
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Koc: 10
Method: OECD 121: HPLC Method

ethanol
No data available

phenol
No data available

formaldehyde
Mobility in soil: Substance is very mobile in soil (Log Koc < 2).
log Koc: 1.2
Method: estimated

Molybdenum disulfide
Mobility in soil: No relevant data found.

Graphite
Mobility in soil: 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
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

butan-1-ol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

2-ethoxy-1-methylethyl acetate
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

ethanol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

2-methylpropan-1-ol
Not persistent, bioaccumulative, and toxic (PBT).

Not very persistent and very bioaccumulative (vPvB).

phenol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

formaldehyde
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

n-butyl acetate
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

butan-1-ol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

2-ethoxy-1-methylethyl acetate
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

ethanol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

phenol
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

formaldehyde
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

Molybdenum disulfide
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).

Graphite
Not persistent, bioaccumulative, and toxic (PBT).
Not very persistent and very bioaccumulative (vPvB).
Not applicable to inorganic substances.

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.

n-butyl acetate

No data available

butan-1-ol
No data available

2-ethoxy-1-methylethyl acetate
No data available

ethanol
No data available

2-methylpropan-1-ol
No data available

phenol
No data available

formaldehyde
Not classified due to inconclusive data.

n-butyl acetate
No data available

butan-1-ol
No data available

2-ethoxy-1-methylethyl acetate
No data available

ethanol
No data available

phenol
No data available

formaldehyde
Not classified due to inconclusive data.

Molybdenum disulfide
No data available

Graphite
No data available

12.7 Other adverse effects

PMT and vPvM assessment

n-butyl acetate
Not persistent, mobile, and toxic (PMT).

Not very persistent and very mobile (vPvM).

butan-1-ol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

2-ethoxy-1-methylethyl acetate
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

ethanol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

2-methylpropan-1-ol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

phenol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

formaldehyde
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

n-butyl acetate
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

butan-1-ol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

2-ethoxy-1-methylethyl acetate
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

ethanol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

phenol
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

formaldehyde
Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

Molybdenum disulfide

Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).

Graphite

Not persistent, mobile, and toxic (PMT).
Not very persistent and very mobile (vPvM).
Not applicable to inorganic substances.

n-butyl acetate

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.

2-ethoxy-1-methylethyl acetate

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

ethanol

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

2-methylpropan-1-ol

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

phenol

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

formaldehyde

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

n-butyl acetate

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.

2-ethoxy-1-methylethyl acetate

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

ethanol

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

phenol

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

formaldehyde

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.(Ethanol, n-Butyl acetate)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Not considered environmentally hazardous based on available data.
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.(Ethanol, n-Butyl acetate)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Not considered as marine pollutant based on available data.
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.(Ethanol, n-Butyl acetate)

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.

Restrictions on the manufacture, placing on the market and use:
The following substance/s contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product have to comply with the restrictions placed upon it by the aforementioned provision.

CAS-No.: 50-00-0	Name: formaldehyde

Restriction status: listed in REACH Annex XVII
Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction
Number on the list: 28, 72, 77

CAS-No.: 50-00-0	Name: formaldehyde

Restriction status: listed in REACH Annex XVII
Restricted uses: See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction
Number on the list: 28, 72, 77

Commission Regulation (EU) 2023/2055 of 25 September 2023 amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards synthetic polymer microparticles (List number: 78)

The product contains synthetic polymer microparticles above the concentration limit, which confer a sought-after characteristic.

synthetic polymer microparticles (SPM) content: 4.2 %

Generic name
3905: Polymers of vinyl acetate or of other vinyl esters; other vinyl polymers

The synthetic polymer microparticles supplied is subject to conditions laid down by entry 78 of Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council

Please follow the instructions for use and disposal contained in this Safety Data Sheet to prevent releases of synthetic polymer microparticles to the environment.

For further information please refer to the regulation and relevant amendments.

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

P5c	FLAMMABLE LIQUIDS	Lower-tier Quantity:	5,000 t
		Upper-tier Quantity:	50,000 t

Further information
Take note of Directive 92/85/EEC regarding maternity protection 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.

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.

H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
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
Skin Irrit. - 2 - H315 - Calculation method
Eye Dam. - 1 - H318 - Calculation method
STOT SE - 3 - H336 - Calculation method

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

Legend

2004/37/EC	Europe. Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens, mutagens or reprotoxic substances at work - Annex III
2009/161/EU	Europe. COMMISSION DIRECTIVE 2009/161/EU establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
2019/1831/EU	Europe. Commission Directive 2019/1831/EU establishing a fifth list of indicative occupational exposure limit values
STEL	Short term exposure limit
TWA	Long term exposure limit
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard
Carc.	Carcinogenicity
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Muta.	Germ cell mutagenicity
Skin Corr.	Skin corrosion
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation
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 Harmonised 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 Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; 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 - Organisation 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.
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