



SAFETY DATA SHEET

SPECIALTY ELECTRONIC MATERIALS UK LIMITED

Safety Data Sheet according to REACH Regulation (EC) No 1907/2006, as amended by UK REACH

Product name: MOLYKOTE® 106 Anti-Friction Coating

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SPECIALTY ELECTRONIC MATERIALS UK LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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

1.1 Product identifier

Product name: MOLYKOTE® 106 Anti-Friction Coating

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

Identified uses: Electrical industry and electronics 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)-870-8200418

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

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Flammable liquids - Category 3 - H226

Skin irritation - Category 2 - H315

Serious eye damage - Category 1 - H318

Skin sensitisation - Category 1 - H317

Specific target organ toxicity - single exposure - Category 3 - H335

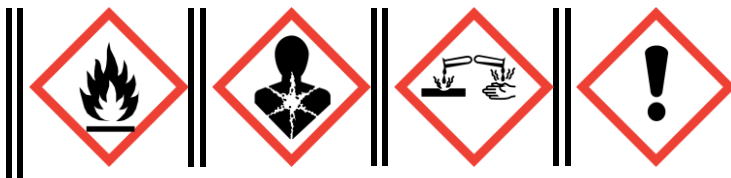
Specific target organ toxicity - single exposure - Category 3 - H336

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

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

2.2 Label elements

Hazard pictograms



Signal word: DANGER

Hazard statements

H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H373	May cause damage to organs (Kidney, Liver, Auditory system) through prolonged or repeated exposure if swallowed.

Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
	No smoking.
P260	Do not breathe mist or vapours.
P260	Do not breathe spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P305 + P351 + P338	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 The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 6.3014 %

Contains Reaction mass of ethylbenzene and xylene; butan-1-ol; Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100); formaldehyde

2.3 Other hazards

Static-accumulating flammable liquid.

Endocrine disrupting properties (human health):

This substance/mixture does not contain components considered to have endocrine disrupting properties for human health according to UK REACH Article 57(f) at levels of 0.1% or higher.

Endocrine disrupting properties (environment):

This substance/mixture does not contain components considered to have endocrine disrupting properties for environment according to UK REACH Article 57(f) at levels of 0.1% or higher.

PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Inorganic and organic compounds, dispersion

3.2 Mixtures

This product is a mixture.

Identification number	Component	Classification according to GB-CLP	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
CASRN – EC-No. – Index-No. – Registration number –	Reaction mass of ethylbenzene and xylene	Flam. Liq. 3 - H226 Acute Tox. 4 - H332 Acute Tox. 4 - H312 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 STOT SE 3 - H335 STOT SE 3 - H336 STOT RE 2 - H373 Asp. Tox. 1 - H304 Aquatic Chronic 3 - H412	Oral ATE: 3,523 mg/kg Inhalation ATE: 11 mg/l (vapour) Dermal ATE: 1,100 mg/kg	>= 20.0 - < 25.0 %
CASRN 71-36-3 EC-No. 200-751-6 Index-No. 603-004-00-6 Registration number –	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	>= 20.0 - < 30.0 %
CASRN 54839-24-6 EC-No. 259-370-9 Index-No. 603-177-00-8 Registration	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 %

number –				
CASRN 25068-38-6 EC-No. polymer Index-No. – Registration number –	Reaction product: Bisphenol A- (epichlorohydrin); epoxy resin (number average molecular weight 700-1100)	Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Skin Sens. 1 - H317	Eye Irrit.2; H319:C >= 5 % Skin Irrit.2; H315:C >= 5 % Oral ATE: > 2,000 mg/kg Dermal ATE: > 2,000 mg/kg	>= 5.0 - < 10.0 %
CASRN 67-56-1 EC-No. 200-659-6 Index-No. 603-001-00-X Registration number –	methanol	Flam. Liq. 2 - H225 Acute Tox. 3 - H301 Acute Tox. 3 - H331 Acute Tox. 3 - H311 STOT SE 1 - H370	STOT SE1; H370:C >= 10 % STOT SE2; H371:C 3 - < 10 % Oral ATE: 100 mg/kg Inhalation ATE: 3 mg/l (vapour) Dermal ATE: 300 mg/kg	>= 0.1 - < 1.0 %
CASRN 50-00-0 EC-No. 200-001-8 Index-No. 605-001-00-5 Registration number –	formaldehyde	Acute Tox. 3 - H301 Acute Tox. 2 - H330 Acute Tox. 3 - H311 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317 Muta. 2 - H341 Carc. 1B - H350 STOT SE 3 - H335	Eye Dam.1; H318:C >= 25 % 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 % Skin Sens.1; H317:C >= 0.2 % Oral ATE: 100 mg/kg Inhalation ATE: 463 ppm (gas) Dermal ATE: 270 mg/kg	< 0.1 %

Substances with a workplace exposure limit

Identification number	Component	Classification according to GB-CLP	specific concentration limit/ M-Factors/ Acute toxicity estimate	%
CASRN 1317-33-5 EC-No. 215-263-9 Index-No. – Registration number –	Molybdenum disulfide	Not classified	Oral ATE: > 2,000 mg/kg Dermal ATE: > 2,000 mg/kg	>= 10.0 - < 20.0 %
CASRN 7782-42-5 EC-No. 231-955-3 Index-No. – Registration number –	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 Chlorine compounds Nitrogen oxides (NO_x) Formaldehyde

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
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.		
methanol	GB EH40	TWA	266 mg/m3 200 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	333 mg/m3 250 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.		
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.		
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

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Reaction mass of ethylbenzene and xylene	Not Assigned	methyl hippuric acid	Urine	After shift	650 Millimoles per mole Creatinine	GB EH40 BAT

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: 64 °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

29.5 °C

Method: (Pensky-Martens closed cup)

Auto-ignition temperature

No data available

Decomposition temperature**Thermal decomposition**

No data available

pH

No data available

Viscosity**Viscosity, kinematic**> 20.5 mm²/s (25 °C)**Solubility(ies)****Water solubility**

No data available

Partition coefficient: n-octanol/water

No data available

Vapour pressure

No data available

Density and / or relative density**Relative density**

1.165

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.

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: Bisphenol A. Phenol.

SECTION 11: TOXICOLOGICAL INFORMATION

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

11.1 Information on toxicological effects**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, vapour, > 20 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

Skin sensitisation, Category 1

H317: May cause an allergic skin reaction.

Classification procedure: Calculation method

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

H335: May cause respiratory irritation.

Classification procedure: Calculation method

Specific target organ toxicity - single exposure, Category 3

H336: May cause drowsiness or dizziness.

Classification procedure: Calculation method

Product test data not available. Refer to component data.

STOT - repeated exposure

Specific target organ toxicity - repeated exposure, Category 2

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

Classification procedure: Calculation method

Product test data not available. Refer to component data.

Aspiration Hazard

Not classified

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

Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:

Reaction mass of ethylbenzene and xylene

Acute toxicity (Acute oral toxicity)

LD50, Rat, 3,523 mg/kg

Acute toxicity (Acute dermal toxicity)

LD50, Rabbit, > 4,200 mg/kg

Acute toxicity estimate, 1,100 mg/kg Acute toxicity estimate according to Regulation

Acute toxicity (Acute inhalation toxicity)

Acute toxicity estimate, 4 Hour, vapour, 11 mg/l

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

Vapor may cause skin irritation.

May cause drying and flaking of the skin.

Serious eye damage/eye irritation

May cause moderate eye irritation.

May cause slight temporary corneal injury.

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

Respiratory or skin sensitisation

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

Germ cell mutagenicity

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

Carcinogenicity

Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice.

Reproductive toxicity

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects. Available data are inadequate for evaluation of maternal toxicity.

STOT - single exposure

May cause respiratory irritation.

May cause drowsiness or dizziness.

Route of Exposure: Inhalation

Target Organs: Respiratory system, Central nervous system

STOT - repeated exposure

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

Blood.

Kidney.

Liver.

Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

Aspiration Hazard

May be fatal if swallowed and enters airways.

butan-1-ol**Acute toxicity (Acute oral toxicity)**

Acute toxicity estimate, 500 mg/kg Acute toxicity estimate according to Regulation

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.

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

Acute toxicity (Acute oral toxicity)

Single dose oral LD50 has not been determined. Typical for this family of materials. LD50, Rat, > 2,000 mg/kg Estimated.

Acute toxicity (Acute dermal toxicity)

The dermal LD50 has not been determined.

Typical for this family of materials. LD50, Rabbit, > 2,000 mg/kg

Acute toxicity (Acute inhalation toxicity)

The LC50 has not been determined.

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Prolonged contact may cause skin irritation with local redness.

Repeated contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause slight eye irritation.

Corneal injury is unlikely.

Solid or dust may cause irritation or corneal injury due to mechanical action.

Respiratory or skin sensitisation

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

Germ cell mutagenicity

Some similar resins have shown genetic toxicity in in vitro tests, while others have not.

Carcinogenicity

Similar epoxy resin did not cause cancer in long-term animal studies.

Reproductive toxicity

Toxicity to reproduction assessment :

No relevant data found.

Assessment Teratogenicity:

No relevant data found.

STOT - repeated exposure

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

Aspiration Hazard

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

methanol**Acute toxicity (Acute oral toxicity)**

Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart. Effects may be delayed. LD50, Rat, > 5,000 mg/kg

Lethal Dose, Humans, 340 mg/kg Estimated.

Lethal Dose, Humans, 29 - 237 ml Estimated.

Acute toxicity estimate, 100 mg/kg Acute toxicity estimate according to Regulation

Acute toxicity (Acute dermal toxicity)

Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death. Acute toxicity estimate, 300 mg/kg

Acute toxicity (Acute inhalation toxicity)

Easily attainable vapor concentrations may cause serious adverse effects, even death. At lower concentrations: May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death. Effects may be delayed.

Acute toxicity estimate, Not tested on animals, 4 Hour, vapour, 3 mg/l

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

May cause eye irritation.

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

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

Carcinogenicity

Did not cause cancer in laboratory animals.

Reproductive toxicity

Toxicity to reproduction assessment :

In animal studies, did not interfere with reproduction.

Assessment Teratogenicity:

Has caused birth defects in lab animals at high doses. There is no evidence that these findings are relevant to humans.

STOT - single exposure

Causes damage to organs.

Route of Exposure: Oral

Target Organs: Eyes, Central nervous system

STOT - repeated exposure

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

Aspiration Hazard

May be harmful if swallowed and enters airways.

formaldehyde

Acute toxicity (Acute oral toxicity)

Acute toxicity estimate, Not tested on animals, 100 mg/kg Acute toxicity estimate according to Regulation

Acute toxicity (Acute dermal toxicity)

LD50, Rabbit, 270 mg/kg

Acute toxicity (Acute inhalation toxicity)

LC50, Rat, 4 Hour, gas, 463 ppm OECD Test Guideline 403

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

Further information

No data available

SECTION 12: ECOLOGICAL INFORMATION

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

12.1 Toxicity

Reaction mass of ethylbenzene and xylene

Acute toxicity to fish

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2.6 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, 3.82 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EC50, Selenastrum capricornutum (fresh water algae), 72 Hour, 4.9 mg/l

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate, 0.44 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to fish

NOEC, Oncorhynchus mykiss (rainbow trout), flow-through, 56 d, mortality, > 1.3 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, 1.57 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 practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
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

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)**Acute toxicity to fish**

Based on information for a similar material:
Not expected to be acutely toxic, but may cause adverse effects by physical/mechanical means.

methanol**Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Bluegill sunfish (*Lepomis macrochirus*), flow-through test, 96 Hour, 15,400 mg/l

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), 48 Hour, 18,260 mg/l

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), 96 Hour, Growth rate, 22,000 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

IC50, activated sludge, 3 Hour, Respiration rates., > 1,000 mg/l, OECD Test Guideline 209

Chronic toxicity to fish

NOEC, Pimephales promelas (fathead minnow), 28 d, 446 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, 208 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

Toxicity to bacteria

EC50, activated sludge, 3 Hour, 19.6 mg/l, OECD 209 Test

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), 21 d, 1.04 mg/l

Molybdenum disulfide

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

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**Reaction mass of ethylbenzene and xylene**

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Pass

Biodegradation: 87.8 %

Exposure time: 28 d

Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 19.7 Hour

Method: Estimated.

butan-1-ol

Biodegradability: Readily biodegradable.

Biodegradation: 92 %

Exposure time: 20 d

Theoretical Oxygen Demand: 2.59 mg/mg Estimated.

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 55.9 Hour

Method: Estimated.

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

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

Biodegradability: This water-insoluble polymeric solid is expected to be inert in the environment. Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

methanol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 82.7 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	72 %
20 d	79 %

Photodegradation

Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals
Atmospheric half-life: 8 - 18 d
Method: Estimated.

formaldehyde

Biodegradability: Readily biodegradable.

Biodegradation: 99 %
Exposure time: 28 d
Method: OECD Test Guideline 301A

Theoretical Oxygen Demand: 1.07 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	> 100 %
10 d	> 100 %
20 d	> 100 %

Photodegradation

Test Type: Half-life (indirect photolysis)
Sensitization: OH radicals

Atmospheric half-life: 15.8 Hour

Method: Estimated.

Molybdenum disulfide

Biodegradability: Biodegradability is not applicable to inorganic substances.

Graphite

Biodegradability: Not applicable

12.3 Bioaccumulative potential

Reaction mass of ethylbenzene and xylene

Bioaccumulation: Does not bioaccumulate.

Partition coefficient: n-octanol/water(log Pow): 3.16 at 20 °C

Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

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

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

Partition coefficient: n-octanol/water(log Pow): ca.3 at 25 °C

methanol

Bioaccumulation: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water(log Pow): -0.77

Bioconcentration factor (BCF): < 10 Leuciscus idus (Golden orfe) Measured

formaldehyde

Bioaccumulation: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water(log Pow): 0.35 at 25 °C

Molybdenum disulfide

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

Graphite

Bioaccumulation: Not applicable Not applicable

12.4 Mobility in soil

Reaction mass of ethylbenzene and xylene

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).

Koc: 443

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

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

No data available

methanol

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

Koc: 0.44

Method: Estimated.

formaldehyde

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

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Koc: 1

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.

Reaction mass of ethylbenzene and xylene

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

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

butan-1-ol

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

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

2-ethoxy-1-methylethyl acetate

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

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

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

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

methanol

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

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

formaldehyde

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

Molybdenum disulfide

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

Graphite

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

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

12.6 Other adverse effects**Reaction mass of ethylbenzene and xylene**

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.

Reaction product: Bisphenol A-(epichlorohydrin); epoxy resin (number average molecular weight 700-1100)

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

methanol

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	UN 1993
14.2	UN proper shipping name	FLAMMABLE LIQUID, N.O.S.(Ethylbenzene, Butan-1-ol)
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	UN 1993
14.2	UN proper shipping name	FLAMMABLE LIQUID, N.O.S.(Ethylbenzene, Butan-1-ol)
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	Transport in bulk according to Annex II of Marpol and the IBC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

14.1	UN number	UN 1993
14.2	UN proper shipping name	Flammable liquid, n.o.s.(Ethylbenzene, Butan-1-ol)
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

UK REACH List of restrictions (Annex 17)

The following substance/s contained in this product is/are subject through Annex XVII of UK 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.: 67-56-1	Name: methanol
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Restriction status: listed in UK REACH Annex XVII

Restricted uses: See UK Restrictions under REACH (<https://www.hse.gov.uk/reach/list-of-restrictions.xlsx>)

Number on the list: 69

CAS-No.: 50-00-0	Name: formaldehyde
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Restriction status: listed in UK REACH Annex XVII

Restricted uses: See UK Restrictions under REACH (<https://www.hse.gov.uk/reach/list-of-restrictions.xlsx>)

Number on the list: 28, 72

Major Accident Hazard Legislation

Control of Major Accident Hazards Regulations 2015 (COMAH)

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

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.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H312	Harmful 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.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H370	Causes damage to organs.
H373	May cause damage to organs through prolonged or repeated exposure if swallowed.
H412	Harmful to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and subsequent amendments

Flam. Liq. - 3 - H226 - Based on product data or assessment

Skin Irrit. - 2 - H315 - Calculation method

Eye Dam. - 1 - H318 - Calculation method

Skin Sens. - 1 - H317 - Calculation method

STOT SE - 3 - H335 - Calculation method

STOT SE - 3 - H336 - Calculation method

|| STOT RE - 2 - H373 - 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

GB EH40	UK. EH40 WEL - Workplace Exposure Limits
GB EH40 BAT	UK. Biological monitoring guidance values
STEL	Short-term exposure limit (15-minute reference period)
TWA	Long-term exposure limit (8-hour TWA reference period)
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration 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

GB CLP - REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, UK SI 2020/1567, and subsequent amendments; UK-REACH - REACH Regulation (EC) No 1907/2006, as amended by UK REACH, UK SI 2019/758 and subsequent amendments; ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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

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GB