

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

### 1.1. Product identifier

**Product Description:** Borane-dimethyl sulfide complex  
**Cat No. :** L07705  
**Synonyms** BMS; Dimethyl sulfideborane  
**Molecular Formula** C2 H9 B S

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

**Recommended Use** Laboratory chemicals.  
**Uses advised against** No Information available

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

**Company**  
 Avocado Research Chemicals Ltd.  
 (Part of Thermo Fisher Scientific)  
 Shore Road, Heysham  
 Lancashire, LA3 2XY,  
 United Kingdom  
 Office Tel: +44 (0) 1524 850506  
 Office Fax: +44 (0) 1524 850608

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11  
 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

##### Physical hazards

Flammable liquids	Category 2 (H225)
Substances/mixtures which, in contact with water, emit flammable gases	Category 1 (H260)

##### Health hazards

Acute oral toxicity	Category 3 (H301)
Acute dermal toxicity	Category 3 (H311)
Skin Corrosion/Irritation	Category 2 (H315)

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Serious Eye Damage/Eye Irritation  
Reproductive Toxicity

Category 1 (H318)  
Category 1B (H360FD)

## Environmental hazards

Chronic aquatic toxicity

Category 3 (H412)

Full text of Hazard Statements: see section 16

## 2.2. Label elements



Signal Word

Danger

## Hazard Statements

H225 - Highly flammable liquid and vapor  
H260 - In contact with water releases flammable gases which may ignite spontaneously  
H301 + H311 - Toxic if swallowed or in contact with skin  
H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H360FD - May damage fertility. May damage the unborn child  
H412 - Harmful to aquatic life with long lasting effects  
EUH014 - Reacts violently with water

## Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
P231 + P232 - Handle and store contents under inert gas. Protect from moisture  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P310 - Immediately call a POISON CENTER or doctor/physician

## Additional EU labelling

Restricted to professional users

## 2.3. Other hazards

Reacts violently with water  
This product does not contain any known or suspected endocrine disruptors  
Toxic to terrestrial vertebrates

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Component	CAS No	EC No	Weight %	GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567
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Boron, trihydro[thiobis[methane]]-, (T-4)-	13292-87-0	EEC No. 236-313-6	>=94	Flam. Liq. 2 (H225) Water-react. 1 (H260) Acute Tox. 3 (H301) Acute Tox. 3 (H311) Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Repr. 1B (H360FD) Aquatic Chronic 3 (H412) (EUH014)
Dimethyl sulfide	75-18-3	EEC No. 200-846-2	3-6	Flam. Liq. 2 (H225) Eye Irrit. 2 (H319)

Full text of Hazard Statements: see section 16

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

<b>General Advice</b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
<b>Eye Contact</b>	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Inhalation</b>	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
<b>Self-Protection of the First Aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

### 4.2. Most important symptoms and effects, both acute and delayed

Causes severe eye damage. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Gastrointestinal discomfort

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

<b>Notes to Physician</b>	Treat symptomatically. Symptoms may be delayed.
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## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

#### Suitable Extinguishing Media

CO<sub>2</sub>, dry chemical, dry sand, alcohol-resistant foam. Water mist may be used to cool closed containers.

#### Extinguishing media which must not be used for safety reasons

Water.

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

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Flammable. Reacts violently with water. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

## Hazardous Combustion Products

Hydrogen, Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides, Oxides of boron, Hydrogen chloride gas.

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

### 6.2. Environmental precautions

Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

### 6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Do not expose spill to water. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water. Handle under an inert atmosphere. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

### 7.2. Conditions for safe storage, including any incompatibilities

Refrigerator/flammables. Keep under nitrogen. Keep away from heat, sparks and flame. Keep from any possible contact with water. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from water or moist air. Protect from moisture.

**Technical Rules for Hazardous Substances (TRGS) 510**  
**Storage Class (LGK) (Germany)**

Class 4.3

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## 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### Exposure limits

List source(s): IRE - 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

Component	The United Kingdom	European Union	Ireland
Dimethyl sulfide			TWA: 10 ppm 8 hr. STEL: 30 ppm 15 min

#### Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Dimethyl sulfide 75-18-3 ( 3-6 )				DNEL = 17.5mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Dimethyl sulfide 75-18-3 ( 3-6 )				DNEL = 12.3mg/m <sup>3</sup>

#### Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Dimethyl sulfide 75-18-3 ( 3-6 )	PNEC = 0.029mg/L	PNEC = 0.12mg/kg sediment dw	PNEC = 0.29mg/L	PNEC = 0.2mg/L	PNEC = 0.0072mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Dimethyl sulfide 75-18-3 ( 3-6 )	PNEC = 0.0029mg/L	PNEC = 0.012mg/kg sediment dw			

### 8.2. Exposure controls

#### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

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## Personal protective equipment

### Eye Protection

Goggles (European standard - EN 166)

### Hand Protection

Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Nitrile rubber	See manufacturers	-	EN 374	(minimum requirement)
Viton (R)	recommendations			

### Skin and body protection

Long sleeved clothing.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

### Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

**Recommended Filter type:** low boiling organic solvent Type AX Brown conforming to EN371 or Organic gases and vapours filter Type A Brown conforming to EN14387

### Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

When RPE is used a face piece Fit Test should be conducted

### Environmental exposure controls

Prevent product from entering drains.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Amber	
Odor	pungent	
Odor Threshold	No data available	
Melting Point/Range	-40 - -37 °C / -40 - -34.6 °F	
Softening Point	No data available	
Boiling Point/Range	No information available	
Flammability (liquid)	Highly flammable	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	No data available	
Flash Point	3 °C / 37.4 °F	Method - No information available
Autoignition Temperature	91 °C / 195.8 °F	
Decomposition Temperature	44 °C	
pH	No information available	
Viscosity	No data available	
Water Solubility	Reacts violently with water	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		

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<b>Component</b>	<b>log Pow</b>	
Dimethyl sulfide	0.84	
<b>Vapor Pressure</b>	19.1 mmHg @ 22.2 °C	
<b>Density / Specific Gravity</b>	0.790	
<b>Bulk Density</b>	Not applicable	Liquid
<b>Vapor Density</b>	No information available	(Air = 1.0)
<b>Particle characteristics</b>	Not applicable (liquid)	

## 9.2. Other information

<b>Molecular Formula</b>	C2 H9 B S
<b>Molecular Weight</b>	75.95
<b>Explosive Properties</b>	Vapors may form explosive mixtures with air
<b>Substances/mixtures which, in contact with water, emit flammable gases</b>	Emitted gas ignites spontaneously

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Yes

### 10.2. Chemical stability

Reacts violently with water, liberating extremely flammable gases. Moisture sensitive.

### 10.3. Possibility of hazardous reactions

<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing. Reacts violently with water.

### 10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Incompatible products. Exposure to moist air or water. Exposure to moisture.

### 10.5. Incompatible materials

Acids. Water. Alcohols. Acid anhydrides. Acid chlorides.

### 10.6. Hazardous decomposition products

Hydrogen. Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Sulfur oxides. Oxides of boron. Hydrogen chloride gas.

## SECTION 11: TOXICOLOGICAL INFORMATION

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

#### Product Information

#### (a) acute toxicity;

<b>Oral</b>	Category 3
<b>Dermal</b>	Category 3
<b>Inhalation</b>	Based on available data, the classification criteria are not met

#### Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Boron, trihydro[thiobis[methane]]-, (T-4)-	<500 mg/kg (Rat)	>2000 mg/kg (Rabbit)	-
Dimethyl sulfide	> 2000 mg/kg ( Rat )	>5000 mg/kg ( Rabbit )	LC50 = 40250 ppm ( Rat ) 4 h

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(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory No data available  
Skin No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Category 1B

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs None known.

(j) aspiration hazard; No data available

**Symptoms / effects, both acute and delayed** Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Gastrointestinal discomfort.

## 11.2. Information on other hazards

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### Ecotoxicity effects

Do not empty into drains. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment. Reacts with water so no ecotoxicity data for the substance is available.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Dimethyl sulfide	LC50: = 213 mg/L, 96h semi-static (Oncorhynchus mykiss)	EC50: = 23 mg/L, 48h (Daphnia pulex)	

**12.2. Persistence and degradability** No information available

**Persistence** Persistence is unlikely, based on information available.



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**Degradability**  
**Degradation in sewage treatment plant**

Reacts with water.  
Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants. Reacts violently with water.

**12.3. Bioaccumulative potential**

Product does not bioaccumulate due to reaction with water

Component	log Pow	Bioconcentration factor (BCF)
Dimethyl sulfide	0.84	No data available

**12.4. Mobility in soil**

Reacts violently with water . Is not likely mobile in the environment.

**12.5. Results of PBT and vPvB assessment**

Reacts violently with water.

**12.6. Endocrine disrupting properties**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects**  
**Persistent Organic Pollutant**  
**Ozone Depletion Potential**

This product does not contain any known or suspected substance

This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods**

**Waste from Residues/Unused Products**

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging**

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**European Waste Catalogue (EWC)**

According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information**

Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Do not let this chemical enter the environment.

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

**14.1. UN number**

UN3399

**14.2. UN proper shipping name**

ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE

**Technical Shipping Name**

Boron, trihydro[thiobis[methane]]-, (T-4)-, Dimethyl sulfide

**14.3. Transport hazard class(es)**

4.3

**Subsidiary Hazard Class**

3

**14.4. Packing group**

I

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## ADR

14.1. UN number	UN3399
14.2. UN proper shipping name	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
Technical Shipping Name	Boron, trihydro[thiobis[methane]]-, (T-4)-, Dimethyl sulfide
14.3. Transport hazard class(es)	4.3
Subsidiary Hazard Class	3
14.4. Packing group	I

## IATA

14.1. UN number	UN3399
14.2. UN proper shipping name	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
Technical Shipping Name	Boron, trihydro[thiobis[methane]]-, (T-4)-, Dimethyl sulfide
14.3. Transport hazard class(es)	4.3
Subsidiary Hazard Class	3
14.4. Packing group	I

14.5. Environmental hazards	No hazards identified
14.6. Special precautions for user	No special precautions required.
14.7. Maritime transport in bulk according to IMO instruments	Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Boron, trihydro[thiobis[methane]]-, (T-4)-	13292-87-0	236-313-6	-	-	X	X	2008-1-560	-	X
Dimethyl sulfide	75-18-3	200-846-2	-	-	X	X	KE-33766	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Boron, trihydro[thiobis[methane]]-, (T-4)-	13292-87-0	X	ACTIVE	-	X	-	X	-
Dimethyl sulfide	75-18-3	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

Authorisation/Restrictions according to EU REACH Not applicable

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Boron, trihydro[thiobis[methane]]-, (T-4)-	13292-87-0	-	-	-
Dimethyl sulfide	75-18-3	-	-	-

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## Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Boron, trihydro[thiobis[methane]]-, (T-4)-	13292-87-0	Not applicable	Not applicable
Dimethyl sulfide	75-18-3	Not applicable	Not applicable

## Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

## Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

## National Regulations

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

## WGK Classification

Water endangering class = 1 (self classification)

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Boron, trihydro[thiobis[methane]]-, (T-4)-	WGK1	
Dimethyl sulfide	WGK1	

## 15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

## SECTION 16: OTHER INFORMATION

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

H260 - In contact with water releases flammable gases which may ignite spontaneously

H301 - Toxic if swallowed

H311 - Toxic in contact with skin

H315 - Causes skin irritation

H318 - Causes serious eye damage

H360FD - May damage fertility. May damage the unborn child

H360Fd - May damage fertility. Suspected of damaging the unborn child

H412 - Harmful to aquatic life with long lasting effects

EUH014 - Reacts violently with water

H225 - Highly flammable liquid and vapor

H319 - Causes serious eye irritation

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## Legend

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer  
Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:**

**Physical hazards** On basis of test data

**Health Hazards** Calculation method

**Environmental hazards** Calculation method

## Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

**Prepared By** Health, Safety and Environmental Department

**Creation Date** 22-Sep-2009

**Revision Date** 05-Mar-2025

**Revision Summary** SDS sections updated.

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

## Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**