



## BETANAL FLOW

Version 2 / IRL  
102000000753

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Revision Date: 15.01.2025  
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### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifier

**Trade name** BETANAL FLOW  
**UFI** Y6D0-10SE-4009-SCTJ  
**Product code (UVP)** 05942667

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

**Use** Herbicide

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

**Supplier** Bayer CropScience Ltd  
Bayer Ltd  
1st Floor, The Grange Offices  
The Grange, Brewery Road  
Stillorgan  
A94 H2K7 Co. Dublin  
Ireland

**Telephone** +353 1 216 3300

**Responsible Department** Email: [gb-bcs-crop-regulatory-affairs@bayer.com](mailto:gb-bcs-crop-regulatory-affairs@bayer.com)

#### 1.4 Emergency telephone no.

**Emergency telephone no.** +44 330 678 3382 (24 hr) (charged as a standard international call to the UK)

For Medical Professionals and Members of the Public:  
You can also contact the relevant NPIS.

National Poisons Information Centre Dublin: 01 809 2166

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### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

**Classification in accordance with Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, as amended.**

Eye irritation: Category 2  
H319 Causes serious eye irritation.

Short-term (acute) aquatic hazard: Category 1  
H400 Very toxic to aquatic life.

Long-term (chronic) aquatic hazard: Category 1



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H410 Very toxic to aquatic life with long lasting effects.

### 2.2 Label elements

**Labelling in accordance with Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, as amended.**

Hazard label for supply/use required.

**Hazardous components which must be listed on the label:**

- Phenmedipham



**Signal word:** Warning

### Hazard statements

H410 Very toxic to aquatic life with long lasting effects.  
H319 Causes serious eye irritation.  
EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

### Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P391 Collect spillage.  
P501 Dispose of contents/container to a licensed hazardous waste disposal contractor or collection site, except for triple rinsed empty containers which can be disposed of as non-hazardous waste.

### 2.3 Other hazards

No additional hazards known beside those mentioned.

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

Ecological information: 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.

Toxicological information: 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.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2 Mixtures

#### Chemical nature

Suspo-emulsion (SE)  
Phenmedipham 160 g/l



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### Hazardous components

Hazard statements according to Regulation (EC) No. 1272/2008

Name	CAS-No. / EC-No. / REACH Reg. No.	Classification	Conc. [%]
		REGULATION (EC) No 1272/2008	
Phenmedipham	13684-63-4 237-199-0	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	15.84
Alcohols, C11-14-iso-, C13-rich, ethoxylated	78330-21-9	Acute Tox. 4, H302 Eye Dam. 1, H318 Aquatic Chronic 3, H412	> 1 – < 3
Docusate sodium	577-11-7 209-406-4 01-2119491296-29-xxxx	Eye Dam. 1, H318 Skin Irrit. 2, H315	> 1 – < 3
1,2-Propanediol	57-55-6 200-338-0 01-2119456809-23-XXXX	Not classified	> 1

### Further information

Phenmedipham	13684-63-4	M-Factor: 10 (acute), 10 (chronic)
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For the full text of the H-Statements mentioned in this Section, see Section 16.

### Particle characteristics

This substance/ mixture does not contain nanoforms

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

Call a physician or poison control center immediately. Remove contaminated clothing immediately and dispose of safely.

Move out of dangerous area. Place and transport victim in stable position (lying sideways). Remove contaminated clothing immediately and dispose of safely.

#### Inhalation

Move to fresh air. Keep patient warm and at rest. Call a physician or poison control center immediately.

#### Skin contact

Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. If symptoms persist, call a physician.

#### Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

#### Ingestion

Rinse mouth. Do NOT induce vomiting. Call a physician or poison control center immediately.

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



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<b>Symptoms</b>	If large amounts are ingested, the following symptoms may occur: lethargy  Symptoms and hazards refer to effects observed after intake of significant amounts of the active ingredient(s).
<b>4.3 Indication of any immediate medical attention and special treatment needed</b>	
<b>Risks</b>	This product, although being a carbamate, is NOT a cholinesterase inhibitor.
<b>Treatment</b>	Treat symptomatically. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. There is no specific antidote. Forced alkaline diuresis and hemodialysis may be considered.

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## SECTION 5: FIREFIGHTING MEASURES

### 5.1 Extinguishing media

**Suitable** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**5.2 Special hazards arising from the substance or mixture** In the event of fire the following may be released: Hydrogen cyanide (hydrocyanic acid), Carbon monoxide (CO), Nitrogen oxides (NO<sub>x</sub>)

### 5.3 Advice for firefighters

**Special protective equipment for firefighters** In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.

**Further information** Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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

**Precautions** Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.

**6.2 Environmental precautions** Do not allow to get into surface water, drains and ground water.

### 6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Clean contaminated floors and objects thoroughly, observing environmental regulations. Keep in suitable, closed containers for disposal.

**6.4 Reference to other sections** Information regarding safe handling, see section 7.  
Information regarding personal protective equipment, see section 8.  
Information regarding waste disposal, see section 13.



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### SECTION 7: HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

- Advice on safe handling** Use only in area provided with appropriate exhaust ventilation.
- Advice on protection against fire and explosion** Keep away from heat and sources of ignition.
- Hygiene measures** Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Remove soiled clothing immediately and clean thoroughly before using again. Garments that cannot be cleaned must be destroyed (burnt).

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

- Requirements for storage areas and containers** Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in a place accessible by authorized persons only. Keep away from direct sunlight. Protect from freezing.
- Advice on common storage** Keep away from food, drink and animal feedingstuffs.
- Suitable materials** HDPE (high density polyethylene)
- 7.3 Specific end use(s)** Refer to the label and/or leaflet.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Phenmedipham	13684-63-4	1.5 mg/m <sup>3</sup> (TWA)		OES BCS*
1,2-Propanediol (Particulate.)	57-55-6	10 mg/m <sup>3</sup> (TWA)	01 2020	ELV (IE)
1,2-Propanediol (Total vapour and particulates.)	57-55-6	470 mg/m <sup>3</sup> /150 ppm (TWA)	01 2020	ELV (IE)

\*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

#### 8.2 Exposure controls

##### Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

##### Respiratory protection

Respiratory protection is not required under anticipated circumstances of exposure.  
Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's



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instructions regarding wearing and maintenance.

### Hand protection

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0.4 mm
Protective index	Class 6
Directive	Protective gloves complying with EN 374.

### Eye protection

Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

### Skin and body protection

Wear standard coveralls and Category 3 Type 6 suit.

If there is a risk of significant exposure, consider a higher protective type suit.

Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

If chemical protection suit is splashed, sprayed or significantly contaminated, decontaminate as far as possible, then carefully remove and dispose of as advised by manufacturer.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Form	Liquid
Colour	white to beige
Odour	weak, aromatic
Odour Threshold	No data available
Melting point/ range	No data available
Boiling Point	No data available
Flammability	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Flash point	> 100 °C
Auto-ignition temperature	450 °C
Ignition temperature	The product is not self-ignitable.



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<b>Thermal decomposition</b>	> 260 °C
<b>Self-accelarating decomposition temperature (SADT)</b>	No data available
<b>pH</b>	3.0 - 7.0 (10 %) (23 °C) (deionized water)
<b>Viscosity, dynamic</b>	141 mPa.s (20 °C) Velocity gradient 20 /s 88 mPa.s (20 °C) Velocity gradient 100 /s
<b>Viscosity, kinematic</b>	No data available
<b>Water solubility</b>	dispersible
<b>Partition coefficient: n-octanol/water</b>	Phenmedipham: log Pow: 3.59
<b>Surface tension</b>	31 mN/m (25 °C) Determined in the undiluted form.
<b>Vapour pressure</b>	No data available
<b>Density</b>	ca. 1.01 g/cm <sup>3</sup> (20 °C)
<b>Relative density</b>	No data available
<b>Relative vapour density</b>	No data available
<b>Assessment nano particles</b>	This substance/ mixture does not contain nanoforms
<b>Particle size</b>	No data available
<b>9.2 Other information</b>	
<b>Explosivity</b>	Not explosive
<b>Oxidizing properties</b>	No oxidizing properties
<b>Evaporation rate</b>	No data available
<b>Other physico-chemical properties</b>	Further safety related physical-chemical data are not known.

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## SECTION 10: STABILITY AND REACTIVITY

<b>10.1 Reactivity</b>	Stable under normal conditions.
<b>10.2 Chemical stability</b>	Stable under recommended storage conditions.
<b>10.3 Possibility of hazardous reactions</b>	No hazardous reactions when stored and handled according to prescribed instructions.



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- 10.4 Conditions to avoid** Extremes of temperature and direct sunlight.
- 10.5 Incompatible materials** Store only in the original container.
- 10.6 Hazardous decomposition products** No decomposition products expected under normal conditions of use.

## SECTION 11: TOXICOLOGICAL INFORMATION

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

- Acute oral toxicity** LD50 (Rat) > 2,000 mg/kg  
Test conducted with a similar formulation.
- Acute inhalation toxicity** During intended and foreseen applications, no respirable aerosol is formed.
- Acute dermal toxicity** LD50 (Rat) > 2,000 mg/kg  
Test conducted with a similar formulation.
- Skin corrosion/irritation** Slight irritant effect - does not require labelling. (Rabbit)  
Test conducted with a similar formulation.
- Serious eye damage/eye irritation** Irritating to eyes.  
Calculation method
- Respiratory or skin sensitisation** Skin: Non-sensitizing. (Guinea pig)  
OECD Test Guideline 406, Buehler test  
Test conducted with a similar formulation.

#### Assessment STOT Specific target organ toxicity – single exposure

Phenmedipham: Based on available data, the classification criteria are not met.

#### Assessment STOT Specific target organ toxicity – repeated exposure

Phenmedipham caused haemolytic anaemia, methaemoglobinaemia in animal studies. The observed effects do not appear to be relevant for humans.

#### Assessment mutagenicity

Phenmedipham was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.

#### Assessment carcinogenicity

Phenmedipham was not carcinogenic in lifetime feeding studies in rats and mice.

#### Assessment toxicity to reproduction

Phenmedipham caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Phenmedipham is related to parental toxicity.

#### Assessment developmental toxicity

Phenmedipham caused developmental toxicity only at dose levels toxic to the dams. Phenmedipham caused a delayed ossification of foetuses. The developmental effects seen with Phenmedipham are





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related to maternal toxicity.

### Aspiration hazard

Based on available data, the classification criteria are not met.

### Further information

No further toxicological information is available.

### 11.2 Information on other hazards

#### Endocrine disrupting properties

##### Assessment

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.

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## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

#### Toxicity to fish

LC50 (Oncorhynchus mykiss (rainbow trout)) 8.4 mg/l  
Exposure time: 96 h  
Test conducted with a similar formulation.

LC50 (Oncorhynchus mykiss (rainbow trout)) 1.84 mg/l  
Exposure time: 96 h  
The value mentioned relates to the active ingredient phenmedipham.

#### Chronic toxicity to fish

Oncorhynchus mykiss (rainbow trout)  
NOEC: 0.096 mg/l  
Exposure time: 92 d  
The value mentioned relates to the active ingredient phenmedipham.

Oncorhynchus mykiss (rainbow trout)  
NOEC: 0.0041 mg/l  
Exposure time: 92 d  
The value mentioned relates to the active ingredient phenmedipham.

#### Toxicity to aquatic invertebrates

EC50 (Daphnia magna (Water flea)) 0.5 mg/l  
Exposure time: 48 h  
The value mentioned relates to the active ingredient phenmedipham.

#### Chronic toxicity to aquatic invertebrates

(Daphnia magna (Water flea)): 0.005 mg/l  
Exposure time: 28 d  
The value mentioned relates to the active ingredient phenmedipham.

#### Toxicity to aquatic plants

EC50 (Raphidocelis subcapitata (freshwater green alga)) 0.086 mg/l  
Growth rate; Exposure time: 72 h  
Test conducted with a similar formulation.

EC10 (Myriophyllum spicatum (Eurasian watermilfoil)) 0.028 mg/l  
Biomass; Exposure time: 14 d  
The value mentioned relates to the active ingredient phenmedipham.



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EC10 (Myriophyllum spicatum (Eurasian watermilfoil)) 0.0208 mg/l  
Growth rate; Exposure time: 14 d  
The value mentioned relates to the active ingredient phenmedipham.

NOEC (Myriophyllum spicatum (Eurasian watermilfoil)) 0.0128 mg/l  
Biomass; Exposure time: 14 d  
The value mentioned relates to the active ingredient phenmedipham.

NOEC (Myriophyllum spicatum (Eurasian watermilfoil)) 0.0128 mg/l  
Growth rate; Exposure time: 14 d  
The value mentioned relates to the active ingredient phenmedipham.

ErC50 (Raphidocelis subcapitata (freshwater green alga)) 0.0168 mg/l  
Growth rate; Exposure time: 72 h  
The value mentioned relates to the active ingredient phenmedipham.

NOEC (Raphidocelis subcapitata (freshwater green alga)) 0.000563 mg/l  
Growth rate; Exposure time: 72 h  
The value mentioned relates to the active ingredient phenmedipham.

ErC50 (Myriophyllum spicatum (Eurasian watermilfoil)) 0.0705 mg/l  
Growth rate; Exposure time: 72 h  
The value mentioned relates to the active ingredient phenmedipham.

NOEC (Myriophyllum spicatum (Eurasian watermilfoil)) 0.012 mg/l  
Growth rate; Exposure time: 72 h  
The value mentioned relates to the active ingredient phenmedipham.

### 12.2 Persistence and degradability

**Biodegradability** Not readily biodegradable.

**Biodegradability** Phenmedipham:  
Not rapidly biodegradable

**Koc** Phenmedipham: Koc: 888

### 12.3 Bioaccumulative potential

**Bioaccumulation** Phenmedipham: Bioconcentration factor (BCF) 165  
Does not bioaccumulate.

### 12.4 Mobility in soil

**Mobility in soil** Phenmedipham: Slightly mobile in soils

### 12.5 Results of PBT and vPvB assessment

**PBT and vPvB assessment** Phenmedipham: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

### 12.6 Endocrine disrupting properties

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

### 12.7 Other adverse effects

**Additional ecological information** No other effects to be mentioned.



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### SECTION 13: DISPOSAL CONSIDERATIONS

#### 13.1 Waste treatment methods

<b>Product</b>	In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.
<b>Contaminated packaging</b>	Not completely emptied packagings should be disposed of as hazardous waste.
<b>Waste key for the unused product</b>	<b>02 01 08*</b> agrochemical waste containing hazardous substances

### SECTION 14: TRANSPORT INFORMATION

#### ADR/RID/ADN

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES
Hazard no.	90
Tunnel Code	-

This classification is in principle not valid for carriage by tank vessel on inland waterways. Please refer to the manufacturer for further information.

#### IMDG

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM SOLUTION)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Marine pollutant	YES

#### IATA

14.1 UN number	<b>3082</b>
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (PHENMEDIPHAM SOLUTION )
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environm. Hazardous Mark	YES

#### 14.6 Special precautions for user

See sections 6 to 8 of this Safety Data Sheet.



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### 14.7 Transport in bulk according to IMO instruments

No transport in bulk according to the IBC Code.

## SECTION 15: REGULATORY INFORMATION

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

#### Republic of Ireland Regulations

This material may be subject to some or all of the following regulations (and any subsequent amendments). Users must ensure that any uses and restrictions as indicated on the label and/or leaflet are followed.

#### Supply and Use

European Communities (Prohibition of Certain Active Substances in Plant Protection Products) Regulations 1981 (SI No 320/1981)  
European Communities (Authorization, Placing on the Market, Use and Control of Plant Protection Products) Regulations 2003 (SI No 83/2003)  
European Communities (Classification, Packaging and Labelling of Plant Protection Products and Biocide Products) Regulations 2001 (SI No 624/2001)  
2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations, 2001 (SI No 619/2001)

#### Waste Treatment

Landfill Directive  
Regulation on Substances That Deplete the Ozone Layer 1994 (EEC/3093/94)

#### Further information

WHO-classification: III (Slightly hazardous)

### 15.2 Chemical safety assessment

A chemical safety assessment is not required.

## SECTION 16: OTHER INFORMATION

### Text of the hazard statements mentioned in Section 3

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

#### Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute toxicity estimate



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CAS-Nr.	Chemical Abstracts Service number
Conc.	Concentration
EC-No.	European community number
ECx	Effective concentration to x %
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
ELV	Exposure Limit Value
EN	European Standard
EU	European Union
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICx	Inhibition concentration to x %
IMDG	International Maritime Dangerous Goods
LCx	Lethal concentration to x %
LDx	Lethal dose to x %
LOEC/LOEL	Lowest observed effect concentration/level
MARPOL	MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.	Not otherwise specified
NOEC/NOEL	No observed effect concentration/level
OECD	Organization for Economic Co-operation and Development
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SI	Statutory Instrument
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

The above information is intended to give general health and safety guidance on the storage and transport of the product.

It is not intended to apply to the use of the product for which purposes the product label and any appropriate technical usage literature available should be consulted and any relevant licenses, consents or approvals complied with.

The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or product should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given.

The information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate.

No liability will be accepted for any injury, loss or damage resulting from any failure to take account of information or advice contained in this safety data sheet.

**Reason for Revision:** Safety Data Sheet according to Regulation (EU) No. 2020/878. Checked and revised for editorial purposes due to adjustments according to the current Annex II of the REACH regulation.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.