

## Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878 and to Annex II to UK REACH

### SECTION 1. Identification of the substance/mixture and of the company/undertaking

**1.1. Product identifier**

Product name **Permabond TA4630B**

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

Intended use **Adhesive**

Identified Uses	Industrial	Professional	Consumer
Use	✓	✓	-

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

Name **Permabond Engineering Adhesives**  
 Full address **Niederkasseler Lohweg 18**  
 District and Country **40547 Düsseldorf Germany**

Tel. **+44 (0)1962 711 661**

e-mail address of the competent person responsible for the Safety Data Sheet

**info.europe@permabond.com**

Supplier:

**Permabond Engineering Adhesives Ltd**  
**Wessex Way, Colden Common,**  
**Winchester, Hampshire SO21 1WP, UK**  
 tel: **+44 (0)1962 711 661**  
 mail: **info.europe@permabond.com**

**1.4. Emergency telephone number**

For urgent inquiries refer to **+44 (0)1962 711 661 ( 8.00 am-5.00 pm Mon-Fri)**

**CHEMTREC UK: +(44)-870-8200418**  
**CHEMTREC Ireland: +(353)-19014670**  
**CHEMTREC Australia: +(61)-290372994**  
**CHEMTREC New Zealand: +(64)-98010034**

### SECTION 2. Hazards identification

**2.1. Classification of the substance or mixture**

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878.

Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Reproductive toxicity, category 1B	H360D	May damage the unborn child.
Eye irritation, category 2	H319	Causes serious eye irritation.
Skin irritation, category 2	H315	Causes skin irritation.
Skin sensitization, category 1	H317	May cause an allergic skin reaction.
Hazardous to the aquatic environment, chronic toxicity, category 3	H412	Harmful to aquatic life with long lasting effects.

**SECTION 2. Hazards identification ... / >>**

**2.2. Label elements**

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Danger

Hazard statements:

- H360D** May damage the unborn child.
- H319** Causes serious eye irritation.
- H315** Causes skin irritation.
- H317** May cause an allergic skin reaction.
- H412** Harmful to aquatic life with long lasting effects.  
Restricted to professional users.

Precautionary statements:

- P202** Do not handle until all safety precautions have been read and understood.
- P273** Avoid release to the environment.
- P280** Wear protective gloves / protective clothing / eye protection / face protection.
- P302+P352** In case of contact with the skin: wash abundantly with soap and water.
- P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313** IF exposed or concerned: Get medical advice / attention.

**Contains:** TETRAHYDROFURFURYL METHACRYLATE  
2-ETHYLHEXYL METHACRYLATE  
TRIETHYLBORANE--DIAMINOPROPANE COMPLEX  
PROPANE-1,3-DIAMINE  
2-DIMETHYLAMINOETHYL METHACRYLATE

**2.3. Other hazards**

On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration  $\geq$  0.1%.

**SECTION 3. Composition/information on ingredients**

**3.2. Mixtures**

Contains:

Identification	x = Conc. %	Classification (EC) 1272/2008 (CLP)
<b>TETRAHYDROFURFURYL METHACRYLATE</b>		
INDEX	60 $\leq$ x < 100	Repr. 1B H360D, Skin Sens. 1 H317, Aquatic Chronic 3 H412
EC	219-529-5	
CAS	2455-24-5	
REACH Reg.	1-2120748481-53-XXXX	
<b>2-ETHYLHEXYL METHACRYLATE</b>		
INDEX	5 $\leq$ x < 10	Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Skin Sens. 1B H317, Aquatic Chronic 3 H412, EUH208
EC	211-708-6	
CAS	688-84-6	
REACH Reg.	01-2119490166-35-XXXX	

### SECTION 3. Composition/information on ingredients ... / >>

#### TRIETHYLBORANE--DIAMINOPROPANE COMPLEX

INDEX  $1 \leq x < 3$

Acute Tox. 4 H312, Skin Corr. 1A H314, Eye Dam. 1 H318, Skin Sens. 1B H317

STA Dermal: 1100 mg/kg

EC 604-654-3  
CAS 148861-07-8  
REACH Reg. Exent

#### 2-DIMETHYLAMINOETHYL METHACRYLATE

INDEX  $0,1 \leq x < 1$

Acute Tox. 4 H302, Acute Tox. 4 H312, Skin Corr. 1B H314, Eye Dam. 1 H318, Skin Sens. 1 H317

STA Oral: 500 mg/kg, STA Dermal: 1100 mg/kg

EC 220-688-8  
CAS 2867-47-2  
REACH Reg. 01-2119474677-22-XXXX

#### PROPANE-1,3-DIAMINE

INDEX  $0,1 \leq x < 1$

Flam. Liq. 3 H226, Acute Tox. 2 H310, Acute Tox. 4 H302, Skin Corr. 1C H314, Eye Dam. 1 H318, Resp. Sens. 1 H334, Skin Sens. 1B H317

LD50 Oral: 311 mg/kg, LD50 Dermal: 178 mg/kg

EC 203-702-7  
CAS 109-76-2  
REACH Reg. 01-2119977065-31-XXXX

The full wording of hazard (H) phrases is given in section 16 of the sheet.

### SECTION 4. First aid measures

#### 4.1. Description of first aid measures

Skin: Wash the skin thoroughly with soap and water. If symptoms arise, request medical assistance

Eyes: Make sure you have removed any contact lenses before rinsing your eyes. Wash readily and abundantly the eyes with water keeping the eyelids open.

Continue to rinse for at least 15 minutes. Consult a doctor if the discomfort continues.

Ingestion: rinse the mouth with water thoroughly. Make a abundant quantity of water drink.

Do not cause vomiting. Consult a doctor.

Inhalation: move the subject exposed in the open air. Consult a doctor in case of serious symptoms or persistent.

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

Contact with the skin: skin irritation. Mild dermatitis, allergic rash.

Contact with eyes: irritating and can cause redness and pain.

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

Note for the doctor no specific recommendation. Symptomatic treatment.

### SECTION 5. Firefighting measures

#### 5.1. Extinguishing media

##### SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

##### UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

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

##### HAZARDS DUE TO EXPOSURE IN THE EVENT OF FIRE

Avoid breathing combustion products, carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), and nitric oxides (NO<sub>x</sub>).

#### 5.3. Advice for firefighters

##### GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

##### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

## SECTION 6. Accidental release measures

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

Block the leakage if there is no hazard.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

### 6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

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

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

### 6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

## SECTION 7. Handling and storage

### 7.1. Precautions for safe handling

Keep away from heat, sparks and naked flames; do not smoke or use matches or lighters. Without adequate ventilation, vapours may accumulate at ground level and, if ignited, catch fire even at a distance, with the danger of backfire. Avoid bunching of electrostatic charges. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat. Avoid leakage of the product into the environment.

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

Store only in the original container. Store in a cool and well ventilated place, keep far away from sources of heat, naked flames and sparks and other sources of ignition. Keep containers away from any incompatible materials, see section 10 for details.

Storage class TRGS 510 (Germany): 6.1C

### 7.3. Specific end use(s)

Adhesive

## SECTION 8. Exposure controls/personal protection

### 8.1. Control parameters

#### 2-ETHYLHEXYL METHACRYLATE

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,003	mg/l
Normal value in marine water	0	mg/l
Normal value for fresh water sediment	2,24	mg/kg
Normal value for marine water sediment	0,224	mg/kg
Normal value of STP microorganisms	10	mg/l
Normal value for the terrestrial compartment	0,446	mg/kg

### SECTION 8. Exposure controls/personal protection ... / >>

#### TETRAHYDROFURFURYL METHACRYLATE

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,347	mg/l
Normal value in marine water	0,035	mg/l
Normal value for fresh water sediment	2,12	mg/kg/d
Normal value for marine water sediment	0,212	mg/kg/d
Normal value of STP microorganisms	15,8	mg/l
Normal value for the terrestrial compartment	0,221	mg/kg/d

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute	Acute	Chronic	Chronic	Acute	Acute	Chronic	Chronic
	local	systemic	local	systemic	local	systemic	local	systemic
Oral				0.5				
				mg/kg/d				
Inhalation				0.87				3.53
				mg/m3				mg/m3
Skin				0.5				1
				mg/kg/d				mg/kg/d

#### 2-DIMETHYLAMINOETHYL METHACRYLATE

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,087	mg/l
Normal value for fresh water sediment	0,483	mg/kg
Normal value of STP microorganisms	210	mg/l
Normal value for the terrestrial compartment	0,0454	mg/kg

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute	Acute	Chronic	Chronic	Acute	Acute	Chronic	Chronic
	local	systemic	local	systemic	local	systemic	local	systemic
Inhalation					321		27	27
					mg/m3		mg/m3	mg/m3
Skin							41,7	41,7
							mg/kg	mg/kg
							bw/d	bw/d

#### PROPANE-1,3-DIAMINE

##### Predicted no-effect concentration - PNEC

Normal value in fresh water	1	mg/l
Normal value in marine water	0,1	mg/l
Normal value for fresh water sediment	5	mg/kg
Normal value for marine water sediment	0,5	mg/kg
Normal value of STP microorganisms	10	mg/l

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute	Acute	Chronic	Chronic	Acute	Acute	Chronic	Chronic
	local	systemic	local	systemic	local	systemic	local	systemic
Inhalation								3
								mg/m3
Skin								0,26
								mg/kg
								bw/d

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

### 8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

#### HAND PROTECTION

Protect hands with category III work gloves.

The following should be considered when choosing work glove material (see standard EN 374): compatibility, degradation, failure time and permeability.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends

### SECTION 8. Exposure controls/personal protection ... / >>

on the duration and type of use.

#### SKIN PROTECTION

Wear category II professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

#### EYE PROTECTION

Wear airtight protective goggles (see standard EN 166).

#### RESPIRATORY PROTECTION

If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, use a mask with a type A filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387). In the presence of gases or vapours of various kinds and/or gases or vapours containing particulate (aerosol sprays, fumes, mists, etc.) combined filters are required.

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

#### ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

### SECTION 9. Physical and chemical properties

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

Properties	Value	Information
Appearance	liquid	
Colour	transparent	
Odour	characteristic	
Melting point / freezing point	not available	
Initial boiling point	not available	
Flammability	not available	
Lower explosive limit	not available	
Upper explosive limit	not available	
Flash point	> 100 °C	
Auto-ignition temperature	not available	
Decomposition temperature	not available	
pH	not available	Reason for missing data: substance/mixture is non-soluble (in water)
Kinematic viscosity	not available	
Dynamic viscosity	~ 12000 mPa.s	Temperature: 25 °C
Solubility	not available	
Partition coefficient: n-octanol/water	not available	
Vapour pressure	not available	
Density and/or relative density	1	
Relative vapour density	not available	
Particle characteristics	not applicable	

#### 9.2. Other information

##### 9.2.1. Information with regard to physical hazard classes

Information not available

##### 9.2.2. Other safety characteristics

Information not available

### SECTION 10. Stability and reactivity

#### 10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

#### 10.2. Chemical stability

### SECTION 10. Stability and reactivity ... / >>

The product is stable in normal conditions of use and storage.

#### 10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

#### 10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

#### 10.5. Incompatible materials

Strong reducing and oxidizing agents.

#### 10.6. Hazardous decomposition products

By thermal decomposition, carbon monoxide, carbon dioxide and ed other unidentified organic compounds.

### SECTION 11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification. It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

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

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

ATE (Inhalation) of the mixture:	Not classified (no significant component)
ATE (Oral) of the mixture:	Not classified (no significant component)
ATE (Dermal) of the mixture:	>2000 mg/kg

2-ETHYLHEXYL METHACRYLATE	
LD50 (Dermal):	> 17620 mg/kg
LD50 (Oral):	> 2000 mg/kg

TETRAHYDROFURFURYL METHACRYLATE	
LD50 (Oral):	3945 mg/kg

2-DIMETHYLAMINOETHYL METHACRYLATE	
LD50 (Dermal):	> 2000 mg/kg
STA (Dermal):	1100 mg/kg estimate from table 3.1.2 of Annex I of the CLP (figure used for calculation of the acute toxicity estimate of the mixture)
LD50 (Oral):	> 2000 mg/kg

PROPANE-1,3-DIAMINE	
LD50 (Dermal):	178 mg/kg
LD50 (Oral):	311 mg/kg

TRIETHYLBORANE--DIAMINOPROPANE COMPLEX

### SECTION 11. Toxicological information ... / >>

STA (Dermal):

1100 mg/kg estimate from table 3.1.2 of Annex I of the CLP  
(figure used for calculation of the acute toxicity estimate of the mixture)

#### SKIN CORROSION / IRRITATION

Causes skin irritation

#### SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye irritation

#### RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin

#### GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

#### CARCINOGENICITY

Does not meet the classification criteria for this hazard class

#### REPRODUCTIVE TOXICITY

May damage the unborn child

#### STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

#### STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

#### ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

#### 11.2. Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

### SECTION 12. Ecological information

This product is dangerous for the environment and the aquatic organisms. In the long term, it have negative effects on aquatic environment.

#### 12.1. Toxicity

##### 2-ETHYLHEXYL METHACRYLATE

LC50 - for Fish	2,78 mg/l/96h
EC50 - for Crustacea	2,18 mg/l/48h
EC50 - for Algae / Aquatic Plants	7,68 mg/l/72h
Chronic NOEC for Crustacea	0,11 mg/l
Chronic NOEC for Algae / Aquatic Plants	0,28 mg/l

##### TETRAHYDROFURFURYL METHACRYLATE

LC50 - for Fish	34,7 mg/l/96h
EC50 - for Crustacea	69 mg/l/48h
EC50 - for Algae / Aquatic Plants	> 100 mg/l/72h
Chronic NOEC for Fish	9,4 mg/l
Chronic NOEC for Crustacea	37,2 mg/l

##### 2-DIMETHYLAMINOETHYL METHACRYLATE

LC50 - for Fish	19,1 mg/l/96h
EC50 - for Crustacea	33 mg/l/48h
EC50 - for Algae / Aquatic Plants	69,7 mg/l/72h
Chronic NOEC for Crustacea	4,35 mg/l

**SECTION 12. Ecological information** ... / >>

Chronic NOEC for Algae / Aquatic Plants 32 mg/l

**12.2. Persistence and degradability**TETRAHYDROFURFURYL METHACRYLATE  
NOT rapidly degradable2-DIMETHYLAMINOETHYL METHACRYLATE  
Rapidly degradable**12.3. Bioaccumulative potential**TETRAHYDROFURFURYL METHACRYLATE  
Partition coefficient: n-octanol/water 1,38 Log Kow**12.4. Mobility in soil**

Information not available

**12.5. Results of PBT and vPvB assessment**On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.**12.6. Endocrine disrupting properties**

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

**12.7. Other adverse effects**

Information not available

**SECTION 13. Disposal considerations****13.1. Waste treatment methods**

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

Waste class 08 04 09\* stickers and sealed sealing, containing organic solvents or other dangerous substances.

**SECTION 14. Transport information**

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

**14.1. UN number or ID number**

not applicable

**14.2. UN proper shipping name**

not applicable

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

not applicable



### SECTION 16. Other information ... / >>

<b>Eye Irrit. 2</b>	Eye irritation, category 2
<b>Skin Irrit. 2</b>	Skin irritation, category 2
<b>STOT SE 3</b>	Specific target organ toxicity - single exposure, category 3
<b>Resp. Sens. 1</b>	Respiratory sensitization, category 1
<b>Skin Sens. 1</b>	Skin sensitization, category 1
<b>Skin Sens. 1B</b>	Skin sensitization, category 1B
<b>Aquatic Chronic 3</b>	Hazardous to the aquatic environment, chronic toxicity, category 3
<b>H226</b>	Flammable liquid and vapour.
<b>H360D</b>	May damage the unborn child.
<b>H310</b>	Fatal in contact with skin.
<b>H302</b>	Harmful if swallowed.
<b>H312</b>	Harmful in contact with skin.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H319</b>	Causes serious eye irritation.
<b>H315</b>	Causes skin irritation.
<b>H335</b>	May cause respiratory irritation.
<b>H334</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>H317</b>	May cause an allergic skin reaction.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>EUH208</b>	Contains <name of sensitising substance>. May produce an allergic reaction.

#### LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

#### GENERAL BIBLIOGRAPHY

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)

**SECTION 16. Other information ... / >>**

15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)
20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)
22. Delegated Regulation (UE) 2022/692 (XVIII Atp. CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

**Note for users:**

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

**CALCULATION METHODS FOR CLASSIFICATION**

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.