

## Safety Data Sheet

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

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

#### 1.1. Product identifier

Code: **32C**  
Product name: **NORPHEN 200 HCR (A)**  
UFI: **QN52-50KA-600W-AW4W**

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

Intended use: **SOLVENT-FREE EPOXY ENAMEL WITH HIGH CHEMICAL RESISTANCE**

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

Name: **NORD RESINE S.p.A.**  
Full address: **Via Fornace Vecchia, 79**  
District and Country: **31058 Susegana (TV)  
Italia**  
Tel.: **+39 0438-437511**  
Fax: **+39 0438-435155**

e-mail address of the competent person responsible for the Safety Data Sheet: **annabreda@nordresine.com**

Supplier: **NORD RESINE S.p.A.**

#### 1.4. Emergency telephone number

For urgent inquiries refer to:

**Ireland**  
**National Poisons Information Centre**  
**+353 018092166**  
**+353 018092566**

**Malta**  
**Malta Competition and Consumer Affairs Authority (MCCAA)**  
**+356 2395 2000**

**Belgium**  
**Centre Antipoisons: +32 022649636**

**Germany**  
**BfR Bundesinstitut für Risikobewertung: +49 30184120**

**Netherlands**  
**National Poisons Information Center / University Medical Center Utrecht**  
**+31 88 75 585 61**

**Croatia**  
**Croatian Institute of Public Health, Division for Toxicology: +38514686910**

**Sveden**  
**Swedish Poisons Information Centre: +46104566750**

### 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.

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

Hazard classification and indication:

Germ cell mutagenicity, category 2	H341	Suspected of causing genetic defects.
Reproductive toxicity, category 1B	H360F	May damage fertility.
Skin corrosion, category 1C	H314	Causes severe skin burns and eye damage.
Serious eye damage, category 1	H318	Causes serious eye damage.
Skin sensitization, category 1	H317	May cause an allergic skin reaction.
Hazardous to the aquatic environment, chronic toxicity, category 2	H411	Toxic to aquatic life with long lasting effects.

**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:

<b>H341</b>	Suspected of causing genetic defects.
<b>H360F</b>	May damage fertility.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H317</b>	May cause an allergic skin reaction.
<b>H411</b>	Toxic to aquatic life with long lasting effects.

Precautionary statements:

<b>P260</b>	Do not breathe dust / fume / gas / mist / vapours / spray.
<b>P201</b>	Obtain special instructions before use.
<b>P305+P351+P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P303+P361+P353</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
<b>P280</b>	Wear protective gloves/ protective clothing / eye protection / face protection.
<b>P310</b>	Immediately call a POISON CENTER / doctor.

**Contains:**

2,3-epoxypropyl o-tolyl ether  
Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane bis-[4-(2,3-epoxypropoxy)phenyl]propane  
Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-((2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane  
MALEIC ANHYDRIDE

VOC (Directive 2004/42/EC) :

Two-pack reactive performance coatings for specific end use such as floors.

VOC given in g/litre of product in a ready-to-use condition :

Limit value:

- Catalysed with :

52,63 %

205,27

500,00

NORPHEN 200 HCR (B)

**2.3. Other hazards**

vPvB substances contained:

DIISOPROPYLNAPHTHALENE

PBT substances contained:

DIISOPROPYLNAPHTHALENE

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>bis-[4-(2,3-epoxypropoxy)phenyl]propane</b>		
INDEX	603-073-00-2	$25 \leq x < 35$
EC	216-823-5	
CAS	1675-54-3	
REACH Reg.	01-2119456619-26	
<b>Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl]oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane</b>		
INDEX		$25 \leq x < 35$
EC	701-263-0	
CAS		
REACH Reg.	01-2119454392-40	
<b>Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane</b>		
INDEX		$15 \leq x < 20$
EC	701-135-4	
CAS		
REACH Reg.	01-2120078341-60	
<b>TITANIUM DIOXIDE</b>		
INDEX		$7 \leq x < 11$
EC	236-675-5	
CAS	13463-67-7	
REACH Reg.	01-2119489379-17	
<b>2,3-epoxypropyl o-tolyl ether</b>		
INDEX	603-056-00-X	$1 \leq x < 2,5$
EC	218-645-3	
CAS	2210-79-9	
REACH Reg.	01-2119966907-18	
<b>2-METHOXY-1-METHYLETHYL ACETATE</b>		
INDEX	607-195-00-7	$1 \leq x < 3$
EC	203-603-9	
CAS	108-65-6	
REACH Reg.	01-2119475791-29	
<b>Hydrocarbons, C10-C12, isoalkanes, &lt;2% aromatics</b>		
INDEX		$0,1 \leq x < 0,5$
EC	923-037-2	
CAS		
REACH Reg.	01-2119471991-29	
<b>DIISOPROPYLNAPHTHALENE</b>		
INDEX		$0,25 \leq x < 0,5$
EC	254-052-6	
CAS	38640-62-9	
REACH Reg.	01-2119565150-48	
<b>4-HYDROXY-4-METHYLPENTAN-2-ONE</b>		
INDEX	603-016-00-1	$0,1 \leq x < 0,5$
EC	204-626-7	
CAS	123-42-2	
REACH Reg.	01-2119473975-21	
<b>N-BUTYL ACETATE</b>		
INDEX	607-025-00-1	$0,1 \leq x < 0,5$
EC	204-658-1	
CAS	123-86-4	
REACH Reg.	01-2119485493-29	

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

**XYLENE (MIXTURE OF ISOMERS)**

INDEX 601-022-00-9 0 < x < 0,1

Flam. Liq. 3 H226, Acute Tox. 4 H312, Acute Tox. 4 H332, Asp. Tox. 1 H304, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Classification note according to Annex VI to the CLP Regulation: C  
ATE Dermal: 1100 mg/kg, ATE Inhalation vapours: 11 mg/l

EC 215-535-7  
CAS 1330-20-7  
REACH Reg. 01-2119488216-32

**DIPROPYLENE GLYCOL MONOMETHYL ETHER**

INDEX 252-104-2 0 < x < 0,1

Substance with a community workplace exposure limit.

EC 252-104-2  
CAS 34590-94-8  
REACH Reg. 01-2119450011-60

**ETHYLBENZENE**

INDEX 601-023-00-4 0 < x < 0,1

Flam. Liq. 2 H225, Acute Tox. 4 H332, Asp. Tox. 1 H304, STOT RE 2 H373  
LC50 Inhalation vapours: 17,2 mg/l/4h

EC 202-849-4  
CAS 100-41-4  
REACH Reg. 01-2119489370-35

**3-IODO-2-PROPYNYL BUTYLCARBAMATE**

INDEX 616-212-00-7 0 < x < 0,1

Acute Tox. 3 H331, Acute Tox. 4 H302, STOT RE 1 H372, Eye Dam. 1 H318, Skin Sens. 1 H317, Aquatic Acute 1 H400 M=10, Aquatic Chronic 1 H410 M=1  
LD50 Oral: 1056 mg/kg, LC50 Inhalation mists/powders: 0,68 mg/l/4h

EC 259-627-5  
CAS 55406-53-6  
REACH Reg. 01-2120762115-60

**MIXED XYLENES, ETHYLBENZENE**

INDEX 601-022-00-9 0 < x < 0,01

Flam. Liq. 3 H226, Acute Tox. 4 H312, Acute Tox. 4 H332, Asp. Tox. 1 H304, STOT RE 2 H373, Eye Irrit. 2 H319, Skin Irrit. 2 H315, STOT SE 3 H335, Aquatic Chronic 3 H412, Classification note according to Annex VI to the CLP Regulation: C  
ATE Dermal: 1100 mg/kg, ATE Inhalation vapours: 11 mg/l

EC 215-535-7  
CAS 1330-20-7  
REACH Reg. 01-2119488216-32

**1-METHOXY-2-PROPANOL**

INDEX 603-064-00-3 0 < x < 0,01

Flam. Liq. 3 H226, STOT SE 3 H336

EC 203-539-1  
CAS 107-98-2  
REACH Reg. 01-2119457435-35

**ETHYLBENZENE**

INDEX 601-023-00-4 0 < x < 0,01

Flam. Liq. 2 H225, Acute Tox. 4 H332, Asp. Tox. 1 H304, STOT RE 2 H373, Aquatic Chronic 3 H412  
LC50 Inhalation vapours: 17,2 mg/l/4h

EC 202-849-4  
CAS 100-41-4  
REACH Reg. 01-2119489370-35

**MALEIC ANHYDRIDE**

INDEX 607-096-00-9 0 < x < 0,001

Acute Tox. 4 H302, STOT RE 1 H372, Skin Corr. 1B H314, Eye Dam. 1 H318, Resp. Sens. 1 H334, Skin Sens. 1A H317, EUH071  
Skin Sens. 1A H317: ≥ 0,001%  
LD50 Oral: 1090 mg/kg

EC 203-571-6  
CAS 108-31-6  
REACH Reg. 01-2119472428-31

**Quartz**

INDEX 238-878-4 0 < x < 0,01

STOT RE 1 H372

EC 238-878-4  
CAS 14808-60-7

**ETHYL METHYL KETONE**

INDEX 606-002-00-3 0 < x < 0,01

Flam. Liq. 2 H225, Eye Irrit. 2 H319, STOT SE 3 H336, EUH066

EC 201-159-0  
CAS 78-93-3  
REACH Reg. 01-2119457290-43

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**

In case of doubt or in the presence of symptoms contact a doctor and show him this document.

In case of more severe symptoms, ask for immediate medical aid.

EYES: Remove, if present, contact lenses if the situation allows you to do so easily. Wash immediately with plenty of water for at least 15

## SECTION 4. First aid measures ... / >>

minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Take off immediately all contaminated clothing. Wash immediately and thoroughly with running water (and soap if possible). Get medical advice/attention. Avoid further contact with contaminated clothing.

**INGESTION:** Do not induce vomiting unless explicitly authorised by a doctor. Rinse your mouth with running water. Do not give anything by mouth to an unconscious person. Get medical advice/attention.

**INHALATION:** Remove victim to fresh air, away from the accident scene. In the event of respiratory symptoms (coughing, wheezing, breathing difficulty, asthma) keep the victim in a comfortable position for breathing. If necessary administer oxygen. If the subject stops breathing, administer artificial respiration. Get medical advice/attention.

### Rescuer protection

It is good practice for rescuers lending support to a person who has been exposed to a chemical substance or to a mixture to wear personal protective equipment. The nature of such protection depends on the hazard level of the substance or mixture, on the type of exposure and on the extent of the contamination. In the absence of other more specific indications, use of disposable gloves in the event of possible contact with body fluids is recommended. For the type of PPE suitable for the characteristics of the substance or mixture, see section 8.

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

Specific information on symptoms and effects caused by the product are unknown.

**DELAYED EFFECTS:** Based on the information currently available, there are no known cases of delayed effects following exposure to this product.

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

Immediately call a POISON CENTER / doctor.

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment: see section 4.1

### Means to have available in the workplace for specific and immediate treatment

Running water for skin and eye wash.

## 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 CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products.

### 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

## SECTION 6. Accidental release measures ... / >>

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.

2-METHOXY-1-METHYLETHYL ACETATE

Store in an inert atmosphere, sheltered from moisture because it hydrolyses easily.

### 7.3. Specific end use(s)

Information not available

## SECTION 8. Exposure controls/personal protection

### 8.1. Control parameters

Regulatory references:

ALB	Shqipëria	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË"
CZE	Česká Republika	NAŘÍZENÍ VLÁDY ze dne 18. října 2023, kterým se mění nařízení vlády č. 361/2007 Sb., kterým se stanoví podmínky ochrany zdraví při práci, ve znění pozdějších předpisů
DEU	Deutschland	WirkungDosisNOAELMAK-und BAT-Werte-Liste 2024 Ständige Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe
ESP	España	Límites de exposición profesional para agentes químicos en España 2024
FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en France Décret n° 2021-1849 du 28 décembre 2021
GRC	Ελλάδα	Π.Δ. 26/2020 (ΦΕΚ 50/Α' 6.3.2020) Εναρμόνιση της ελληνικής νομοθεσίας προς τις διατάξεις των οδηγιών 2017/2398/ΕΕ, 2019/130/ΕΕ και 2019/983/ΕΕ «για την τροποποίηση της οδηγίας 2004/37/ΕΚ "σχετικά με την προστασία των εργαζομένων από τους κινδύνους που συνδέονται με την έκθεση σε καρκινογόνους ή μεταλλαξιογόνους παράγοντες κατά την εργασία"»
HUN	Magyarország	Az innovációért és technológiáért felelős miniszter 5/2020. (II. 6.) ITM rendelete a kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
HRV	Hrvatska	PRAVILNIK O IZMJENAMA I DOPUNAMA PRAVILNIKA O ZAŠTITI RADNIKA OD IZLOŽENOSTI OPASNIM KEMIKALIJAMA NA RADU, GRANIČNIM VRIJEDNOSTIMA IZLOŽENOSTI I BIOLOŠKIM GRANIČNIM VRIJEDNOSTIMA
ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
NLD	Nederland	Regeling van de Minister van Sociale Zaken en Werkgelegenheid van 13 mei 2024, nr. 2024-0000092805, tot wijziging van de Arbeidsomstandighedenregeling in verband met de implementatie van Richtlijn 2022/431
PRT	Portugal	Decreto-Lei n.º 102/2024, de 4 de dezembro. Sumário: Transpõe para a ordem jurídica interna a Diretiva (UE) 2022/431, relativa à proteção dos trabalhadores contra riscos ligados à exposição a agentes cancerígenos ou mutagénicos e procede à quarta alteração
POL	Polska	ROZPORZĄDZENIE MINISTRA RODZINY, PRACY I POLITYKI SPOŁECZNEJ z dnia 24 czerwca 2024 r. zmieniające rozporządzenie w sprawie najwyższych dopuszczalnych stężeń i

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

ROU	România	nałeżeń czynników szkodliwych dla zdrowia w środowisku pracy HOTĂRĂRE nr. 179 din 28 februarie 2024 pentru modificarea și completarea Hotărârii Guvernului nr. 1.093/2006 privind stabilirea cerințelor minime de securitate și sănătate pentru protecția lucrătorilor împotriva riscurilor legate de expunerea la agenți ca
RUS	Россия	ПОСТАНОВЛЕНИЕ от 13 февраля 2018 г. N 25 ОБ УТВЕРЖДЕНИИ ГИГИЕНИЧЕСКИХ НОРМАТИВОВ ГН 2.2.5.3532-18 "ПРЕДЕЛЬНО ДОПУСТИМЫЕ КОНЦЕНТРАЦИИ (ПДК) ВРЕДНЫХ ВЕЩЕСТВ В ВОЗДУХЕ РАБОЧЕЙ ЗОНЫ"
SVN	Slovenija	Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti rakotvornim, mutagenim ali reprotoksičnim snovem pri delu. Ljubljana, četrtek 4. 4. 2024
GBR	United Kingdom	EH40/2005 Workplace exposure limits (Fourth Edition 2020)
EU	OEL EU	Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
	ACGIH	ACGIH 2025

**2,3-epoxypropyl o-tolyl ether**

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,0028	mg/l
Normal value in marine water	0,00028	mg/l
Normal value for fresh water sediment	0,039	mg/kg/d
Normal value for marine water sediment	0,0039	mg/kg/d
Normal value of STP microorganisms	10	mg/l
Normal value for the terrestrial compartment	0,012	mg/kg

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

Route of exposure	Effects on consumers			Chronic systemic	Effects on workers			
	Acute local	Acute systemic	Chronic local		Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				0,14 mg/kg bw/d				
Inhalation					40 mg/m3	40 mg/m3	0,46 mg/m3	0,46 mg/m3
Skin								0,139 mg/kg bw/d

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

**DIPROPYLENE GLYCOL MONOMETHYL ETHER**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	ALB	308	50			SKIN
TLV	CZE	270	43,8	550	89,3	SKIN
AGW	DEU	310	50	310	50	11
MAK	DEU	310	50	310	50	
VLA	ESP	308	50			SKIN
VLEP	FRA	308	50			SKIN
TLV	GRC	600	100	900	150	
AK	HUN	308	50			
GVI/KGVI	HRV	308	50			SKIN
VLEP	ITA	308	50			SKIN Allegato XXXVIII D.Lgs 81/08
TGG	NLD	300				
VLE	PRT	308	50			SKIN
NDS/NDSch	POL	240		480		SKIN
TLV	ROU	308	50			SKIN
MV	SVN	308	50	308	50	SKIN
WEL	GBR	308	50			SKIN
OEL	EU	308	50			SKIN
ACGIH			50			

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	19	mg/l
Normal value in marine water	1,9	mg/l
Normal value for fresh water sediment	70,2	mg/kg
Normal value for marine water sediment	7,02	mg/kg
Normal value for water, intermittent release	190	mg/l
Normal value of STP microorganisms	4168	mg/l
Normal value for the terrestrial compartment	2,74	mg/kg

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

Route of exposure	Effects on consumers		Effects on workers					
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				1,67 mg/kg/d				
Inhalation				37,2 mg/m3				310 mg/m3
Skin				15 mg/kg/d				65 mg/kg/d

**TITANIUM DIOXIDE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
MAK	DEU	0,3		2,4		RESP Hinweis
VLA	ESP	10				
VLEP	FRA	10				
TLV	GRC		10			
GVI/KGVI	HRV	10				INHAL
GVI/KGVI	HRV	4				RESP
NDS/NDSch	POL	10				INHAL
TLV	ROU	10		15		
ПДК	RUS	10				a, φ
WEL	GBR	10				INHAL
WEL	GBR	4				RESP
ACGIH		0,2				RESP

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

**2-METHOXY-1-METHYLETHYL ACETATE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	ALB	275	50	550	100	
TLV	CZE	275	50	550	100	SKIN
AGW	DEU	270	50	270	50	
MAK	DEU	270	50	270	50	
VLA	ESP	275	50	550	100	SKIN
VLEP	FRA	275	50	550	100	SKIN
TLV	GRC	275	50	550	100	
AK	HUN	275	50	550	100	
GVI/KGVI	HRV	275	50	550	100	SKIN
VLEP	ITA	275	50	550	100	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	550				
VLE	PRT	275	50	550	100	SKIN
NDS/NDSch	POL	260		520		SKIN
TLV	ROU	275	50	550	100	SKIN
ПДК	RUS			10		n
MV	SVN	275	50	550	100	SKIN
WEL	GBR	274	50	548	100	SKIN
OEL	EU	275	50	550	100	SKIN

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,635	mg/l
Normal value in marine water	0,0635	mg/l
Normal value for fresh water sediment	3,29	mg/kg
Normal value for marine water sediment	0,329	mg/kg
Normal value for water, intermittent release	6,35	mg/l
Normal value of STP microorganisms	100	mg/l
Normal value for the terrestrial compartment	0,29	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				36 mg/kg/d				
Inhalation				33 mg/m3			NPI	275 mg/m3
Skin			NPI	320 mg/kg/d			NPI	796 mg/kg/d

**Quartz**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
VLA	ESP		0,05			RESP
VLEP	FRA	0,1				RESP
GVI/KGVI	HRV	0,1				
VLEP	ITA	0,1				RESP Allegato XXXVIII D. Lgs. 81/08
TGG	NLD	0,075				RESP
VLE	PRT	0,05				RESP
NDS/NDSch	POL	0,1				RESP
TLV	ROU	0,1				RESP
MV	SVN	0,05				RESP
OEL	EU	0,1				RESP
ACGIH		0,025				RESP

**3-IODO-2-PROPYNYL BUTYLCARBAMATE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
AGW	DEU	0,058	0,005	0,116	0,01	11
MAK	DEU	0,058	0,005	0,116	0,01	11
MV	SVN	0,058	0,005	0,116	0,01	

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

**ETHYLBENZENE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	ALB	442	100	884	200	SKIN
TLV	CZE	200	45,33	500	113,32	SKIN
AGW	DEU	88	20	176	40	SKIN
MAK	DEU	88	20	176	40	SKIN
VLA	ESP	441	100	884	200	SKIN
VLEP	FRA	88,4	20	442	100	SKIN
TLV	GRC	435	100	545	125	
AK	HUN	442	100	884	200	SKIN
GVI/KGVI	HRV	442	100	884	200	SKIN
VLEP	ITA	442	100	884	200	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	215		430		SKIN
VLE	PRT	442	100	884	200	SKIN
NDS/NDSch	POL	200		400		SKIN
TLV	ROU	442	100	884	200	SKIN
ПДК	RUS	50		150		n
MV	SVN	442	100	884	200	SKIN
WEL	GBR	441	100	552	125	SKIN
OEL	EU	442	100	884	200	SKIN
ACGIH		87	20			

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,1	mg/l
Normal value in marine water	0,01	mg/l
Normal value for fresh water sediment	13,7	mg/kg/d
Normal value for marine water sediment	1,37	mg/kg/d
Normal value for marine water, intermittent release	0,1	mg/l
Normal value of STP microorganisms	9,6	mg/l
Normal value for the food chain (secondary poisoning)	20	mg/kg
Normal value for the terrestrial compartment	2,68	mg/kg/d

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		1,6 mg/kg bw/d				
Inhalation	LOW	LOW	LOW	15 mg/m3	293 mg/m3	LOW	442 mg/m3	77 mg/m3
Skin	NPI	NPI	NPI	NPI	NPI	NPI	NPI	180 mg/kg bw/d

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

**1-METHOXY-2-PROPANOL**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	ALB	375	100	568	150	SKIN
TLV	CZE	270	72,09	550	146,84	SKIN
AGW	DEU	370	100	740	200	
MAK	DEU	370	100	740	200	
VLA	ESP	375	100	568	150	SKIN
VLEP	FRA	188	50	375	100	SKIN
TLV	GRC	360	100	1080	300	
AK	HUN	375	100	568	150	SKIN
GVI/KGVI	HRV	375	100	568	150	
VLEP	ITA	375	100	568	150	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	375		563		SKIN
VLE	PRT	375	100	568	150	
NDS/NDSch	POL	180		360		SKIN
TLV	ROU	375	100	568	150	SKIN
MV	SVN	375	100	568	150	SKIN
WEL	GBR	375	100	560	150	SKIN
OEL	EU	375	100	568	150	SKIN
ACGIH		184	50	368	100	

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	10	mg/l
Normal value in marine water	1	mg/l
Normal value for fresh water sediment	52,3	mg/kg
Normal value for marine water sediment	5,2	mg/kg
Normal value for water, intermittent release	100	mg/l
Normal value of STP microorganisms	100	mg/l
Normal value for the terrestrial compartment	4,59	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		33 mg/kg bw/d				
Inhalation		NPI	NPI	43,9 mg/m3	553,5 mg/m3	553,5 mg/m3	NPI	369 mg/m3
Skin		NPI	NPI	78 mg/kg bw/d	NPI	NPI	NPI	183 mg/kg bw/d

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

**ETHYL METHYL KETONE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	ALB	600	200	900	300	
TLV	CZE	600	200	900	300	
AGW	DEU	600	200	600	200	SKIN
MAK	DEU	600	200	600	200	SKIN
VLA	ESP	600	200	900	300	
VLEP	FRA	600	200	900	300	SKIN
TLV	GRC	600	200	900	300	
AK	HUN	600	200	900	300	SKIN
GVI/KGVI	HRV	600	200	900	300	
VLEP	ITA	600	200	900	300	Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	590		500		SKIN
VLE	PRT	600	200	900	300	
NDS/NDSch	POL	450		900		SKIN
TLV	ROU	600	200	900	300	
ПДК	RUS	200		400		n
MV	SVN	600	200	900	300	SKIN
WEL	GBR	600	200	899	300	SKIN
OEL	EU	600	200	900	300	
ACGIH			75		150	SKIN

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	55,8	mg/l
Normal value in marine water	55,8	mg/l
Normal value for fresh water sediment	284,74	mg/kg
Normal value of STP microorganisms	709	mg/l
Normal value for the food chain (secondary poisoning)	100	mg/kg
Normal value for the terrestrial compartment	22,5	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				31				
				mg/kg bw/d				
Inhalation				106				600
				mg/m3				mg/m3
Skin				412				1161
				mg/kg bw/d				mg/kg bw/d

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

**N-BUTYL ACETATE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	CZE	241	50	723	150	
AGW	DEU	300	62	600	124	
MAK	DEU	480	100	960	200	
VLA	ESP	241	50	723	150	
VLEP	FRA	241	50	723	150	
TLV	GRC	710	150	950	200	
AK	HUN	241	50	723	150	
GVI/KGVI	HRV	241	50	723	150	
VLEP	ITA	241	50	723	150	Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	150				
VLE	PRT	241	50	723	150	
NDS/NDSch	POL	240		720		
TLV	ROU	241	50	723	150	
ПДК	RUS			0,1		n
MV	SVN	241	50	723	150	
WEL	GBR	724	150	966	200	
OEL	EU	241	50	723	150	
ACGIH			50		150	

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,18	mg/l
Normal value in marine water	0,018	mg/l
Normal value for fresh water sediment	0,981	mg/kg/d
Normal value for marine water sediment	0,0981	mg/kg/d
Normal value for water, intermittent release	0,36	mg/l
Normal value of STP microorganisms	35,6	mg/l
Normal value for the terrestrial compartment	0,0903	mg/kg

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		2 mg/kg/d		2 mg/kg/d				
Inhalation	300 mg/m3	300 mg/m3	35,7 mg/m3	35,7 mg/m3	600 mg/m3	600 mg/m3	300 mg/m3	300 mg/m3
Skin		6 mg/kg/d		6 mg/kg/d		11 mg/kg bw/d		11 mg/kg bw/d

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

**MALEIC ANHYDRIDE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	CZE	1		2		
AGW	DEU	0,081	0,02	0,081	0,02	11
MAK	DEU	0,081	0,02	0,081 (C)	0,02 (C)	C = 0,20 mg/m3
VLA	ESP	0,4	0,1			
VLEP	FRA			1		
TLV	GRC	1				
AK	HUN	0,08	0,2	0,08	0,2	
GVI/KGVI	HRV	0,41	0,1	0,8	0,2	INHAL
GVI/KGVI	HRV	0,41	0,1	0,8	0,2	SKIN
NDS/NDSch	POL	0,5		1		SKIN
TLV	ROU	1	0,25	3	0,75	
ПДК	RUS			1		n + a, A
MV	SVN	0,41	0,1	0,41	0,1	
WEL	GBR	1		3		
ACGIH		0,01	0,0025			INHAL

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,038	mg/l
Normal value in marine water	0,004	mg/l
Normal value for fresh water sediment	0,296	mg/kg/d
Normal value for marine water sediment	0,03	mg/kg/d
Normal value of STP microorganisms	44,6	mg/l
Normal value for the terrestrial compartment	0,037	mg/kg/d

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,2 mg/m3	0,2 mg/m3	0,081 mg/m3	0,081 mg/m3

**DIISOPROPYLNAPHTHALENE**

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,00023	mg/l
	6	
Normal value in marine water	0,00002	mg/l
	36	
Normal value for fresh water sediment	0,853	mg/kg
Normal value for marine water sediment	0,085	mg/kg
Normal value of STP microorganisms	0,15	mg/l
Normal value for the food chain (secondary poisoning)	25	mg/kg
Normal value for the terrestrial compartment	0,171	mg/kg

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral			VND	2,1 mg/kg/d				
Inhalation			VND	7,4 mg/m3			VND	30 mg/m3
Skin			VND	2,1 mg/kg/d			VND	4,3 mg/kg/d

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

**Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane**

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	3,7	µg/L
Normal value in marine water	37	µg/L
Normal value for fresh water sediment	19,9	µg/kg
Normal value for marine water sediment	1,99	µg/kg
Normal value for marine water, intermittent release	370	ng/l
Normal value of STP microorganisms	16,8	mg/l
Normal value for the terrestrial compartment	1,81	µg/kg
Normal value for the atmosphere	NPI	

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		NPI				
Inhalation		NPI	NPI	NPI	MED	NPI	MED	1,17 mg/m <sup>3</sup>
Skin		NPI	NPI	NPI	MED	NPI	MED	670,0 µg/kg

**MIXED XYLENES, ETHYLBENZENE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	CZE	200		400		SKIN
AGW	DEU	440	100	880	200	SKIN
MAK	DEU	440	100	880	200	SKIN
VLA	ESP	221	50	442	100	SKIN
VLEP	FRA	221	50	442	100	SKIN
TLV	GRC	435	100	650	150	
AK	HUN	221		442		SKIN
GVI/KGVI	HRV	221	50	442	100	SKIN
VLEP	ITA	221	50	442	100	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	210		442		SKIN
VLE	PRT	221	50	442	100	SKIN
NDS/NDSch	POL	100				
MV	SVN	221	50			SKIN
WEL	GBR	220	50	441	100	
OEL	EU	221	50	442	100	SKIN
ACGIH		434	100	651	150	

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,327	mg/l
Normal value in marine water	0,327	mg/l
Normal value for fresh water sediment	12,46	mg/kg/d
Normal value for marine water sediment	12,46	mg/kg/d
Normal value of STP microorganisms	6,58	mg/l
Normal value for the terrestrial compartment	2,31	mg/kg/d

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		5 mg/kg bw/d				
Inhalation	260 mg/m3	260 mg/m3	65,3 mg/m3	65,3 mg/m3	442 mg/m3	442 mg/m3	221 mg/m3	221 mg/m3
Skin	LOW	LOW	NPI	125 mg/kg bw/d	LOW	LOW		212 mg/kg bw/d

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

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	CZE	200		300		
AGW	DEU	96	20	192	40	SKIN
MAK	DEU	96	20	192	40	SKIN
VLA	ESP	241	50			
VLEP	FRA	240	50			
TLV	GRC	240	50	360	75	
GVI/KGVI	HRV	241	50	362	75	
TGG	NLD	120				SKIN
NDS/NDSch	POL	240				
TLV	ROU	150	32	250	53	
MV	SVN	240	50			SKIN
WEL	GBR	241	50	362	75	
ACGIH		238	50			

**XYLENE (MIXTURE OF ISOMERS)**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
TLV	CZE	200	46	400	92	SKIN
AGW	DEU	440	100	880	200	SKIN
MAK	DEU	440	100	880	200	SKIN
VLA	ESP	221	50	442	100	SKIN
VLEP	FRA	221	50	442	100	SKIN
TLV	GRC	435	100	650	150	
GVI/KGVI	HRV	221	50	442	100	SKIN
VLEP	ITA	221	50	442	100	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	210		442		SKIN
VLE	PRT	221	50	442	100	SKIN
NDS/NDSch	POL	100		200		SKIN
TLV	ROU	221	50	442	100	SKIN
MV	SVN	221	50	442	100	SKIN
WEL	GBR	220	50	441	100	SKIN
OEL	EU	221	50	442	100	SKIN
ACGIH		434	100	651	150	

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,327	mg/l
Normal value in marine water	0,327	mg/l
Normal value for fresh water sediment	12,46	mg/kg
Normal value for marine water sediment	12,46	mg/kg
Normal value for water, intermittent release	0,327	mg/l
Normal value of STP microorganisms	6,58	mg/l
Normal value for the terrestrial compartment	2,31	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral								1,6 mg/kg/d
Inhalation				14,8 mg/m3	289 mg/m3	289 mg/m3		77 mg/m3
Skin				108 mg/kg/d				180 mg/kg/d

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

**Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane and 2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane**

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,003	mg/l
Normal value for fresh water sediment	0,294	mg/kg
Normal value for marine water sediment	0,029	mg/kg
Normal value for water, intermittent release	0,025	mg/l
Normal value of STP microorganisms	10	mg/l
Normal value for the terrestrial compartment	0,237	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				6,25 mg/kg bw/d				
Inhalation				8,7 mg/m3				29,39 mg/m3
Skin				62,5 mg/kg bw/d	0,0083 mg/cm2			104,15 mg/kg bw/d

**bis-[4-(2,3-epoxipropoxy)phenyl]propane**

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,006	mg/l
Normal value in marine water	0,0006	mg/l
Normal value for fresh water sediment	0,996	mg/kg
Normal value for marine water sediment	0,0996	mg/kg

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

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral			VND	0,75 mg/kg/d				
Inhalation							VND	12,25 mg/m3
Skin			VND	3,571 mg/kg/d			VND	8,33 mg/kg

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

**ETHYLBENZENE**

**Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
TLV	CZE	200	45,4	500	113,5	SKIN
AGW	DEU	88	20	176	40	SKIN
MAK	DEU	88	20	176	40	SKIN
VLA	ESP	441	100	884	200	SKIN
VLEP	FRA	88,4	20	442	100	SKIN
TLV	GRC	435	100	545	125	
AK	HUN	442		884		SKIN
GVI/KGVI	HRV	442	100	884	200	SKIN
VLEP	ITA	442	100	884	200	SKIN Allegato XXXVIII D.Lgs. 81/08
TGG	NLD	215		430		SKIN
VLE	PRT	442	100	884	200	SKIN
NDS/NDSch	POL	200		400		SKIN
TLV	ROU	442	100	884	200	SKIN
ПДК	RUS	50		150		n
MV	SVN	442	100	884	200	SKIN
WEL	GBR	441	100	552	125	SKIN
OEL	EU	442	100	884	200	SKIN
ACGIH		87	20			

**Predicted no-effect concentration - PNEC**

Normal value in fresh water	0,1	mg/l
Normal value in marine water	0,01	mg/l
Normal value for fresh water sediment	13,7	mg/kg/d
Normal value for marine water sediment	1,37	mg/kg/d
Normal value for marine water, intermittent release	0,1	mg/l
Normal value of STP microorganisms	9,6	mg/l
Normal value for the food chain (secondary poisoning)	20	mg/kg
Normal value for the terrestrial compartment	2,68	mg/kg/d

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

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral		NPI		1,6 mg/kg bw/d				
Inhalation	LOW	LOW	LOW	15 mg/m <sup>3</sup>	293 mg/m <sup>3</sup>	LOW	442 mg/m <sup>3</sup>	77 mg/m <sup>3</sup>
Skin	NPI	NPI	NPI	NPI	NPI	NPI	NPI	180 mg/kg bw/d

**Legend:**

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.  
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, permeability time.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.

Protect your hands with gloves of the following type:

Material: Butyl rubber (IIR)

Thickness: 0,35 mm

Breakthrough time: 480 min

Material: Nitrile rubber (NBR)

Thickness: 0,38 mm

Breakthrough time: 480 min

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

### 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 ISO 16321).

### RESPIRATORY PROTECTION

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. 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).

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	various	
Odour	characteristic	
Melting point / freezing point	not determined	Reason for missing data: not determined
Initial boiling point	not determined	Reason for missing data: not determined
Flammability	not determined	
Lower explosive limit	not determined	Reason for missing data: not determined
Upper explosive limit	not determined	Reason for missing data: not determined
Flash point	> 100 °C	
Auto-ignition temperature	not determined	Reason for missing data: not determined
Decomposition temperature	not determined	Reason for missing data: not determined
pH	not applicable	
Kinematic viscosity	not determined	Reason for missing data: not determined
Solubility	soluble in organic solvents	
Partition coefficient: n-octanol/water	not applicable	
Vapour pressure	not determined	Reason for missing data: not determined
Density and/or relative density	1,16 kg/l	Method: EN ISO 1675 Temperature: 23 °C
Relative vapour density	not determined	Reason for missing data: not determined
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

VOC (Directive 2004/42/EC) : 2,16 % - 25,11 g/litre

## SECTION 10. Stability and reactivity

### 10.1. Reactivity

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

#### DIPROPYLENE GLYCOL MONOMETHYL ETHER

Forms peroxides with: air.

#### 2-METHOXY-1-METHYLETHYL ACETATE

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

Stable in normal conditions of use and storage.  
 With the air it may slowly develop peroxides that explode with an increase in temperature.

**1-METHOXY-2-PROPANOL**

Dissolves various plastic materials. Stable in normal conditions of use and storage.  
 Absorbs and dissolves in water and in organic solvents. With air it may slowly form explosive peroxides.

**ETHYL METHYL KETONE**

Reacts with: light metals, strong oxidants. Attacks various types of plastic materials. Decomposes under the effect of heat.

**N-BUTYL ACETATE**

Decomposes on contact with: water.

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

Decomposes at temperatures above 90°C/194°F.

**10.2. Chemical stability**

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

**10.3. Possibility of hazardous reactions**

The vapours may also form explosive mixtures with the air.

**DIPROPYLENE GLYCOL MONOMETHYL ETHER**

May react violently with: strong oxidising agents.

**2-METHOXY-1-METHYLETHYL ACETATE**

May react violently with: oxidising substances, strong acids, alkaline metals.

**ETHYLBENZENE**

Reacts violently with: strong oxidants. Attacks various types of plastic materials. May form explosive mixtures with: air.

**1-METHOXY-2-PROPANOL**

May react dangerously with: strong oxidising agents, strong acids.

**ETHYL METHYL KETONE**

May form peroxides with: air, light, strong oxidising agents. Risk of explosion on contact with: hydrogen peroxide, nitric acid, sulphuric acid. May react dangerously with: oxidising agents, trichloromethane, alkalis. Forms explosive mixtures with: air.

**N-BUTYL ACETATE**

Risk of explosion on contact with: strong oxidising agents. May react dangerously with: alkaline hydroxides, potassium tert-butoxide. Forms explosive mixtures with: air.

**MIXED XYLENES, ETHYLBENZENE**

Stable in normal conditions of use and storage. Reacts violently with: strong oxidants, strong acids, nitric acid, perchlorates. May form explosive mixtures with: air.

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

Risk of explosion on contact with: air, sources of heat. May react dangerously with: alkaline metals, amines, oxidising agents, acids.

**XYLENE (MIXTURE OF ISOMERS)**

Stable in normal conditions of use and storage. Reacts violently with: strong oxidants, strong acids, nitric acid, perchlorates. May form explosive mixtures with: air.

**ETHYLBENZENE**

Reacts violently with: strong oxidants. Attacks various types of plastic materials. May form explosive mixtures with: air.

**10.4. Conditions to avoid**

Avoid overheating. Avoid bunching of electrostatic charges. Avoid all sources of ignition.

**DIPROPYLENE GLYCOL MONOMETHYL ETHER**

Avoid exposure to: sources of heat. Possibility of explosion.

**1-METHOXY-2-PROPANOL**

Avoid exposure to: air.

**ETHYL METHYL KETONE**

Avoid exposure to: sources of heat.

**N-BUTYL ACETATE**

Avoid exposure to: moisture, sources of heat, naked flames.

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

Avoid exposure to: light, sources of heat, naked flames.

**10.5. Incompatible materials**

**2-METHOXY-1-METHYLETHYL ACETATE**

Incompatible with: oxidising substances, strong acids, alkaline metals.

**1-METHOXY-2-PROPANOL**

Incompatible with: oxidising substances, strong acids, alkaline metals.

**ETHYL METHYL KETONE**

Incompatible with: strong oxidants, inorganic acids, ammonia, copper, chloroform.

**N-BUTYL ACETATE**

Incompatible with: water, nitrates, strong oxidants, acids, alkalis, zinc.

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

### 10.6. Hazardous decomposition products

In the event of thermal decomposition or fire, gases and vapours that are potentially dangerous to health may be released.

**ETHYLBENZENE**

May develop: methane, styrene, hydrogen, ethane.

**ETHYLBENZENE**

May develop: methane, styrene, hydrogen, ethane.

## 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

**MIXED XYLENES, ETHYLBENZENE**

Has a toxic effect on the CNS (encephalopathies). Irritating to the skin, conjunctivae, cornea and respiratory apparatus.

Metabolism, toxicokinetics, mechanism of action and other information

**2-METHOXY-1-METHYLETHYL ACETATE**

The main route of entry is the skin, whereas the respiratory route is less important due to the low vapour pressure of the product.

Information on likely routes of exposure

**2-METHOXY-1-METHYLETHYL ACETATE**

WORKERS: inhalation; contact with the skin.

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

WORKERS: inhalation; contact with the skin.

**N-BUTYL ACETATE**

WORKERS: inhalation; contact with the skin.

**XYLENE (MIXTURE OF ISOMERS)**

WORKERS: inhalation; contact with the skin.

POPULATION: ingestion of contaminated food or water; inhalation of environmental air.

**ETHYLBENZENE**

WORKERS: inhalation; contact with the skin.

POPULATION: ingestion of contaminated food or water; contact with the skin of products containing the substance.

**1-METHOXY-2-PROPANOL**

WORKERS: inhalation; contact with the skin.

POPULATION: ingestion of contaminated food or water; inhalation of ambient air; contact with the skin of products containing the substance.

**ETHYLBENZENE**

WORKERS: inhalation; contact with the skin.

POPULATION: ingestion of contaminated food or water; contact with the skin of products containing the substance.

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

**2-METHOXY-1-METHYLETHYL ACETATE**

Above 100 ppm causes irritation of the eye, nose and oropharynx mucous membranes. At 1000 ppm, disturbance of equilibrium and severe eye irritation can be noticed. Clinical and biological examinations carried out on exposed volunteers revealed no anomalies. Acetate produces greater skin and eye irritation with direct contact. No chronic effects on humans have been reported (INCR, 2010).

**4-HYDROXY-4-METHYLPENTAN-2-ONE**

Acute toxicity causes irritation of the eyes, nose and throat in humans at 100 ppm (476 mg/kg) and pulmonary disorders at 400 ppm. No chronic effects on humans have been reported. The substance may have a depressive effect on the respiratory centres and cause death from respiratory failure.

**N-BUTYL ACETATE**

In humans, the substance's vapours cause irritation of the eyes and nose. In the event of repeated exposure, skin irritation, dermatitis (dryness and cracking of the skin) and keratitis appear.

**SECTION 11. Toxicological information ... / >>**

**XYLENE (MIXTURE OF ISOMERS)**

Toxic effect on the central nervous system (encephalopathy); irritating for the skin, conjunctiva, cornea and respiratory apparatus.

**ETHYLBENZENE**

As the counterparts of benzene, may have an acute effect on the central nervous system, with depression, narcosis, often preceded by dizziness and associated with headache (Ispesl). Is irritating for skin, conjunctiva and respiratory tract.

**1-METHOXY-2-PROPANOL**

The main route of entry is the skin, whereas the respiratory route is less important due to the low vapour pressure of the product. Above 100 ppm causes irritation of the eye, nose and oropharynx mucous membranes. At 1000 ppm, disturbance of equilibrium and severe eye irritation can be noticed. Clinical and biological examinations carried out on exposed volunteers revealed no anomalies. Acetate produces greater skin and eye irritation with direct contact. No chronic effects on humans have been reported.

**ETHYLBENZENE**

As the counterparts of benzene, may have an acute effect on the central nervous system, with depression, narcosis, often preceded by dizziness and associated with headache (Ispesl). Is irritating for skin, conjunctiva and respiratory tract.

Interactive effects

**N-BUTYL ACETATE**

A case of acute intoxication been reported involving a 33 year old worker while cleaning a tank with a preparation containing xylenes, butyl acetate and ethylene glycol acetate. The person had irritation of the conjunctiva and upper respiratory tract, drowsiness and motor coordination disorders, which disappeared within 5 hours. The symptoms are attributed to poisoning by mixed xylenes and butyl acetate, with a possible synergistic effect responsible for the neurological effects. Cases of vacuolar keratitis are reported in workers exposed to a mixture of butyl acetate and isobutanol vapours, but with uncertainty concerning the responsibility of a particular solvent (INRC, 2011).

**XYLENE (MIXTURE OF ISOMERS)**

Intake of alcohol interferes with the metabolism of the substance, inhibiting it. Ethanol consumption (0.8 g/kg) before a 4-hour exposure to xylene vapours (145 and 280 ppm) causes a 50% reduction in the excretion of methyl hippuric acid, whereas the concentration of xylenes in the blood increases approx. 1.5-2 times. At the same time there is an increase in the secondary side effects of the ethanol. The metabolism of the xylenes is increased by phenobarbital and 3-methyl-colantrene type enzyme inducers. Aspirin and xylenes mutually inhibit their conjugation with the glycine, which results in a decrease in urinary excretion of methyl hippuric acid. Other industrial products can interfere with the metabolism of xylenes.

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:	Not classified (no significant component)

Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and

[2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane	
LD50 (Dermal):	> 2000 mg/kg Rat
LD50 (Oral):	> 5000 mg/kg Rat

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and

1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane	
LD50 (Dermal):	3170 mg/kg (rat)
LD50 (Oral):	3398 mg/kg (rat)

**TITANIUM DIOXIDE**

LD50 (Oral):	> 10000 mg/kg Rat
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**2,3-epoxypropyl o-tolyl ether**

LD50 (Dermal):	2000 mg/kg Rabbit
LC50 (Inhalation vapours):	1220 mg/l

**2-METHOXY-1-METHYLETHYL ACETATE**

LD50 (Dermal):	2000 mg/kg Rat
LD50 (Oral):	6190 mg/kg Rat

**Hydrocarbons, C10-C12, isoalkanes, <2% aromatics**

LD50 (Dermal):	> 5000 mg/kg Rabbit
LD50 (Oral):	> 5000 mg/kg Rat
LC50 (Inhalation vapours):	> 4951 mg/l/4h Rat

**SECTION 11. Toxicological information ... / >>**

DIISOPROPYLNAPHTHALENE	
LD50 (Dermal):	> 4000 mg/kg Rat
LD50 (Oral):	> 4000 mg/kg Rat
4-HYDROXY-4-METHYLPENTAN-2-ONE	
LD50 (Oral):	4000 mg/kg Rat
N-BUTYL ACETATE	
LD50 (Dermal):	> 14112 mg/kg Rabbit
LD50 (Oral):	10760 mg/kg Rat
LC50 (Inhalation vapours):	21,1 mg/l/4h Rat
XYLENE (MIXTURE OF ISOMERS)	
LD50 (Dermal):	4350 mg/kg Rabbit
LD50 (Oral):	3523 mg/kg Rat
LC50 (Inhalation vapours):	26 mg/l/4h Rat
ETHYLBENZENE	
LD50 (Dermal):	15400 mg/kg Rabbit
LD50 (Oral):	3500 mg/kg Rat
LC50 (Inhalation vapours):	17,2 mg/l/4h Rat
3-IODO-2-PROPYNYL BUTYLCARBAMATE	
LD50 (Dermal):	> 2000 mg/kg Rabbit
LD50 (Oral):	1056 mg/kg Rat
LC50 (Inhalation mists/powders):	0,68 mg/l/4h Rat
MIXED XYLENES, ETHYLBENZENE	
LD50 (Dermal):	4350 mg/kg Rabbit
LD50 (Oral):	3523 mg/kg Rat
LC50 (Inhalation vapours):	26 mg/l/4h Rat
1-METHOXY-2-PROPANOL	
LD50 (Dermal):	2000 mg/kg Rat
LD50 (Oral):	4016 mg/kg Rat
ETHYLBENZENE	
LD50 (Dermal):	15400 mg/kg Rabbit
LD50 (Oral):	3500 mg/kg Rat
LC50 (Inhalation vapours):	17,2 mg/l/4h Rat
MALEIC ANHYDRIDE	
LD50 (Dermal):	2620 mg/kg Rabbit
LD50 (Oral):	1090 mg/kg Rat
ETHYL METHYL KETONE	
LD50 (Dermal):	6480 mg/kg Rabbit
LD50 (Oral):	2737 mg/kg Rat
LC50 (Inhalation vapours):	23,5 mg/l/8h Rat

SKIN CORROSION / IRRITATION

Corrosive for the skin

Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-((2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane The skin irritation of bisphenol F diglycidyl ether was determined to be mild to non-irritating based on the six Klimisch 1 and 2 studies conducted according to OECD guidelines.

In the experimental conditions used, only one product induced erythema and edema reactions above the significance threshold (score 2 for erythema or edema) and was classified as irritant according to EEC directive no. 83/467/1983. The other studies indicated mild irritation, but not sufficient to reach the classification threshold.

Two repeated dose cumulative irritation studies were performed and under the experimental conditions employed the test materials induced significant irritation after repeated application and a potential for cumulative skin irritation was found in albino rabbits.

Effects on skin irritation/corrosion: slightly irritating.

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and

**SECTION 11. Toxicological information ... / >>**

1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane

Species: Rabbit

Result: Corrosive, category 1C when reactions occur from exposures between 1 hour and 4 hours and observation times up to 14 days.

2-METHOXY-1-METHYLETHYL ACETATE

Species: rabbit

Result: non-irritating

Method: OECD 404

N-BUTYL ACETATE

Species: rabbit

Result: non-irritating

Method: OECD 404

XYLENE (MIXTURE OF ISOMERS)

Causes irritation (redness, burning sensation), dryness and slight flaking of the skin

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane  
The ocular irritation of bisphenol F diglycidyl ether was determined to be non-irritating based on the four Klimisch 1 and 2 studies conducted according to OECD guidelines. In rabbit eye irritation tests, 0.1 ml of the test material caused no irritation and no initial pain response.

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and

1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane

Species: Rabbit

Result: Irreversible effects on the eyes

2-METHOXY-1-METHYLETHYL ACETATE

Species: rabbit

Result: non-irritating

Method: OECD 405

N-BUTYL ACETATE

Species: rabbit

Result: non-irritating

Method: OECD 405

XYLENE (MIXTURE OF ISOMERS)

Irritating to eyes

RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and

1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane

Route of exposure: Skin

Species: Guinea pig

Result: The product is a skin sensitizer, subcategory 1B.

2-METHOXY-1-METHYLETHYL ACETATE

Species: guinea pig

Result: non-sensitizing

Method: OECD 406

N-BUTYL ACETATE

Species: guinea pig

Result: non-sensitizing

Method: OECD 406

**SECTION 11. Toxicological information ... / >>**

MALEIC ANHYDRIDE  
Species: rabbit  
Result: skin sensitization  
Method: OECD 406

Skin sensitization

Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and [2-((2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl)oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane Bisphenol F diglycidyl ether (BPFDE) tested positive for induction of skin sensitization in the mouse Local Lymph Node Assay (LLNA). Based on an EC3 value of 0.7%, BPFDE is considered a strong skin sensitizer. According to ECHA guidelines, this EC3 value was converted to an EC3 value of 175 ug/cm2 and is considered the LOAEL for the induction of skin sensitization in the LLNA mouse for BPFDE. From sensitization tests it can be concluded that BPFDE is a sensitizer.

GERM CELL MUTAGENICITY

Suspected of causing genetic defects

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane  
Genotoxicity in vitro:  
Type of test: In vitro chromosomal aberration  
Test system: Chinese hamster ovary cells  
Metabolic activation: with or without metabolic activation  
Method: OECD Test Guideline 473  
Result: positive

Test Type: Ames Test  
Test system: Salmonella typhimurium  
Metabolic activation: with or without metabolic activation  
Method: OECD Test Guideline 471  
Result: positive

Type of test: In vitro gene mutation test on mammalian cells  
Test system: Chinese hamster ovary cells  
Metabolic activation: with or without metabolic activation  
Method: OECD Test Guideline 476  
Result: positive

Genotoxicity in vivo:  
Test Type: Comet Test  
Species: Rat  
Application method: Oral  
Doses: 500, 1000, 2000  
Result: positive

Germ cell mutagenicity - Assessment: In vitro assays revealed mutagenic effects

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

XYLENE (MIXTURE OF ISOMERS)  
Classified in Group 3 (not classifiable as a human carcinogen) by the International Agency for Research on Cancer (IARC). The US Environmental Protection Agency (EPA) affirms that "the data is inadequate for an assessment of the carcinogenic potential".

ETHYLBENZENE  
Classified in Group 2B (possible human carcinogen) by the International Agency for Research on Cancer (IARC) - (IARC, 2000). Classified in Group D (not classifiable as a human carcinogen) by the US Environmental Protection Agency (EPA) - (US EPA file on-line 2014).

ETHYLBENZENE  
Classified in Group 2B (possible human carcinogen) by the International Agency for Research on Cancer (IARC) - (IARC, 2000). Classified in Group D (not classifiable as a human carcinogen) by the US Environmental Protection Agency (EPA) - (US EPA file on-line 2014).

REPRODUCTIVE TOXICITY

**SECTION 11. Toxicological information ... / >>**

May damage fertility

Adverse effects on sexual function and fertility

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane  
Species: Rat, male and female  
Application method: Oral  
Doses: 0, 30, 100, 300 milligram per kilo  
Treatment frequency: 7 days/week  
General parental toxicity: NOAEL: 100 mg/kg body weight  
Method: OECD Test Guideline 422

Adverse effects on development of the offspring

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane  
Species: Rat, male and female  
Application method: Oral  
Doses: 0,30,100,300 milligram per kilo  
Treatment frequency: 7 days/week  
Developmental toxicity: NOAEL: 100 mg/kg body weight  
Method: OECD Test Guideline 422

Species: Rat, male and female  
Application method: Oral  
Doses: 0, 30, 90, 180 milligram per kilo  
Treatment frequency: 7 days/week  
Developmental toxicity: NOAEL: 180 mg/kg body weight  
Method: OECD Test Guideline 414  
BPL: yes  
Reproductive Toxicity - Assessment: Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

Target organs

2-METHOXY-1-METHYLETHYL ACETATE  
Target organs: central nervous system  
It can cause sleepiness or dizziness.

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

Target organs

XYLENE (MIXTURE OF ISOMERS)  
May cause damage to organs (respiratory tract) through prolonged or repeated exposure.

ETHYLBENZENE  
Test: STOT RE - Route: Inhalation. Auditory system, ears

ETHYLBENZENE  
Test: STOT RE - Route: Inhalation. Auditory system, ears

MALEIC ANHYDRIDE  
Respiratory tract.  
LOAEC: 0.01 mg/l  
Species: rat  
Method: Oecd 412  
Source: Echa

Route of exposure

MALEIC ANHYDRIDE  
Inhalation

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

### 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 is toxic for aquatic organisms. In the long term, it has negative effects on the aquatic environment.

### 12.1. Toxicity

bis-[4-(2,3-epoxypropoxy)phenyl]propane

LC50 - for Fish 1,5 mg/l/96h Fish

Reaction mass of 2,2'-[methylenebis(4,1-phenyleneoxymethylene)]dioxirane and

[2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy)methyl}oxirane and [2,2'-[methylenebis(2,1-phenyleneoxymethylene)]dioxirane

LC50 - for Fish 2,54 mg/l/96h

EC50 - for Crustacea 2,55 mg/l/48h Daphnia Magna

EC50 - for Algae / Aquatic Plants 1,8 mg/l/72h

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and

1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane

LC50 - for Fish 75 mg/l/96h

EC50 - for Crustacea 3,7 mg/l/48h

EC50 - for Algae / Aquatic Plants > 3,4 mg/l/72h

Chronic NOEC for Algae / Aquatic Plants 2,5 mg/l

2,3-epoxypropyl o-tolyl ether

LC50 - for Fish 7,5 mg/l/96h Oncorhynchus mykiss

EC50 - for Crustacea 3,3 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants 5,1 mg/l/72h Selenastrum capricornutum

2-METHOXY-1-METHYLETHYL ACETATE

LC50 - for Fish > 100 mg/l/96h Oncorhynchus mykiss

EC50 - for Crustacea 500 mg/l/48h Daphnia magna

Chronic NOEC for Crustacea 100 mg/l Daphnia magna

DIISOPROPYLNAPHTHALENE

LC50 - for Fish 2,44 mg/l/96h

EC10 for Crustacea 0,16 mg/l/48h

EC10 for Algae / Aquatic Plants 0,15 mg/l/72h

Chronic NOEC for Crustacea 0,013 mg/l

4-HYDROXY-4-METHYLPENTAN-2-ONE

LC50 - for Fish > 100 mg/l/96h Oryzia latipes

EC50 - for Crustacea > 1000 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants > 1000 mg/l/72h Pseudokirchneriella subcapitata

N-BUTYL ACETATE

LC50 - for Fish 18 mg/l/96h Pimephales promelas

EC50 - for Crustacea 44 mg/l/48h Daphnia magna

Chronic NOEC for Crustacea 23 mg/l Daphnia magna

3-iodo-2-propynyl butylcarbamate

LC50 - for Fish 0,41 mg/l/96h Cyprinodon variegatus

EC50 - for Crustacea 0,645 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants 0,053 mg/l/72h Desmodesmus subspicatus

Chronic NOEC for Crustacea 0,0499 mg/l Daphnia magna

1-METHOXY-2-PROPANOL

LC50 - for Fish > 1000 mg/l/96h

EC50 - for Crustacea > 21100 mg/l/48h

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

MALEIC ANHYDRIDE	
LC50 - for Fish	75 mg/l/96h Oncorhynchus mykiss
EC50 - for Crustacea	42,81 mg/l/48h Daphnia magna
EC50 - for Algae / Aquatic Plants	74,35 mg/l/72h Pseudokirchneriella subcapitata
Chronic NOEC for Crustacea	10 mg/l Daphnia magna

**12.2. Persistence and degradability**

bis-[4-(2,3-epoxipropoxy)phenyl]propane	
Solubility in water	0,1 - 100 mg/l
NOT rapidly degradable	
Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane	
Solubility in water	2,73 g/l
Inherently degradable	
NOT rapidly degradable	
TITANIUM DIOXIDE	
Solubility in water	< 0,001 mg/l
Degradability: information not available	
2-METHOXY-1-METHYLETHYL ACETATE	
Solubility in water	> 10000 mg/l
Rapidly degradable	83% (28 d, OECD 301 F)
DIISOPROPYLNAPHTHALENE	
Solubility in water	0,125 mg/l
4-HYDROXY-4-METHYLPENTAN-2-ONE	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	
N-BUTYL ACETATE	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	>90% (28 d)
XYLENE (MIXTURE OF ISOMERS)	
Solubility in water	100 - 1000 mg/l
Degradability: information not available	
DIPROPYLENE GLYCOL MONOMETHYL ETHER	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	
ETHYLBENZENE	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	
3-iodo-2-propynyl butylcarbamate	
Solubility in water	168 mg/l
Inherently degradable	
MIXED XYLENES, ETHYLBENZENE	
Degradability: information not available	
1-METHOXY-2-PROPANOL	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	
ETHYLBENZENE	
Solubility in water	1000 - 10000 mg/l
Rapidly degradable	
MALEIC ANHYDRIDE	
Solubility in water	> 10000 mg/l
Inherently degradable	

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

ETHYL METHYL KETONE  
Solubility in water > 10000 mg/l  
Rapidly degradable

**12.3. Bioaccumulative potential**

bis-[4-(2,3-epoxipropoxy)phenyl]propane  
Partition coefficient: n-octanol/water > 2,918  
BCF 31

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and  
1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane  
Partition coefficient: n-octanol/water 0,467

2,3-epoxypropyl o-tolyl ether  
Partition coefficient: n-octanol/water 2,16

2-METHOXY-1-METHYLETHYL ACETATE  
Partition coefficient: n-octanol/water 1,2 Log Kow 20°C - OECD 117

4-HYDROXY-4-METHYLPENTAN-2-ONE  
Partition coefficient: n-octanol/water -0,09

N-BUTYL ACETATE  
Partition coefficient: n-octanol/water 2,3 25°C - OECD 117  
BCF 15,3

XYLENE (MIXTURE OF ISOMERS)  
Partition coefficient: n-octanol/water 3,12  
BCF 25,9

DIPROPYLENE GLYCOL MONOMETHYL ETHER  
Partition coefficient: n-octanol/water 0,0043

ETHYLBENZENE  
Partition coefficient: n-octanol/water 3,6

3-iodo-2-propynyl butylcarbamate  
Partition coefficient: n-octanol/water 2,81  
BCF 48,8

MIXED XYLENES, ETHYLBENZENE  
Partition coefficient: n-octanol/water 3,12  
BCF 25,9

1-METHOXY-2-PROPANOL  
Partition coefficient: n-octanol/water < 1

ETHYLBENZENE  
Partition coefficient: n-octanol/water 3,6

MALEIC ANHYDRIDE  
Partition coefficient: n-octanol/water -2,78

ETHYL METHYL KETONE  
Partition coefficient: n-octanol/water 0,3

**12.4. Mobility in soil**

bis-[4-(2,3-epoxipropoxy)phenyl]propane  
Partition coefficient: soil/water 2,65

Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and  
1-(2,3-epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane  
Partition coefficient: soil/water 17,8

### SECTION 12. Ecological information ... / >>

DIISOPROPYLNAPHTHALENE Partition coefficient: soil/water	> 4,5
N-BUTYL ACETATE Partition coefficient: soil/water	< 3
XYLENE (MIXTURE OF ISOMERS) Partition coefficient: soil/water	2,73
3-iodo-2-propynyl butylcarbamate Partition coefficient: soil/water	2,49
MIXED XYLENES, ETHYLBENZENE Partition coefficient: soil/water	2,73

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

vPvB substances contained:  
DIISOPROPYLNAPHTHALENE

PBT substances contained:  
DIISOPROPYLNAPHTHALENE

#### 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.

Waste transportation may be subject to ADR restrictions.

The management of waste arising from the use or dispersal of this product must be organised in accordance with occupational safety regulations. See section 8 for possible need for PPE.

CONTAMINATED PACKAGING

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

### SECTION 14. Transport information

#### 14.1. UN number or ID number

ADR / RID, IMDG, IATA: UN 1760

#### 14.2. UN proper shipping name

ADR / RID:	CORROSIVE LIQUID, N.O.S. (Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane)
IMDG:	CORROSIVE LIQUID, N.O.S. (Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane; bis-[4-(2,3-epoxipropoxi)phenyl]propane)
IATA:	CORROSIVE LIQUID, N.O.S. (Reaction mass of 1-(2,3-epoxypropoxy)-2,2-bis ((2,3-epoxypropoxy)methyl) butane and 1-(2,3epoxypropoxy)-2-((2,3-epoxypropoxy)methyl)-2-hydroxymethyl butane)

**SECTION 14. Transport information** ... / >>

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

ADR / RID: Class: 8 Label: 8



IMDG: Class: 8 Label: 8



IATA: Class: 8 Label: 8



**14.4. Packing group**

ADR / RID, IMDG, IATA: III

**14.5. Environmental hazards**

ADR / RID: Environmentally Hazardous



IMDG: Marine Pollutant



IATA: NO

For Air transport, environmentally hazardous mark is only mandatory for UN 3077 and UN 3082.

**14.6. Special precautions for user**

ADR / RID:	HIN - Kemler: 80 Special provision: 274	Limited Quantities: 5 lt	Tunnel restriction code: (E)
IMDG:	EMS: F-A, S-B	Limited Quantities: 5 lt	
IATA:	Cargo: Passengers: Special provision:	Maximum quantity: 60 L Maximum quantity: 5 L A3, A803	Packaging instructions: 856 Packaging instructions: 852

**14.7. Maritime transport in bulk according to IMO instruments**

Information not relevant

**SECTION 15. Regulatory information**

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

Seveso Category - Directive 2012/18/EU: E2

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

<u>Product</u>	
Point	3 - 40
<u>Contained substance</u>	
Point	75

Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors  
not applicable

Substances in Candidate List (Art. 59 REACH)  
On the basis of available data, the product does not contain any SVHC in percentage  $\geq$  than 0,1%.

Substances subject to authorisation (Annex XIV REACH)  
None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:  
None

## SECTION 15. Regulatory information ... / >>

Substances subject to the Rotterdam Convention:  
None

Substances subject to the Stockholm Convention:  
None

### Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

VOC (Directive 2004/42/EC) :

Two-pack reactive performance coatings for specific end use such as floors.

## 15.2. Chemical safety assessment

A chemical safety assessment has been performed for the following contained substances

2-METHOXY-1-METHYLETHYL ACETATE

ETHYL METHYL KETONE

N-BUTYL ACETATE

bis-[4-(2,3-epoxipropoxi)phenyl]propane

## SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

<b>Flam. Liq. 2</b>	Flammable liquid, category 2
<b>Flam. Liq. 3</b>	Flammable liquid, category 3
<b>Muta. 2</b>	Germ cell mutagenicity, category 2
<b>Repr. 1B</b>	Reproductive toxicity, category 1B
<b>Repr. 2</b>	Reproductive toxicity, category 2
<b>Acute Tox. 3</b>	Acute toxicity, category 3
<b>Acute Tox. 4</b>	Acute toxicity, category 4
<b>STOT RE 1</b>	Specific target organ toxicity - repeated exposure, category 1
<b>Asp. Tox. 1</b>	Aspiration hazard, category 1
<b>STOT RE 2</b>	Specific target organ toxicity - repeated exposure, category 2
<b>Skin Corr. 1B</b>	Skin corrosion, category 1B
<b>Skin Corr. 1C</b>	Skin corrosion, category 1C
<b>Eye Dam. 1</b>	Serious eye damage, category 1
<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. 1A</b>	Skin sensitization, category 1A
<b>Skin Sens. 1B</b>	Skin sensitization, category 1B
<b>Aquatic Acute 1</b>	Hazardous to the aquatic environment, acute toxicity, category 1
<b>Aquatic Chronic 1</b>	Hazardous to the aquatic environment, chronic toxicity, category 1
<b>Aquatic Chronic 2</b>	Hazardous to the aquatic environment, chronic toxicity, category 2
<b>Aquatic Chronic 3</b>	Hazardous to the aquatic environment, chronic toxicity, category 3
<b>H225</b>	Highly flammable liquid and vapour.
<b>H226</b>	Flammable liquid and vapour.
<b>H341</b>	Suspected of causing genetic defects.
<b>H360F</b>	May damage fertility.
<b>H361d</b>	Suspected of damaging the unborn child.
<b>H331</b>	Toxic if inhaled.
<b>H302</b>	Harmful if swallowed.
<b>H312</b>	Harmful in contact with skin.
<b>H332</b>	Harmful if inhaled.
<b>H372</b>	Causes damage to organs through prolonged or repeated exposure.
<b>H304</b>	May be fatal if swallowed and enters airways.
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H318</b>	Causes serious 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>H336</b>	May cause drowsiness or dizziness.
<b>H400</b>	Very toxic to aquatic life.

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

<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H411</b>	Toxic to aquatic life with long lasting effects.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>EUH066</b>	Repeated exposure may cause skin dryness or cracking.
<b>EUH071</b>	Corrosive to the respiratory tract.
<b>EUH212</b>	Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.

**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
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PMT: Persistent, mobile and toxic
- 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
- vPvM: Very persistent and very mobile
- 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)
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)
23. Delegated Regulation (UE) 2023/707
24. Delegated Regulation (UE) 2023/1434 (XIX Atp. CLP)
25. Delegated Regulation (UE) 2023/1435 (XX Atp. CLP)
26. Delegated Regulation (UE) 2024/197 (XXI Atp. CLP)

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

27. Delegated Regulation (UE) 2024/2564 (XXII 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.

**Changes to previous review:**

The following sections were modified:

01 / 02 / 03 / 08 / 09 / 11 / 12.