

**Safety Data Sheet**  
**RESFOAM S /A**

Safety Data Sheet dated: 04/02/2020 - version 3



**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1. Product identifier**

Mixture identification:

Trade name: RESFOAM S /A

Trade code: 9024472

Registration Number N/A

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

Recommended use: Polyurethane resins based compound

Uses advised against: Data not available

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

Company: MAPEI AS - Vallsetvegen, 6 - 2120 Sagstua - Norway

Responsible: sicurezza@mapei.it

**1.4. Emergency telephone number**

Giftinformasjonen – phone number: +47 22591300

MAPEI AS - phone: +47-62972000

fax: +47-62972099

www.mapei.no (office hours)

**SECTION 2: Hazards identification**



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

**Regulation (EC) n. 1272/2008 (CLP)**

Acute Tox. 4	Harmful if inhaled.
Skin Irrit. 2	Causes skin irritation.
Eye Irrit. 2	Causes serious eye irritation.
Resp. Sens. 1	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens. 1	May cause an allergic skin reaction.
Carc. 2	Suspected of causing cancer.
STOT SE 3	May cause respiratory irritation.
STOT RE 2	May cause damage to organs through prolonged or repeated exposure.

Adverse physicochemical, human health and environmental effects:

No other hazards

**2.2. Label elements**

**Regulation (EC) n. 1272/2008 (CLP)**

**Pictograms and Signal Words**



Danger

**Hazard statements:**

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements:**

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
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P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	[In case of inadequate ventilation] wear respiratory protection.
P302+P352	IF ON SKIN: Wash with plenty of water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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+P311	IF exposed or concerned: Call a POISON CENTER.
P501	Dispose of contents/container in accordance with applicable regulations.

**Special Provisions:**

EUH204 Contains isocyanates. May produce an allergic reaction.

**Contains:**

diphenylmethanediisocyanate isomers and homologues

4,4'-methylenediphenyl diisocyanate;  
diphenylmethane-4,4'-diisocyanate

Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate

**Special provisions according to Annex XVII of REACH and subsequent amendments:**

None

**2.3. Other hazards**

No PBT/vPvB Ingredients are present

Other Hazards: No other hazards

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

**3.1. Substances**

N.A.

**3.2. Mixtures**

Mixture identification: RESFOAM S /A

**Hazardous components within the meaning of the CLP regulation and related classification:**

Quantity	Name	Ident. Numb.	Classification	Registration Number
≥75 - <100 %	diphenylmethanediisocyanate isomers and homologues	CAS:9016-87-9 EC:618-498-9 Index:615-005-00-9	Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H335; Skin Irrit. 2, H315; Resp. Sens. 1,1A,1B, H334; Skin Sens. 1,1A,1B, H317; STOT RE 2, H373; Carc. 2, H351	
≥10 - <20 %	Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	EC:905-806-4	Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Resp. Sens. 1, H334; Skin Sens. 1, H317; Carc. 2, H351; STOT SE 3, H335; STOT RE 2, H373	01-2119457015-45
≥5 - <10 %	4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	CAS:101-68-8 EC:202-966-0 Index:615-005-00-9	Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H335; Skin Irrit. 2, H315; Resp. Sens. 1,1A,1B, H334; Skin Sens. 1,1A,1B, H317; STOT RE 2, H373; Carc. 2, H351	01-2119457014-47-XXXX

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

In case of skin contact:

- Immediately take off all contaminated clothing.
- Remove contaminated clothing immediately and dispose of safely.
- After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

- After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and the hazard label.

In case of Inhalation:

If breathing is irregular or stopped, administer artificial respiration.

In case of inhalation, consult a doctor immediately and show him packing or label.

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

Eye irritation

Eye damages

Skin Irritation

Erythema

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

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

Treatment:

(see paragraph 4.1)

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### **SECTION 5: Firefighting measures**

#### **5.1. Extinguishing media**

Suitable extinguishing media:

Water.

Carbon dioxide (CO<sub>2</sub>).

Extinguishing media which must not be used for safety reasons:

None in particular.

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

Do not inhale explosion and combustion gases.

#### **5.3. Advice for firefighters**

Use suitable breathing apparatus.

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### **SECTION 6: Accidental release measures**

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

Wear personal protection equipment.

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Provide adequate ventilation.

Use appropriate respiratory protection.

#### **6.2. Environmental precautions**

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Limit leakages with earth or sand.

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

Suitable material for taking up: absorbing material, organic, sand

Retain contaminated washing water and dispose it.

#### **6.4. Reference to other sections**

See also section 8 and 13

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### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

Avoid contact with skin and eyes, inhalation of vapours and mists.

Use localized ventilation system.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

Contaminated clothing should be changed before entering eating areas.

Do not eat or drink while working.

See also section 8 for recommended protective equipment.

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

Keep away from food, drink and feed.

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Adequately ventilated premises.

#### **7.3. Specific end use(s)**

Recommendation(s)

None in particular

Industrial sector specific solutions:  
None in particular

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### List of components with OEL value

Component	OEL Type	Country	Ceiling	Long Term mg/m3	Long Term ppm	Short Term mg/m3	Short Term ppm	Behaviour	Note
diphenylmethanediisocyanate isomers and homologues	ACGIH	NNN			0,05				
	SUVA	NNN		0,02		0,02			
	DFG	GERMANY	C			0,05			
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	National	GERMANY		0,05					
	National	NORWAY		0,050	0,005				A 4
	SUVA	NNN		0,020		0,020			
	National	SWEDEN	C	0,030	0,002	0,050	0,005		SWEDEN, Ceiling limit value
	NDS	NNN		0,030					
	NDSP	NNN		0,090					
	ACGIH	NNN			0,005				Resp sens
	National	POLAND		0,030		0,090			
	National	AUSTRIA		0,050	0,005	0,100	0,010		
	DFG	GERMANY	C			0,050			
	ACGIH	NNN			0,005				respiratory sensitization (listed under Methylene bisphenyl isocyanate (MDI))
	National	SWEDEN		0,030	0,002				
	National	FRANCE		0,100	0,010	0,200	0,020		
	National	SPAIN		0,052	0,005				
	National	DENMARK		0,050	0,005				
	National	GERMANY		0,050					
	National	PORTUGAL			0,005				
	National	BELGIUM		0,052	0,005				
	NDS	POLAND		0,030					
	NDSCh	POLAND				0,090			
National	CZECH REPUBLIC		0,050						
National	HUNGARY		0,05		0,050				
Malaysia OEL	MALAYSIA		0,051	0,005					
National	ESTONIA		0,050	0,005	0,100	0,010			
National	CZECH REPUBLIC	C			0,100				
National	SLOVAKIA		0,002						
National	SLOVAKIA		0,030						
National	SLOVENIA		0,050		0,050				
National	ROMANIA				0,150				
National	LITHUANIA		0,050	0,005					
National	LITHUANIA	C			0,100	0,010			

#### Predicted No Effect Concentration (PNEC) values

Component	CAS-No.	PNEC Limit	Exposure Route	Exposure Frequency	Remark
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Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate

1 mg/l Fresh Water  
0,1 mg/l Marine water  
1 mg/kg Soil

4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate

101-68-8 1 mg/l Fresh Water  
0,1 mg/l Marine water  
1 mg/kg Soil  
1 mg/l Microorganisms in sewage treatments  
10,000000 mg/l Intermittent release

**Derived No Effect Level. (DNEL)**

Component	CAS-No.	Worker Industrial	Worker Professional	Consumer	Exposure Route	Exposure Frequency	Remark	
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate		50 mg/kg		25 mg/kg	Human Dermal		Short Term, systemic effects	
		0,1 mg/m3		0,05 mg/m3	Human Inhalation		Short Term, systemic effects	
		28,7 mg/cm2		17,2 mg/cm2	Human Dermal		Short Term, local effects	
		0,1 mg/m3		0,05 mg/m3	Human Inhalation		Short Term, local effects	
		0,05 mg/m3		0,025 mg/m3	Human Inhalation		Long Term, systemic effects	
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	101-68-8			20 mg/kg	Human Oral		Short Term, systemic effects	
			50 mg/kg		Human Dermal		Short Term, systemic effects	
			0,1 mg/m3			Human Inhalation		Short Term, systemic effects
			0,1 mg/m3			Human Inhalation		Short Term, local effects
			0,05 mg/m3			Human Inhalation		Long Term, systemic effects
		0,05 mg/m3			Human Inhalation		Long Term, local effects	

	25 mg/kg	Human Dermal	Short Term, systemic effects
	0,05 mg/m3	Human Inhalation	Short Term, systemic effects
	20 mg/kg	Human Oral	Short Term, systemic effects
	0,05 mg/m3	Human Inhalation	Short Term, local effects
	0,025 mg/m3	Human Inhalation	Long Term, systemic effects
	0,025 mg/m3	Human Inhalation	Long Term, local effects
28,7 mg/cm2	17,2 mg/cm2	Human Dermal	Short Term, local effects

## 8.2. Exposure controls

### Eye protection:

Use close fitting safety goggles, don't use eye lens.

### Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

### Protection for hands:

Suitable materials for safety gloves; EN 374:

Polychloroprene - CR: thickness  $\geq 0,5$ mm; breakthrough time  $\geq 480$ min.

Nitrile rubber - NBR: thickness  $\geq 0,35$ mm; breakthrough time  $\geq 480$ min.

Butyl rubber - IIR: thickness  $\geq 0,5$ mm; breakthrough time  $\geq 480$ min.

Fluorinated rubber - FKM: thickness  $\geq 0,4$ mm; breakthrough time  $\geq 480$ min.

Neoprene gloves are suggested (0,5 mm) not recommended gloves: not waterproof gloves

### Respiratory protection:

Personal Protective Equipment should comply with relevant CE standards (as EN 374 for gloves and EN 166 for goggles), correctly maintained and stored. Consult the supplier to check the suitability of equipment against specific chemicals and for user information.

In case of insufficient ventilation use mask with ABEKP filters (EN 14387).

Use adequate protective respiratory equipment.

### Hygienic and Technical measures

N.A.

### Appropriate engineering controls:

N.A.

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## SECTION 9: Physical and chemical properties

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

Physical State Liquid

Appearance and colour: Liquid light brown

Odour: N.A.

Odour threshold: N.A.

pH: N.A.

Melting point / freezing point: N.A.

Initial boiling point and boiling range: 300 °C (572 °F)

Flash point: 220 °C (428 °F)

Evaporation rate: N.A.

Upper/lower flammability or explosive limits: N.A.

Vapour density: N.A.

Vapour pressure: N.A.

Relative density: N.A.

Solubility in water: N.A.

Partition coefficient (n-octanol/water): N.A. - This product is a mixture

Auto-ignition temperature: N.A. - No explosive or spontaneous ignition in contact with air at room temperature

Decomposition temperature: N.A.

Viscosity: N.A.

Explosive properties: N.A. - No components with explosive properties

Oxidizing properties: N.A. - No component with oxidizing properties

Solid/gas flammability: N.A.

## 9.2. Other information

No additional information

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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Stable under normal conditions

### 10.2. Chemical stability

Stable under normal conditions

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

Stable under normal conditions.

### 10.5. Incompatible materials

None in particular.

### 10.6. Hazardous decomposition products

None.

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## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Toxicological information of the mixture:

There is no toxicological data available on the mixture. Consider the individual concentration of each component to assess toxicological effects resulting from exposure to the mixture.

#### Toxicological information on main components of the mixture:

diphenylmethanediisocyanate isomers and homologues	a) acute toxicity	LD50 Oral Rat > 10000 mg/kg	
		LD50 Skin Rabbit > 9400 mg/kg	
		LC50 Inhalation Dust Rat = 0,31 mg/l 4h	
		LD50 Skin Rabbit > 9,4 g/kg	
		LC50 Inhalation Rat = 490 mg/m <sup>3</sup> 4h	
		LD50 Oral Rat = 49 g/kg	
	g) reproductive toxicity	NOAEL Inhalation Rat = 12 mg/m <sup>3</sup>	
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	a) acute toxicity	LD50 Oral Rat > 10000,00000 mg/kg	
		LD50 Skin Rat > 9400,00000 mg/kg	
	e) germ cell mutagenicity	Genotoxicity Inhalation = 118,00000 mg/m <sup>3</sup>	3 w
	f) carcinogenicity	Carcinogenicity Inhalation Rat = 1,00000 mg/m <sup>3</sup>	24 months
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	a) acute toxicity	LD50 Oral Rat > 2000 mg/kg	
		LD50 Skin Rabbit > 9400 mg/kg	
		LC50 Inhalation Dust Rat = 0,368 mg/l 4h	
		LC50 Inhalation Rat = 369 mg/m <sup>3</sup> 4h	
		LD50 Oral Rat = 31600 mg/kg	
	b) skin corrosion/irritation	Skin Irritant Skin Rabbit Positive	
	d) respiratory or skin sensitisation	Skin Sensitization Skin Mouse Positive	
		Respiratory Sensitization Inhalation Positive	
	f) carcinogenicity	Carcinogenicity Inhalation Rat = 6 mg/m <sup>3</sup>	2 y
	g) reproductive toxicity	NOAEL Inhalation Rat = 12 mg/m <sup>3</sup>	20 d

If not differently specified, the information required in Regulation (EU)2015/830 listed below must be considered as N.A.

- a) acute toxicity
- b) skin corrosion/irritation
- c) serious eye damage/irritation
- d) respiratory or skin sensitisation
- e) germ cell mutagenicity
- f) carcinogenicity
- g) reproductive toxicity
- h) STOT-single exposure
- Toxicological kinetics, metabolism and distribution information
- i) STOT-repeated exposure
- j) aspiration hazard

## SECTION 12: Ecological information

### 12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

#### List of components with eco-toxicological properties

Component	Ident. Numb.	Ecotox Infos
diphenylmethanediisocyanate isomers and homologues	CAS: 9016-87-9 - EINECS: 618-498-9 - INDEX: 615-005-00-9	a) Aquatic acute toxicity : LC50 Fish > 1000 mg/L 96
		a) Aquatic acute toxicity : EC50 Daphnia > 1000 mg/L 24 b) Aquatic chronic toxicity : NOEC Daphnia > 10 mg/L - 21 d a) Aquatic acute toxicity : EC50 Algae > 1640 mg/L 72 c) Bacteria toxicity : EC50 > 100 mg/L 3 d) Terrestrial toxicity : NOEC > 1000 mg/kg - 14 d e) Plant toxicity : NOEC > 1000 mg/kg - 14 d
Reaction mass of 4,4'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	EINECS: 905-806-4	a) Aquatic acute toxicity : EC50 Daphnia > 1000 mg/L 24
		a) Aquatic acute toxicity : LC50 Fish > 1000 mg/L 96 b) Aquatic chronic toxicity : NOEC Daphnia > 10 mg/L - 21 d c) Bacteria toxicity : EC50 Bacteria > 100 mg/L 3 d) Terrestrial toxicity : NOEC > 1000 mg/kg
4,4'-methylenediphenyl diisocyanate; diphenylmethane-4,4'-diisocyanate	CAS: 101-68-8 - EINECS: 202-966-0 - INDEX: 615-005-00-9	a) Aquatic acute toxicity : LC50 Fish > 1000 mg/L 96
		a) Aquatic acute toxicity : EC50 Daphnia > 1000 mg/L 24 b) Aquatic chronic toxicity : NOEC Daphnia > 10 mg/L - 21 d a) Aquatic acute toxicity : EC50 Algae > 1640 mg/L 72 c) Bacteria toxicity : EC50 > 100 mg/L 3 d) Terrestrial toxicity : NOEC > 1000 mg/kg - 14 d e) Plant toxicity : NOEC > 1000 mg/kg - 14 d

### 12.2. Persistence and degradability

N.A.

### 12.3. Bioaccumulative potential

N.A.

### 12.4. Mobility in soil

N.A.

### 12.5. Results of PBT and vPvB assessment



No PBT/vPvB Ingredients are present

## 12.6. Other adverse effects

N.A.

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## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

A waste code according to European waste catalogue (EWC) cannot be specified, due to dependence on the usage. Contact an authorized waste disposal service.

Product:

Do not dispose of waste into sewers.

Do not contaminate ponds, waterways or ditches with chemical or used container.

Send to an authorized waste disposal service.

Contaminated packaging:

Empty remaining content.

Dispose of as unused product.

Do not re-use empty containers.

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## SECTION 14: Transport information

Not classified as dangerous in the meaning of transport regulations.

### 14.1. UN number

N.A.

### 14.2. UN proper shipping name

N.A.

### 14.3. Transport hazard class(es)

N.A.

### 14.4. Packing group

N.A.

### 14.5. Environmental hazards

N.A.

### 14.6. Special precautions for user

N.A.

Road and Rail (ADR-RID) :

N.A.

Air (IATA) :

N.A.

Sea (IMDG) :

N.A.

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

N.A.

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## SECTION 15: Regulatory information

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

VOC (2004/42/EC) : N.A. g/l

Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Regulation (EC) n. 1907/2006 (REACH)

Regulation (EU) 2015/830

Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 286/2011 (ATP 2 CLP)

Regulation (EU) n. 618/2012 (ATP 3 CLP)

Regulation (EU) n. 487/2013 (ATP 4 CLP)

Regulation (EU) n. 944/2013 (ATP 5 CLP)

Regulation (EU) n. 605/2014 (ATP 6 CLP)

Regulation (EU) n. 2015/1221 (ATP 7 CLP)

Regulation (EU) n. 2016/918 (ATP 8 CLP)

Regulation (EU) n. 2016/1179 (ATP 9 CLP)

Regulation (EU) n. 2017/776 (ATP 10 CLP)

Provisions related to directive EU 2012/18 (Seveso III):

N.A.

**German Water Hazard Class.**

N.A.

**Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:**

Restrictions related to the product: 3

Restrictions related to the substances contained: 56

**SVHC Substances:**

No data available

Produktregisteret Norge: 15481

MAL-kode: 00-3 (A+B: 00-3) (1993)

**15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out for the mixture.

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**SECTION 16: Other information**

<b>Code</b>	<b>Description</b>
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.

<b>Code</b>	<b>Hazard class and hazard category</b>	<b>Description</b>
3.1/4/Inhal	Acute Tox. 4	Acute toxicity (inhalation), Category 4
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/2	Eye Irrit. 2	Eye irritation, Category 2
3.4.1/1	Resp. Sens. 1	Respiratory Sensitisation, Category 1
3.4.1/1-1A-1B	Resp. Sens. 1,1A,1B	Respiratory Sensitisation, Category 1,1A,1B
3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.4.2/1-1A-1B	Skin Sens. 1,1A,1B	Skin Sensitisation, Category 1,1A,1B
3.6/2	Carc. 2	Carcinogenicity, Category 2
3.8/3	STOT SE 3	Specific target organ toxicity — single exposure, Category 3
3.9/2	STOT RE 2	Specific target organ toxicity — repeated exposure, Category 2

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

<b>Classification according to Regulation (EC) Nr. 1272/2008</b>	<b>Classification procedure</b>
3.1/4/Inhal	Calculation method
3.2/2	Calculation method
3.3/2	Calculation method
3.4.1/1	Calculation method
3.4.2/1	Calculation method
3.6/2	Calculation method
3.8/3	Calculation method
3.9/2	Calculation method

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.  
This SDS cancels and replaces any preceding release.

Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists  
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.  
AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
ATE: Acute Toxicity Estimate  
ATEmix: Acute toxicity Estimate (Mixtures)  
BCF: Biological Concentration Factor  
BEI: Biological Exposure Index  
BOD: Biochemical Oxygen Demand  
CAS: Chemical Abstracts Service (division of the American Chemical Society).  
CAV: Poison Center  
CE: European Community  
CLP: Classification, Labeling, Packaging.  
CMR: Carcinogenic, Mutagenic and Reprotoxic  
COD: Chemical Oxygen Demand  
COV: Volatile Organic Compound  
CSA: Chemical Safety Assessment  
CSR: Chemical Safety Report  
DMEL: Derived Minimal Effect Level  
DNEL: Derived No Effect Level.  
DPD: Dangerous Preparations Directive  
DSD: Dangerous Substances Directive  
EC50: Half Maximal Effective Concentration  
ECHA: European Chemicals Agency  
EINECS: European Inventory of Existing Commercial Chemical Substances.  
ES: Exposure Scenario  
GefStoffVO: Ordinance on Hazardous Substances, Germany.  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.  
IARC: International Agency for Research on Cancer  
IATA: International Air Transport Association.  
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).  
IC50: half maximal inhibitory concentration  
ICAO: International Civil Aviation Organization.  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).  
IMDG: International Maritime Code for Dangerous Goods.  
INCI: International Nomenclature of Cosmetic Ingredients.  
IRCCS: Scientific Institute for Research, Hospitalization and Health Care  
KSt: Explosion coefficient.  
LC50: Lethal concentration, for 50 percent of test population.  
LD50: Lethal dose, for 50 percent of test population.  
LDLo: Leathal Dose Low  
N.A.: Not Applicable  
N/A: Not Applicable  
N/D: Not defined/ Not available  
NA: Not available  
NIOSH: National Institute for Occupational Safety and Health  
NOAEL: No Observed Adverse Effect Level  
OSHA: Occupational Safety and Health Administration.  
PBT: Persistent, Bioaccumulative and Toxic  
PGK: Packaging Instruction  
PNEC: Predicted No Effect Concentration.  
PSG: Passengers  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.  
STEL: Short Term Exposure limit.  
STOT: Specific Target Organ Toxicity.  
TLV: Threshold Limiting Value.  
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).  
vPvB: Very Persistent, Very Bioaccumulative.  
WGK: German Water Hazard Class.

**Paragraphs modified from the previous revision:**

- 2. HAZARDS IDENTIFICATION