

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**EDC\*HCl**

Revision date: 26.08.2020

Product code: RL-1022

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

EDC\*HCl

**Further trade names**

N-Ethyl-N'-(3-dimethylaminopropyl)carbodiimide hydrochloride  
N'-(ethylcarbonimidoyl)-N,N-dimethylpropane-1,3-diamine monohydrochloride  
1,3-Propanediamine, N'-(ethylcarbonimidoyl)-N,N-dimethyl-, monohydrochloride  
1-(3-(Dimethylamino)propyl)-3-ethyl-carbodiimide hydrochloride  
1-(3-Dimethylaminopropyl)-3-ethylcarbodiimide HCl  
1-(3-Dimethylaminopropyl)-3-ethylcarbodiimide Hydrochloride [Coupling Agent for Peptides Synthesis]  
1-(3-dimethylaminopropyl)-3-ethylcarbodiimidehydrochloride  
1-Ethyl-3-(3-dimethylaminopropyl)carbodiimide HCl  
3-(ethyliminomethyleneamino)-N,N-dimethyl-propan-1-amine hydrochloride  
3-(Ethyliminomethylidenamino)- N,N-dimethyl-propan-1-amin Hydrochlorid  
3-(ethyliminomethylideneamino)-N,N-dimethylpropan-1-amine hydrochloride  
EDAC hydrochloride  
N'-(Ethylcarbonimidoyl)-N,N-dimethylpropane-1,3-diamine HCl  
N'-(ethylcarbonimidoyl)-N,N-dimethylpropane-1,3-diamine monohydrochloride  
N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimid, Monohydrochloride  
N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimide hydrochloride  
N-[3-(dimethylamino)propyl]-N'-ethylcarbodiimide hydrochloride  
N-[3-(dimethylamino)propyl]-N'-ethylcarbodiimide hydrochloride (1:1)

Substance name: EDC\*HCl  
Abbreviation: EDAC, WSC  
REACH Registration Number: 01-2120762851-50-XXXX  
CAS No: 25952-53-8  
EC No: 247-361-2

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

Laboratory chemical. Manufacture of the substance

**Uses advised against**

Do not use for private purposes (household).

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

Company name: Iris Biotech GmbH  
Street: Adalbert-Zoellner-Straße 1  
Place: D-95615 Marktredwitz, Germany  
Post-office box: 568  
D-95605 Marktredwitz, Germany  
Telephone: +49 9231 97121 0  
Telefax: +49 9231 97121 99  
e-mail: info@iris-biotech.de  
Contact person: Compliance Department  
Telephone: +49 9231 97121 0  
e-mail: sds@iris-biotech.de  
Internet: www.iris-biotech.de  
Responsible Department: Only available during office hours.

**1.4. Emergency telephone number:**

+49 (0)89 19240 (POISON CENTER Munich: 24 h)

**Further Information**

Emergency telephone: 24 h (POISON CENTER Munich)

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**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No. 1272/2008**

Hazard categories:

Acute toxicity: Acute Tox. 3

Acute toxicity: Acute Tox. 4

Skin corrosion/irritation: Skin Irrit. 2

Serious eye damage/eye irritation: Eye Irrit. 2

Respiratory or skin sensitisation: Resp. Sens. 1

Respiratory or skin sensitisation: Skin Sens. 1

Specific target organ toxicity - repeated exposure: STOT RE 2

Hazardous to the aquatic environment: Aquatic Acute 1

Hazardous to the aquatic environment: Aquatic Chronic 1

Hazard Statements:

Toxic in contact with skin.

Harmful if swallowed.

Causes skin irritation.

Causes serious eye irritation.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

May cause damage to organs through prolonged or repeated exposure.

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

**2.2. Label elements****Regulation (EC) No. 1272/2008****Signal word:** Danger**Pictograms:****Hazard statements**

H311	Toxic in contact with skin.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P284	Wear respiratory protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of water.

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P312	Call a POISON CENTER/doctor if you feel unwell.
P333	If skin irritation or rash occurs:
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container to an approved disposal site.

**Additional advice on labelling**

Warning - substance not yet tested completely.

**2.3. Other hazards**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**SECTION 3: Composition/information on ingredients**
**3.1. Substances**
**Chemical characterization**

N-Ethyl-N'-(3-dimethylaminopropyl)carbodiimide hydrochloride

 Sum formula: C<sub>8</sub>H<sub>17</sub>N<sub>3</sub>\*HCl

Molecular weight: 155,24\*36,45 g/mol

**Hazardous components**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
25952-53-8	EDC*HCl			<= 100 %
	247-361-2		01-2120762851-50-XXXX	
	Acute Tox. 3, Acute Tox. 4, Skin Irrit. 2, Eye Irrit. 2, Resp. Sens. 1, Skin Sens. 1, STOT RE 2, Aquatic Acute 1, Aquatic Chronic 1; H311 H302 H315 H319 H334 H317 H373 H400 H410			

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
25952-53-8	247-361-2	EDC*HCl	<= 100 %
	dermal: LD50 = >200 mg/kg; oral: LD50 = 500 mg/kg		

**SECTION 4: First aid measures**
**4.1. Description of first aid measures**
**General information**

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

**After inhalation**

Provide fresh air. Medical treatment necessary. Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration. In all cases of doubt, or when symptoms persist, seek medical advice.

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**After contact with skin**

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. Call a physician immediately.

**After contact with eyes**

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately. In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.

**After ingestion**

If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Never give anything by mouth to an unconscious person or a person with cramps.

In all cases of doubt, or when symptoms persist, seek medical advice.

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

No data available

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

Treat symptomatically.

**SECTION 5: Firefighting measures****5.1. Extinguishing media****Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings. Water spray. alcohol resistant foam. Dry extinguishing powder. Carbon dioxide (CO<sub>2</sub>). Sand.

**Unsuitable extinguishing media**

High power water jet.

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

Non-flammable. Thermal decomposition can lead to the escape of irritating gases and vapours.

In case of fire may be liberated: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO). Nitrogen oxides (NO<sub>x</sub>).

Hydrogen chloride (HCl).

**5.3. Advice for firefighters**

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

**Additional information**

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately.

Do not allow entering drains or surface water.

Usual measures for fire prevention.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures****General advice**

Provide adequate ventilation. Avoid dust formation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Use personal protection equipment. Provide adequate ventilation. Avoid breathing dust/fume/gas/mist/vapours/spray.

Wear personal protection equipment.

In case of fire: Evacuate area.

**6.2. Environmental precautions**

Do not allow to enter into surface water or drains.

Do not allow to enter into soil/subsoil.

**6.3. Methods and material for containment and cleaning up****Other information**

Take up mechanically. Treat the recovered material as prescribed in the section on waste disposal. Take up

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mechanically, placing in appropriate containers for disposal. Avoid dust formation.  
 Clear contaminated areas thoroughly.

**6.4. Reference to other sections**

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13 Treat the recovered material as prescribed in the section on waste disposal.

**SECTION 7: Handling and storage**
**7.1. Precautions for safe handling**
**Advice on safe handling**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Avoid dust formation.

Provide adequate ventilation.

Avoid dust formation. Avoid breathing dust/fume/gas/mist/vapours/spray.

Avoid contact with skin, eyes and clothes.

**Advice on protection against fire and explosion**

Usual measures for fire prevention.

**Advice on general occupational hygiene**

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme.

Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff. Avoid contact with skin, eyes and clothes. Provide adequate ventilation. When using do not eat, drink or smoke. Wash hands before breaks and after work.

**7.2. Conditions for safe storage, including any incompatibilities**
**Requirements for storage rooms and vessels**

Keep container tightly closed. Keep locked up.

Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations.

Handle and store contents under inert gas. Protect from moisture.

Protect from direct sunlight. Sensitivity to light.

storage temperature: +2°C - +8°C

**Hints on joint storage**

No special measures are necessary.

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

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

**SECTION 8: Exposure controls/personal protection**
**8.1. Control parameters**
**DNEL/DMEL values**

CAS No	Name of agent	Exposure route	Effect	Value
25952-53-8	EDC*HCl			
Worker DNEL, long-term		inhalation	systemic	1,64 mg/m <sup>3</sup>
Worker DNEL, acute		inhalation	systemic	1,64 mg/m <sup>3</sup>
Worker DNEL, long-term		dermal	systemic	0,467 mg/kg bw/day

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**PNEC values**

CAS No	Name of agent	
Environmental compartment		Value
25952-53-8	EDC*HCl	
Freshwater		0,005 mg/l
Freshwater (intermittent releases)		0,46 mg/l
Marine water		0 mg/l
Micro-organisms in sewage treatment plants (STP)		10 mg/l

**Additional advice on limit values**

To date, no national critical limit values exist.

**8.2. Exposure controls**

**Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe dust. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

**Individual protection measures, such as personal protective equipment**
**Eye/face protection**

Suitable eye protection: goggles. Wear eye/face protection.

**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Wear suitable gloves.

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Use of protective clothing. Wear suitable protective clothing.

**Respiratory protection**

In case of inadequate ventilation wear respiratory protection. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

**Environmental exposure controls**

Discharge into the environment must be avoided.

**SECTION 9: Physical and chemical properties**
**9.1. Information on basic physical and chemical properties**

Physical state:	solid
Colour:	white/ whitish
Odour:	No data available
Odour threshold:	not determined

**Test method**
**Changes in the physical state**

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Melting point/freezing point:	105 - 115 °C
Boiling point or initial boiling point and boiling range:	not determined
Sublimation point:	not determined
Softening point:	not determined
Flash point:	No data available
<b>Flammability</b>	
Solid/liquid:	not determined
Gas:	not applicable
<b>Explosive properties</b>	
No data available	
Lower explosion limits:	not determined
Upper explosion limits:	not determined
Auto-ignition temperature:	No data available
<b>Self-ignition temperature</b>	
Solid:	not determined
Gas:	not applicable
Decomposition temperature:	No data available
pH-Value:	6.0 - 8.0 50 g/l
Viscosity / dynamic:	not applicable
Viscosity / kinematic:	not applicable
Flow time:	not applicable
Water solubility:	1000 g/L
<b>Solubility in other solvents</b>	
Soluble in: Chloroform, DCM, Alcohols.	
insoluble in: Diethyl ether, n-Hexane	
Partition coefficient n-octanol/water:	log Pow: -2,98 (20 °C)
Vapour pressure: (at 20 °C)	1,33 hPa
Density:	1,04 g/cm <sup>3</sup>
Bulk density:	No data available
Relative vapour density:	not determined

**9.2. Other information****Information with regard to physical hazard classes**

Sustaining combustion:	No data available
Oxidizing properties	
No data available	

**Other safety characteristics**

Solvent content:	not determined
Solid content:	not determined
Evaporation rate:	not determined

**Further Information****SECTION 10: Stability and reactivity**

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**10.1. Reactivity**

No data available

**10.2. Chemical stability**

Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

No data available

**10.4. Conditions to avoid**

Protect from moisture.

Keep away from heat.

**10.5. Incompatible materials**

Oxidizing agents, strong.

Strong acid

**10.6. Hazardous decomposition products**

Thermal decomposition can lead to the escape of irritating gases and vapours.

 In case of fire may be liberated: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO). Nitrogen oxides (NO<sub>x</sub>).

Hydrogen chloride (HCl).

**Further information**

In case of fire: See chapter 5.

**SECTION 11: Toxicological information**
**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**
**Toxicokinetics, metabolism and distribution**

No data available

**Acute toxicity**

Toxic in contact with skin.

Harmful if swallowed.

LD50: intravenous: Mouse: 56 mg/kg

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
25952-53-8	EDC*HCl				
	oral	LD50 mg/kg 500	Rat female		OECD 423
	dermal	LD50 mg/kg >200	Rat male/ female		OECD 402

**Irritation and corrosivity**

Causes skin irritation.

Causes serious eye irritation.

Skin corrosion/irritation:

Result Skin - Rabbit Result: Severe skin irritation

OECD 404

Serious eye damage/eye irritation:

eyes - Rabbit.

Result Causes serious eye irritation.

OECD 437



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**Sensitising effects**

May cause allergy or asthma symptoms or breathing difficulties if inhaled. (EDC\*HCl)

May cause an allergic skin reaction. (EDC\*HCl)

Respiratory or skin sensitisation:

mouse lymphoma cells

May cause an allergic skin reaction. OECD 429

**Carcinogenic/mutagenic/toxic effects for reproduction**

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

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Germ cell mutagenicity:

Rat - male

Result: negative

Reproductive toxicity: No data available

**STOT-single exposure**

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

No data available

**STOT-repeated exposure**

May cause damage to organs through prolonged or repeated exposure. (EDC\*HCl)

oral: Causes damage to organs through prolonged or repeated exposure. - gastrointestinal tract

**Aspiration hazard**

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

**Specific effects in experiment on an animal**

No data available

**Additional information on tests**

Special hazards arising from the substance or mixture. Classification according to Regulation (EC) No 1272/2008 [CLP]: health hazard properties.

**Practical experience**

No data available

**Further information**

RTECS: FF2200000

Warning - substance not yet tested completely.

Handle in accordance with good industrial hygiene and safety practice.

**SECTION 12: Ecological information**
**12.1. Toxicity**

Very toxic to aquatic life with long lasting effects.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
25952-53-8	EDC*HCl					
	Acute crustacea toxicity	EC50 mg/l	0,41	48 h	Daphnia magna (Big water flea)	EN ISO 6341

**12.2. Persistence and degradability**

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CAS No	Chemical name	Method	Value	d	Source
		Evaluation			
25952-53-8	EDC*HCl				
	Biological degradation: aerobic. Chemical oxygen demand (COD)		0	28	OECD 301
	Not readily biodegradable (according to OECD criteria)				

**12.3. Bioaccumulative potential**

No data available

**Partition coefficient n-octanol/water**

CAS No	Chemical name	Log Pow
25952-53-8	EDC*HCl	-2,98

**12.4. Mobility in soil**

No data available

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

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.7. Other adverse effects**

Very toxic to aquatic life with long lasting effects.  
 Warning - substance not yet tested completely.

**Further information**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.  
 Discharge into the environment must be avoided.

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

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation. Dispose of waste according to applicable legislation.  
 Consult the appropriate local waste disposal expert about waste disposal.

**Contaminated packaging**

Hazardous waste according to Directive 2008/98/EC (waste framework directive). Handle contaminated packages in the same way as the substance itself. Handle contaminated packages in the same way as the substance itself.

**SECTION 14: Transport information**
**Land transport (ADR/RID)**

- 14.1. UN number or ID number:** UN 2811
- 14.2. UN proper shipping name:** TOXIC SOLID, ORGANIC, N.O.S. (1-(3-(Dimethylamino)propyl)-3-ethyl-carbodiimide hydrochloride)
- 14.3. Transport hazard class(es):** 6.1
- 14.4. Packing group:** III
- Hazard label: 6.1



Classification code: T2

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Special Provisions: 274 614  
Limited quantity: 5 kg  
Excepted quantity: E1  
Transport category: 2  
Hazard No: 60  
Tunnel restriction code: E

**Inland waterways transport (ADN)**

**14.1. UN number or ID number:** UN 2811  
**14.2. UN proper shipping name:** TOXIC SOLID, ORGANIC, N.O.S. (1-(3-(Dimethylamino)propyl)-3-ethyl-carbodiimide hydrochloride)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** III  
Hazard label: 6.1



Classification code: T2  
Special Provisions: 274 614 802  
Limited quantity: 5 kg  
Excepted quantity: E1

**Marine transport (IMDG)**

**14.1. UN number or ID number:** UN 2811  
**14.2. UN proper shipping name:** TOXIC SOLID, ORGANIC, N.O.S. (1-(3-(Dimethylamino)propyl)-3-ethyl-carbodiimide hydrochloride)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** III  
Hazard label: 6.1



Special Provisions: 223, 274  
Limited quantity: 5 kg  
Excepted quantity: E1  
EmS: F-A, S-A

**Air transport (ICAO-TI/IATA-DGR)**

**14.1. UN number or ID number:** UN 2811  
**14.2. UN proper shipping name:** TOXIC SOLID, ORGANIC, N.O.S. (1-(3-(Dimethylamino)propyl)-3-ethyl-carbodiimide hydrochloride)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** III  
Hazard label: 6.1



Special Provisions: A3 A5  
Limited quantity Passenger: 10 kg  
Passenger LQ: Y645  
Excepted quantity: E1

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IATA-packing instructions - Passenger:	670
IATA-max. quantity - Passenger:	100 kg
IATA-packing instructions - Cargo:	677
IATA-max. quantity - Cargo:	200 kg

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: Yes



Danger releasing substance: 1-(3-(Dimethylamino)propyl)-3-ethylcarbodiimide hydrochloride

**14.6. Special precautions for user**

Warning: Acute Toxicity. No data available

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

not applicable

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**

Information according to 2012/18/EU (SEVESO III): E1 Hazardous to the Aquatic Environment

**Additional information**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

**National regulatory information**

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 2 - obviously hazardous to water

Skin resorption/Sensitization: Permeates easily through outer skin and causes poisoning. Causes allergic hypersensitivity reactions.

**15.2. Chemical safety assessment**

For this substance a chemical safety assessment has not been carried out.

**SECTION 16: Other information****Abbreviations and acronyms**

CLP: Classification, labelling and Packaging  
REACH: Registration, Evaluation and Authorization of Chemicals  
GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals  
UN: United Nations  
CAS: Chemical Abstracts Service  
DNEL: Derived No Effect Level  
DMEL: Derived Minimal Effect Level  
PNEC: Predicted No Effect Concentration  
ATE: Acute toxicity estimate  
LC50: Lethal concentration, 50%  
LD50: Lethal dose, 50%  
LL50: Lethal loading, 50%  
EL50: Effect loading, 50%  
EC50: Effective Concentration 50%  
ErC50: Effective Concentration 50%, growth rate

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NOEC: No Observed Effect Concentration  
BCF: Bio-concentration factor  
PBT: persistent, bioaccumulative, toxic  
vPvB: very persistent, very bioaccumulative  
ADR: Accord européen sur le transport des marchandises dangereuses par Route  
(European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Regulations concerning the international carriage of dangerous goods by rail  
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
(Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)  
IMDG: International Maritime Code for Dangerous Goods  
EmS: Emergency Schedules  
MFAG: Medical First Aid Guide  
IATA: International Air Transport Association  
ICAO: International Civil Aviation Organization  
MARPOL: International Convention for the Prevention of Marine Pollution from Ships  
IBC: Intermediate Bulk Container  
SVHC: Substance of Very High Concern  
For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>

**Relevant H and EUH statements (number and full text)**

H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

**Further Information**

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations. Warning - substance not yet tested completely. The product is intended for research, analysis and scientific education.  
The receiver of our product is singularly responsible for adhering to existing laws and regulations.

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.