

Safety Data Sheet

DUNAPOX BLACK AD 135 RESIN



Safety Data Sheet dated 18/1/2024, version 4

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

1.1. Product identifier

Mixture identification:

Trade name: DUNAPOX BLACK AD 135 RESIN

Trade code: 260275

Product type:

Epoxy resin

UFI: F8N0-D0EJ-Q002-SCFR

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

Component for the production of epoxy polymers

Not recommended uses:

Any use other than the relevant ones identified.

1.3. Details of the supplier of the safety data sheet

Company:

DUNA-Corradini S.p.A.

Via Modena-Carpi, 388

41019 Soliera (MO)

Italy

Phone: +39 059 893911

Competent person responsible for the safety data sheet:

safety@dunagroup.com

1.4. Emergency telephone number

DUNA-Corradini S.p.A.

phone +39 059 893911

(8.00 - 18.00)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP):

⚠ Warning, Skin Irrit. 2, Causes skin irritation.

⚠ Warning, Eye Irrit. 2, Causes serious eye irritation.

⚠ Warning, Skin Sens. 1, May cause an allergic skin reaction.

⚠ Warning, Muta. 2, Suspected of causing genetic defects.

⚠ Aquatic Chronic 2, Toxic to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects:

No other hazards

The full text for substance classification is reported in section 16.

2.2. Label elements

Hazard pictograms:

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Warning

Hazard statements:

- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H317 May cause an allergic skin reaction.
- H341 Suspected of causing genetic defects.
- H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
- P391 Collect spillage.

Special Provisions:

EUH205 Contains epoxy constituents. May produce an allergic reaction.

Contains

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane
2,3-epoxypropyl o-tolyl ether

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

None

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration $\geq 0.1\%$

Other Hazards:

No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.

3.2. Mixtures

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

Qty	Name	Ident. Number	Classification
$\geq 20\%$ - $< 25\%$	2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Index number: 603-073-00-2 CAS: 1675-54-3 EC: 216-823-5 REACH No.: 01-2119456619-26	<div> <div> </div> <div> </div> <div> </div> <div> </div> </div> <div> <div> </div> <div> </div> <div> </div> <div> </div> </div>
$\geq 7\%$ - $< 10\%$	2,3-epoxypropyl o-tolyl ether	Index number: 603-056-00-X CAS: 2210-79-9 EC: 218-645-3 REACH No.: 01-2119966907-18	<div> <div> </div> <div> </div> <div> </div> <div> </div> </div> <div> <div> </div> <div> </div> <div> </div> <div> </div> </div>

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96 ppm	2-methoxy-1-methylethyl acetate	Index number: CAS: EC: REACH No.:	607-195-00-7 108-65-6 203-603-9 01-2119475791-29	⚠ 2.6/3 Flam. Liq. 3 H226 ⚠ 3.8/3 STOT SE 3 H336
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The full text of the hazard statements can be found in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap. Wash generously with water and soap. Remove contaminated clothes and shoes. Wash carefully contaminated clothes with water before removing them or use gloves. Rinse for at least 10 minutes. Consult a doctor. In case of disorders or symptoms, avoid exposure to the substance. Wash clothes before reusing. Wash shoes carefully before reusing.

In case of eyes contact:

In case of contact with eyes, wash using water for at least 30 minutes, keep the eyes opened and consult an ophthalmologist. Remove contact lenses if possible. Protect uninjured eye.

In case of ingestion:

If the person exposed to the substance is responsive, make him wash his mouth with water. Do not induce vomiting if not authorized by medical staff. In case of vomit, keep the head down so that vomit does not enter the lungs.

In case of inhalation:

Remove casualty to fresh air and keep warm and at rest. In case of inhalation, consult a doctor immediately and show him packing or label. If breathing is irregular or stopped, administer artificial respiration. Giving CPR could be dangerous for the rescuer.

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

It can cause both skin and eye irritation. It can cause allergic skin reaction. It's irritating for mouth, throat and stomach. In case of long-term exposure, it can cause lacrimation, irritation and reddening of both eyes and skin. Information not available.

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:

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Carbon dioxide (CO₂).

Water spray

Extinguishing media which must not be used for safety reasons:

Direct water jet

5.2. Special hazards arising from the substance or mixture

In case of fire or heating, the pressure can increase causing a rupture of the container.

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Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

Combustion produces carbon dioxide, carbon monoxide and halogenated compounds. In case of fire or overheating, the pressure increases causing a potential explosion of the vessel containing the substance.

5.3. Advice for firefighters

In case of fire, isolate promptly the area of the accident removing all the people. Actions which could involve a risk or are undertaken without the suitable training must be avoided.

People of the emergency response team must wear protective equipment including a positive-pressure Self-Contained Breathing Apparatus (SCBA) with face mask. Protective clothing (including helmets, boots and gloves), complying with EU regulation EN 469, ensure a based level of protection for firefighting personnel during chemical accidents.

Use suitable breathing apparatus.

Move undamaged containers from immediate hazard area if it can be done safely.

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

This compound is toxic for aquatic environments with long-term effects. Contaminated fire extinguishing water must be contained and it must not enter in contact with water streams, sewage or drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

Before acting, make sure the area is well-ventilated and eliminate all the sources for combustion.

See protective measures under point 7 and 8.

6.2. Environmental precautions

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

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and material for containment and cleaning up

Place the contaminated material in suitable containers, duly labeled for subsequent disposal in accordance with current legislation.

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

Wash with plenty of water.

Contain and collect scrubbing water in compliance with the existing legislation.

Contain and collect possible leakage using absorbent and non-combustible material, i.e. sand, soil, vermiculite, diatomite. Then arrange for disposal of the product in a vessel in compliance with the existing legislation.

6.4. Reference to other sections

See also section 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes and inhalation of vapors and mists.

Before transfer operations, make sure that there are no incompatible residual materials in the receiving container.

Contaminated clothing should be changed before entering eating areas.

At work do not eat, do not drink and do not smoke.

7.2. Conditions for safe storage, including any incompatibilities

Avoid direct exposure to the sun.

Carefully close containers and store them upright to prevent leakage.

Keep the product in the original containers duly labeled.

Keep away from sources of heat, flames and sparks.

Incompatible materials: see section 10.

It is recommended that the premises are cool and well-aerated to ensure fresh air all the time in

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the storage area.

Protect from freezing and direct sunlight.

Do not store near drains.

7.3. Specific end use(s)

Refer to subsection 1.2 of this Material Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

2-methoxy-1-methylethyl acetate - CAS: 108-65-6

UE - OEL - TWA(8h): 275 mg/m³, 50 ppm - STEL: 550 mg/m³, 100 ppm - Notes: Skin

NDS - TWA(8h): 260 mg/m³ - STEL(15 m): 520 mg/m³ - Notes: POLAND

National - TWA: 275 mg/m³, 50 ppm - STEL: 550 mg/m³, 100 ppm - Notes: AUSTRIA - ROMANIA

National - TWA: 275 mg/m³, 50 ppm - STEL(15 m): 550 mg/m³, 100 ppm - Notes: Skin - BELGIUM - DENMARK - SWEDEN

National - TWA: 270 mg/m³, 50 ppm - STEL(15 m): 550 mg/m³, 100 ppm - Notes: FINLAND

National - TWA: 275 mg/m³ - STEL(15 m): 550 mg/m³ - Notes: HUNGARY

National - TWA: 270 mg/m³, 50 ppm - Notes: Skin - NORWAY

National - TWA: 275 mg/m³, 50 ppm - STEL: 275 mg/m³, 50 ppm - Notes:

SWITZERLAND

National - TWA: 550 mg/m³ - Notes: THE NETHERLANDS

National - TWA: 274 mg/m³, 50 ppm - STEL: 548 mg/m³, 100 ppm - Notes: UNITED KINGDOM

DNEL Exposure Limit Values

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane - CAS: 1675-54-3

Consumer: 0.5 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects

Worker Industry: 0.75 mg/kg bw/d - Consumer: 0.0893 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects

Worker Industry: 4.93 ppm - Consumer: 0.87 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

2,3-epoxypropyl o-tolyl ether - CAS: 2210-79-9

Worker Industry: 0.46 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

Worker Industry: 40 ppm - Exposure: Human Inhalation - Frequency: Short Term, systemic effects

Worker Industry: 0.46 ppm - Exposure: Human Inhalation - Frequency: Long Term, local effects

Worker Industry: 40 ppm - Exposure: Human Inhalation - Frequency: Short Term, local effects

Worker Industry: 0.139 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects

Consumer: 0.14 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects

2-methoxy-1-methylethyl acetate - CAS: 108-65-6

Worker Industry: 796 mg/kg bw/d - Consumer: 320 mg/kg bw/d - Exposure: Human Dermal - Frequency: Long Term, systemic effects

Worker Industry: 275 ppm - Consumer: 33 ppm - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

Worker Industry: 550 ppm - Consumer: 500 mg/kg bw/d - Exposure: Human Oral - Frequency: Short Term (acute)

Consumer: 36 mg/kg bw/d - Exposure: Human Oral - Frequency: Long Term, systemic effects

PNEC Exposure Limit Values

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane - CAS: 1675-54-3

Target: Fresh Water - Value: 0.006 mg/l

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Target: Marine water - Value: 0.001 mg/l
Target: Marine water sediments - Value: 0.034 mg/Kg
Target: Freshwater sediments - Value: 0.341 mg/Kg
Target: Soil (agricultural) - Value: 0.065 mg/Kg
Target: Food chain - Value: 0.011 19252.04
Target: STP - Value: 10 mg/l

2,3-epoxypropyl o-tolyl ether - CAS: 2210-79-9

Target: Fresh Water - Value: 2.8 µg/l
Target: Marine water - Value: 0.28 µg/l
Target: Sewage treatment plants - Value: 10 mg/l
Target: Freshwater sediments - Value: 0.039 mg/kg/d
Target: Marine water sediments - Value: 0.0039 mg/kg/d
Target: Soil - Value: 0.012 mg/kg/d

2-methoxy-1-methylethyl acetate - CAS: 108-65-6

Target: Fresh Water - Value: 0.635 mg/l
Target: Marine water - Value: 0.064 mg/l
Target: Intermittent release - Value: 6.35 mg/l
Target: Sewage treatment plants - Value: 100 mg/l
Target: Freshwater sediments - Value: 3.29 mg/kg/d
Target: Marine water sediments - Value: 0.329 mg/kg/d
Target: Soil - Value: 0.29 mg/kg/d

8.2. Exposure controls

Eye protection:

Use safety glasses in compliance with regulation EN 166 in order to avoid exposure to liquid drops, sprays or dust.

Protection for skin:

PPE for the body should be selected based on the risks of the job.

Use protective clothing (resistant to chemicals). In case of hypersensitivity of the skin it is not recommended to work with the product.

Protection for hands:

Wear resistant gloves when in contact with chemicals, in accordance with EN 374.

Among the examples of the materials for gloves that can offer appropriate protection are: butyl rubber, chlorinated polyethylene, polyethylene, laminates of copolymers of ethylene / vinyl alcohol (EVAL), polychloroprene (neoprene), nitrile/butadiene rubber (NBR or nitrile), polyvinyl chloride (PVC or vinyl), fluoroelastomer (Viton).

In the case of prolonged or frequently repeated contact, we recommend a protection class of at least 5 (breakthrough time greater than 240 minutes according to the standard EN 374).

If you are planning a short contact, it is recommended a protection class of at least 3 (breakthrough time greater than 60 minutes according to the standard EN 374).

Decontaminate and dispose of contaminated gloves.

Wear protective gloves in the handling of the just obtained polymer to avoid contact with traces of residual material which can be dangerous in contact with the skin.

Respiratory protection:

PPE for respiratory protection must be chosen and used for risks for the job.

Breathing apparatuses should be used (if available) when there's the possibility to exceed the occupational exposure limit values. Otherwise, wear breathing apparatuses when side effects such as irritation to airways appear or when specified in your chemical risk assessment.

In case of exceeding threshold value for daily exposure in the workplace of one or more of the substances present in the mixture, wear a mask with filter type A or universal type, the class of which (1, 2 or 3) will be chosen according to the limit concentration of use (ref. standard EN 141).

Thermal Hazards:

Wear protective gloves when handling the just formed polymer in order to avoid burns.

Environmental exposure controls:

Refer to section 7 and section 13.

Appropriate engineering controls:

Provide a ventilation system (localised or not) in order to keep the concentrations below the occupational exposure limit values. Air intake systems must be designed so that air is removed

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from vapours/aerosols sources and from people working in the area. Provide eyewash fountains and safety showers.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid	--	--
Colour:	Black	--	--
Odour:	Light	--	--
Melting point/freezing point:	N.A.	--	--
Boiling point or initial boiling point and boiling range:	Not available	--	--
Flammability:	N.A.	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	>249 °C	--	Data referring to epoxy resin, CAS: 1675-54-3
Auto-ignition temperature:	>300 °C	--	Data referring to epoxy resin, CAS: 1675-54-3
Decomposition temperature:	Not available	--	--
pH:	Not available	--	--
Kinematic viscosity:	N.A.	--	--
Solubility in water:	Insoluble	--	--
Solubility in oil:	N.A.	--	--
Partition coefficient n-octanol/water (log value):	3,242 log POW	--	Data referring to epoxy resin, CAS: 1675-54-3
Vapour pressure:	<0,01 Pa @ 20°C	--	Data referring to epoxy resin, CAS: 1675-54-3
Density and/or relative density:	1.70 g/cc	--	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

9.2. Other information

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Properties	Value	Method:	Notes:
Explosive properties:	Not explosive	--	--
Viscosity:	100 cps (25°C)	--	--
Oxidizing properties:	Not oxydant	--	--

SECTION 10: Stability and reactivity

- 10.1. Reactivity
The product reacts with amines generating irreversible polymerization accompanied by considerable development of heat.
- 10.2. Chemical stability
The product is stable under the storage conditions described in Section 7.
- 10.3. Possibility of hazardous reactions
It may catch fire on contact with strong oxidizing agents.
- 10.4. Conditions to avoid
Avoid overheating the product for a long time.
Potentially violent decomposition can occur above 350°C.
Generation of gas during decomposition can cause pressure in closed systems. The increase of pressure can be very rapid.
Avoid static electricity discharges.
- 10.5. Incompatible materials
Avoid contact with strong oxidizing materials, acids and bases.
Avoid unintended contact with amines.
- 10.6. Hazardous decomposition products
Oxides of nitrogen and carbon oxides.

SECTION 11: Toxicological information

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

Toxicological information of the product:

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- a) acute toxicity
Not classified
Based on available data, the classification criteria are not met
- b) skin corrosion/irritation
The product is classified: Skin Irrit. 2 H315
- c) serious eye damage/irritation
The product is classified: Eye Irrit. 2 H319
- d) respiratory or skin sensitisation
The product is classified: Skin Sens. 1 H317
- e) germ cell mutagenicity
The product is classified: Muta. 2 H341
- f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met
- g) Reproductive toxicity/toxicity to fertility
Not classified
Based on available data, the classification criteria are not met
- h) STOT-single exposure
Not classified
Based on available data, the classification criteria are not met
- i) STOT-repeated exposure
Not classified

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Based on available data, the classification criteria are not met

- j) aspiration hazard
- Not classified

Based on available data, the classification criteria are not met

Toxicological information of the main substances found in the product:

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane - CAS: 1675-54-3

- a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat > 2000 mg/kg - Based on available data, the classification criteria are not met

Test: LD50 - Route: Dermal - Species: Rat > 2000 mg/kg - Based on available data, the classification criteria are not met

- b) skin corrosion/irritation:

Test: Skin Irritant - Result: Positive

- c) serious eye damage/irritation:

Test: Eye Irritant - Result: Positive

- d) respiratory or skin sensitisation:

Test: Respiratory Tract Irritant - Result: Positive

- e) germ cell mutagenicity:

-Not classified - Based on available data, the classification criteria are not met

- f) carcinogenicity:

Test: NOEAL - Route: Oral - Species: Rat = 15 mg/kg

- g) Reproductive toxicity/toxicity to fertility:

Test: NOEAL - Route: Oral - Species: Rat = 750 mg/kg - Based on available data, the classification criteria are not met

Test: NOEAL - Route: Oral - Species: Rabbit = 180 mg/kg - Based on available data, the classification criteria are not met

Test: NOEAL - Route: Dermal - Species: Rabbit = 300 mg/kg - Based on available data, the classification criteria are not met

- h) STOT-single exposure:

-Not classified - Based on available data, the classification criteria are not met

- i) STOT-repeated exposure:

Test: NOEAL - Route: Oral - Species: Rat = 50 mg/kg - Based on available data, the classification criteria are not met

Test: NOEAL - Route: Dermal - Species: Rat = 100 mg/kg - Based on available data, the classification criteria are not met

- j) aspiration hazard:

-Not classified - Based on available data, the classification criteria are not met

2,3-epoxypropyl o-tolyl ether - CAS: 2210-79-9

- a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat = 2800 mg/kg - Source: OCSE 401

Test: LD50 - Route: Dermal - Species: Rabbit > 2000 mg/kg - Source: OCSE 402

Test: LC50 - Route: Inhalation - Species: Rat = 6.09 mg/l - Duration: 4h - Source: OECD TG 403

- b) skin corrosion/irritation:

Test: Skin Irritant - Species: Rabbit - Result: Positive - Source: OCSE 404

- c) serious eye damage/irritation:

Test: Eye Irritant - Species: Rabbit - Result: Negative - Source: OCSE 405

- d) respiratory or skin sensitisation:

Test: Skin Sensitization - Species: Guinea pig - Result: Positive - Source: OCSE 406

- e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium - Result: Positive - Source: OECD TG 471 (Ames Test)

Test: MUTAG - Species: MAMVIVO - Result: Negative - Source: OECD 474

- f) carcinogenicity:

No data available for the product

- g) Reproductive toxicity/toxicity to fertility:

No data available for the product

- h) STOT-single exposure:

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- No data available for the product
- i) STOT-repeated exposure:
No data available for the product
 - j) aspiration hazard:
No data available for the product
- 2-methoxy-1-methylethyl acetate - CAS: 108-65-6
- a) acute toxicity:
Test: LD50 - Route: Oral - Species: Rat > 5000 mg/kg - Source: OECD TG 402
 - b) skin corrosion/irritation:
Test: Skin Irritant - Species: Rabbit -Result: Negative - Source: OECD TG 404
 - c) serious eye damage/irritation:
Test: Eye Irritant - Species: Rabbit -Result: Negative - Source: OECD TG 405
 - d) respiratory or skin sensitisation:
Test: Skin Sensitization - Species: Guinea pig -Result: Negative - Source: OECD TG 406
 - e) germ cell mutagenicity:
No data available for the product
 - f) carcinogenicity:
No data available for the product
 - g) Reproductive toxicity/toxicity to fertility:
No data available for the product
 - h) STOT-single exposure:
No data available for the product
 - i) STOT-repeated exposure:
No data available for the product
 - j) aspiration hazard:
No data available for the product

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration $\geq 0.1\%$

SECTION 12: Ecological information

12.1. Toxicity

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

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The product is classified: Aquatic Chronic 2 - H411

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane - CAS: 1675-54-3

a) Aquatic acute toxicity:

- Endpoint: LC50 - Species: Fish = 1.75 mg/l - Duration h: 96
- Endpoint: LC50 - Species: Daphnia - Daphnia Magna = 1.7 mg/l - Duration h: 48
- Endpoint: 19125.NOEL - Species: Daphnia - Daphnia Magna = 0.3 mg/l
- Endpoint: EC10 - Species: Algae = 4.2 mg/l - Duration h: 72
- Endpoint: IC50 - Species: Bacteria = 100 mg/l - Duration h: 3
- Endpoint: ErC50 - Species: Algae > 11 mg/l - Duration h: 72

2,3-epoxypropyl o-tolyl ether - CAS: 2210-79-9

a) Aquatic acute toxicity:

- Endpoint: LC50 - Species: Fish - Oncorhynchus mykiss (Rainbow trout) = 7.5 mg/l - Duration h: 96 - Notes: OECD TG 203
- Endpoint: LC50 - Species: Fish - Danio Rerio (zebrafish) = 6.5 mg/l - Duration h: 96 - Notes: OECD TG 203
- Endpoint: EC50 - Species: Daphnia = 3.3 mg/l - Duration h: 48 - Notes: OECD TG 202
- Endpoint: EC50 - Species: Daphnia = 16 mg/l - Duration h: 48 - Notes: OECD TG 202
- Endpoint: EC50 - Species: Algae - Pseudokirchnerella subcapitata = 5.1 mg/l - Duration h: 72 - Notes: OECD TG 201
- Endpoint: IC50 - Species: Activated sludge > 100 mg/l - Duration h: 3 - Notes: OECD TG 209

2-methoxy-1-methylethyl acetate - CAS: 108-65-6

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- a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish - Oncorhynchus mykiss (Rainbow trout) < 180 mg/l - Duration h: 96 - Notes: OECD TG 203
Endpoint: EC50 - Species: Algae - Pseudokirchnerella subcapitata > 1000 mg/l - Duration h: 72 - Notes: OECD TG 201
- 12.2. Persistence and degradability
2,3-epoxypropyl o-tolyl ether - CAS: 2210-79-9
Biodegradability: Not easily biodegradable - Test: CO2 production - Duration: 28 d - %: 17 - Notes: OECD TG 301 B
2-methoxy-1-methylethyl acetate - CAS: 108-65-6
Biodegradability: Readily biodegradable - Duration: 28 d - %: 90 - Notes: OECD TG 301F
- 12.3. Bioaccumulative potential
2-methoxy-1-methylethyl acetate - CAS: 108-65-6
Bioaccumulation: Bioaccumulative - Test: Log Kow - Partition coefficient n-octanol/water 1.2 - Notes: OECD TG 117
- 12.4. Mobility in soil
N.A.
- 12.5. Results of PBT and vPvB assessment
vPvB Substances: None - PBT Substances: None
- 12.6. Endocrine disrupting properties
No endocrine disruptor substances present in concentration $\geq 0.1\%$
- 12.7. Other adverse effects
No data available for the product

SECTION 13: Disposal considerations

- 13.1. Waste treatment methods
Immediately after the last withdrawal of product, completely empty the containers (drained, free of granules and pasty residues). Empty packaging without residue can be delivered to a company specializing in disposal. In the EU this is done specifically by type of packaging taken from the collection centres of the existing recovery systems of the chemical industry. To this end, product and hazard markings must remain on the packaging. Recovery must be carried out in accordance with national legislation and environmental protection provisions. Do not dispose of in wastewater.

SECTION 14: Transport information



- 14.1. UN number or ID number
ADR-UN Number: 3082
IATA-UN Number: 3082
IMDG-UN Number: 3082
- 14.2. UN proper shipping name
ADR-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (epoxy resin)
IATA-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (epoxy resin)
IMDG-Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (epoxy resin)
- 14.3. Transport hazard class(es)
ADR-Class: 9
ADR - Hazard identification number: 90
IATA-Class: 9
IATA-Label: 9

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IMDG-Class:	9
14.4. Packing group	
ADR-Packing Group:	III
IATA-Packing group:	III
IMDG-Packing group:	III
14.5. Environmental hazards	
ADR-Environmental Pollutant:	Yes
IMDG-Marine pollutant:	Marine Pollutant
Most important toxic component:	epoxy resin
IMDG-EmS:	F-A , S-F
14.6. Special precautions for user	
ADR-Subsidiary hazards:	-
ADR-S.P.:	274 335 375 601
ADR-Transport category (Tunnel restriction code):	3 (-)
IATA-Passenger Aircraft:	964
IATA-Subsidiary hazards:	-
IATA-Cargo Aircraft:	964
IATA-S.P.:	A97 A158 A197
IATA-ERG:	9L
IMDG-Subsidiary hazards:	-
IMDG-Stowage and handling:	Category A
IMDG-Segregation:	-
14.7. Maritime transport in bulk according to IMO instruments	
N.A.	

SECTION 15: Regulatory information

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
- 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 (EC) n. 1272/2008 (CLP)
 - Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
 - Regulation (EU) n. 2020/878
 - 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)
 - Regulation (EU) n. 2018/669 (ATP 11 CLP)
 - Regulation (EU) n. 2018/1480 (ATP 13 CLP)
 - Regulation (EU) n. 2019/521 (ATP 12 CLP)
- 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:
 - Restriction 3
 - Restriction 40
 - Restrictions related to the substances contained:
 - Restriction 29
 - Restriction 75
- Where applicable, refer to the following regulatory provisions :
- Directive 2012/18/EU (Seveso III)
 - Regulation (EC) nr 648/2004 (detergents).
 - Dir. 2004/42/EC (VOC directive)

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Provisions related to directive EU 2012/18 (Seveso III):
Seveso III category according to Annex 1, part 1
Product belongs to category: E2

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

The exposure scenarios of the substances considered relevant in the determination of the hazard classification of the mixture are attached to the safety data sheet:

SECTION 16: Other information

Text of phrases referred to under heading 3:
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H411 Toxic to aquatic life with long lasting effects.
H341 Suspected of causing genetic defects.
H226 Flammable liquid and vapour.
H336 May cause drowsiness or dizziness.

Hazard class and hazard category	Code	Description
Flam. Liq. 3	2.6/3	Flammable liquid, Category 3
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
Skin Sens. 1	3.4.2/1	Skin Sensitisation, Category 1
Muta. 2	3.5/2	Germ cell mutagenicity, Category 2
STOT SE 3	3.8/3	Specific target organ toxicity - single exposure, Category 3
Aquatic Chronic 2	4.1/C2	Chronic (long term) aquatic hazard, category 2

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

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Skin Sens. 1, H317	Calculation method
Muta. 2, H341	Calculation method
Aquatic Chronic 2, H411	Calculation method

Safety Data Sheet

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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 MSDS cancels and replaces any preceding release.

Annex: Exposure Scenario Heloxy KR 3.1S (Industrial)

1. Title	
	Exposure Scenario Heloxy KR 3.1S - Industrial Use Applications
Systematic title based on use descriptor	SU 1 SU 2a SU 2b SU 3 SU 5 SU 6a SU 6b SU 7 SU 8 SU 9 SU 10 SU 11 SU 12 SU 13 SU 15 SU 16 SU 17 SU 18 SU 19 SU 23 SU 24 PROC 5 PROC 6 PROC 7 PROC 8a PROC 8b PROC 9 PROC 13 PROC 14 PROC 15 PROC 16 mERC 1.2- Environmental releases related to use of the substance as a reactant, monomer or blending in a mixture by a DU.
Processes, tasks and activities covered	Industrial processes for use and end use in manufacture of an article or finished product, including mixtures and formulations. This includes also blending or formulation into a mixture, and packaging of the product or mixtures as well as packaging into small containers for whole sale or retail sales, including transfers of material or mixtures between vessels, containers and/or shipping tanks for both dedicated and non-dedicated facilities.
Assessment Method	ECETOC-TRA modelling, using DNEL's and PNEC's derived from the REACH Registration IUCLID dossier.
2. Operational conditions and risk management measures	
RMM's and OC's apply to all SU and PROC/ERC categories listed above. The user should select whichever combination of RMM's and OC's are necessary to reduce worker and environmental exposure to the level required to achieve <1.0 Risk Ratios. Risk Ratios can be calculated using PNEC and DNEL values listed in the SDS.	
RMM's - See section 2.1 Operational Controls- See sections 2.1 and 2.2	
Number of sites: Not applicable to this risk management modelling. Modelling based on conservative assumption that 10% of total substance production is used at a single DU industrial site ('worst case' assumptions).	

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2,3-epoxypropyl o-tolyl ether



2.1 Control of workers exposure		
Product characteristic		
There are no specific product characteristics relevant to this exposure scenario. ES assumes substance is 25 - 100% concentration ('worst case').		
Amounts used		
ES and risk assessment modelling assumes a certain volume of the legal entity's Registration at a single DU site (actual volume and DU percentages are confidential) ('worst case').		
Frequency and duration of use/exposure		
Worker risk assessment assumes >4 hour/day (unless otherwise indicated in tables under "Conditions and measures related to personal protection, hygiene and health evaluation") maximum default value in ECETOC-TRA, which is a 'worst case'. Actual employee exposure duration is usually much less.		
Human factors not influenced by risk management		
None specifically known or relevant. Risk modelling does not use any additional exposure mitigation factors (worst case). Risk assessment utilized standard ECETOC modelling parameters for worker respiratory volume (10M3/day), skin contact area and body weight. Standard values also used for room size and ventilation, but not generally applicable to this ES.		
Other given operational conditions affecting workers exposure		
Risk assessment used ECETOC-TRA model without changing assumptions on worker exposure. This is a conservative model for estimating exposure, and would generally over-estimate versus the actual exposure. In particular, workers would rarely be exposed >4hr/day.		
Technical conditions and measures at process level (source) to prevent release		
Conditions and measures to be selected to reduce exposure and risk: Standard conditions and assumptions from ECETOC-TRA model Indoor operations with LEV		
Technical conditions and measures to control dispersion from source towards the worker		
Indoors with LEV.		
Organisational measures to prevent /limit releases, dispersion and exposure		
Must utilize a combination of operational risk management measures or procedures including: Worker training in process operations Workers safety training. Site industrial hygiene and PPE procedure		
Conditions and measures related to personal protection, hygiene and health evaluation		
Employees must be trained in the proper use of PPE, and when to use it.		
Skin protection:		
Minimum efficiency for PPE	PROC 5 PROC 6 PROC 7 PROC 8a PROC 8b PROC 9 PROC 13 PROC 14 PROC 15 PROC 16	PROC 19
50%	Not recommended - Sensitizer	Not recommended - Sensitizer
90%	Not recommended - Sensitizer	Not recommended - Sensitizer
95%	> 4 hrs	< 4 hrs
Respiratory protection:		
Minimum efficiency for PPE	PROC 5 PROC 6 PROC 7 PROC 8a PROC 8b PROC 9 PROC 13 PROC 14 PROC 15	PROC 7

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	PROC 16 PROC 19	
50%	Not needed	> 4 hrs
90%	Not needed	Not needed
95%	Not needed	Not needed
99%	Not needed	Not needed

Skin protection:

For any more specific recommendations consult the SDS.

RMM SK3

Protection efficiency: 95%

ECETOC-TRA risk modelling results based upon a minimum required protective factor of 0.95 for skin protection. Engineering controls, PPE and work practices should provide the highest level of protection. If a user wants to utilize Tier 2 site-specific worker exposure calculations, this value is used to calculate the allowable skin exposure area (cm²) for each applicable PROC.

The primary RMM is avoidance of skin contact through Operational Controls, procedures and process equipment design. If accidental contact occurs product must be immediately removed from the skin. Recommended or required PPE must be chosen based upon the duration and extent of worker exposure. Employees must be instructed on the use and removal of PPE.

PPE recommendations:

Gloves: Use long gauntlet type gloves where hand contact is possible.

For longer term contact (BTT 4+ hours): Butyl rubber (minimum 0.5-0.6 mm) or EVAL ethylene vinyl alcohol laminate (minimum 0.10-0.15 mm) only. For short term or incidental contact: Butyl rubber, EVAL, Nitrile. Use gloves approved to relevant standards (e.g. EN 374, ASTM F739). Glove thickness will be related to the breakthrough time (BTT) and to specific supplier's glove design. Suitability and durability of a glove is dependent on the usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity, and physical wear and tear. Always seek specific advice from glove supplier. Where tasks result in physical damage or where the gloves become excessively contaminated with surface debris double-gloving is recommended. In that case the outer glove may be of a less protective material such as PVC or neoprene based upon the substance and the glove suppliers recommendation. See SDS for any specific recommendation.

Face shield: Full face shield meeting industry standards (EN 166 a/o ANSI Z87.1) in combination with neck protection (PVC).

Protective Clothing: Butyl rubber apron, boots without laces, protective arm sleeves and full body suit required if applicable to the specific use and tasks performed.

In case of vapours use a splash hood.

Secondary contact from vapours and mists may be a significant source of secondary skin contact. Contact must be eliminated through the use of engineering controls or LEV.

Eye protection:

RMM EY3

Maximum recommended Protection:

Anytime when there is a severe risk of splash or spray or if the material in use is highly hazardous the use of a Face shield is necessary. (Full-face supplied air respiratory protection might be needed instead to prevent inhalation risks). Face shields protect the eyes, face, and neck from chemical splashes and spray as well as flying particles. Face shields should not be worn independently. Therefore safety glasses or goggles must be worn underneath face shields for complete protection.

Safety glasses, splash goggles and Face shields must meet EN 166 a/o ANSI Z87.1 standards.

Respiratory protection:

For all respiratory protection equipment training on proper usage is recommended.

RMM IN1

Protection efficiency: 50%

At this level work functions preclude any potential for unexpected inhalation of hazardous levels of any chemicals.

Good work practices and PPE should be used as appropriate and is recommended whenever there is potential for exposure (i.e. during sampling or maintenance etc.).

ECETOC-TRA risk modelling results based upon a required protective factor (PF) of 0.50 to a Risk Ratio of

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<1.0 (DNEL to Estimated Exposure ratio) if using LEV.	
General comment:	
These practices are designed for normal working conditions and operations. For emergency situations additional measures may be needed and the highest level of protection would generally be recommended.	
2.2 Control of environmental exposure	
Product characteristics	
ES covers mixtures 25 - 100% concentration ('worst case').	
Amounts used	
ES and risk modelling covers a percentage fraction that is greater than the actual amount purchased by any DU legal entity ('worst case').	
Frequency and duration of use	
365 days/year, continuous use ('worst case').	
Environment factors not influenced by risk management	
Standard ECETOC-TRA modelling parameters used. Used a conservative dilution factor of only 10X for water discharge to receiving body (i.e. river).	
Other given operational conditions affecting environmental exposure	
Conditions and Measures to be selected to reduce exposure and risk: Manufacturing equipment is Indoors with LEV. Full liquid and solid containment process and spills collected and directed to disposal. All wastes are incinerated and substance is fully destroyed. Modelling procedure used environmental release values of 10exp-2 for uncontrolled air releases, 10exp-4 for waste water releases to treatment plant, 0.8 for fraction connected to sewer system, 10exp-2 for uncontrolled releases to soil and 10exp-2 for fraction directly emitted to Regional marine systems. 365days/year releases ('worst case'). ECETOC default values for waste water treatment plant were used (EUSES is similar or identical). Environmental risk assessment done at "Local", "Regional" and "Continental" levels.	
Technical conditions and measures at process level (source) to prevent release	
None additional. Used standard conditions of model.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
None additional. Used standard conditions of model.	
Organizational measures to prevent/limit release from site	
Must utilize a combination of operational risk management measures including: Worker training in process operations Workers safety training. Spill Control and Countermeasures plan	
Conditions and measures related to municipal sewage treatment plant	
Standard conditions of modelling applied.	
Conditions and measures related to external treatment of waste for disposal	
Non-aqueous process losses, spill recovery material or waste should be disposed by incineration or another destructive process. Another option would be external treatment like for instance via distillation for raw material recovery.	
Conditions and measures related to external recovery of waste	
Waste recovery is not necessary and is not feasible for this substance, other than the recovery of energy value by incineration.	
3. Exposure estimation and reference to its source	
All Risk Characterisation Ratios (RCR) derived from ECETOC-TRA model.	
Workers exposure	
Applicable duration of activity indicated in tables in section 2.1	
	RCR
Oral	n/a
Dermal	<1.0
Inhalation	<1.0
Total exposure	<1.0 dermal + inhalation
Environmental exposure	

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In STP	RCR
Local freshwater	<0.01
Freshwater sediment	<1.0
Local terrestrial	n/a
Local marine water	n/a
Local marine sediment	n/a
Human via environment	<0.1
4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
Risk Management Measures (RMM's) and Operational Controls (OC's) listed in this ES would usually be adequate to control risks to risk ratios <1.0. Risk assessment above was done using conservative input values and assumptions, and is generally applicable to DU's for the indicated SU's. Not all the indicted RMM's and OC's may be necessary in a specific manufacturing plant or under specific circumstances of use. The DU must determine for their own operations the required measures. ECETOC-TRA model was used for risk assessment, but EUSES model may also be used for environmental risk. DU's can calculate their own Risk Ratios and/or PEC/PNEC ratios using DNEL's and PNEC's listed in the SDS, as well as the actual quantities of the substance, daily usage pattern, substance concentration, etc.	