

Safety data sheet Safety data sheet

acc. to Safe Work Australia - Code of Practice



Morpholine ≥ 99%, for synthesis

article number: **9691**
Version: **GHS 3.0 en**
Replaces version of: 2022-02-25
Version: (GHS 2)

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

1.1 Product identifier

Identification of the substance **Morpholine** ≥ 99%, for synthesis
Article number 9691
CAS number 110-91-8

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

Relevant identified uses: Laboratory and analytical use
Laboratory chemical
Uses advised against: Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household). Food, drink and animal feeding-stuffs.

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co. KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone:+49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet: Department Health, Safety and Environment

e-mail (competent person): sicherheit@carlroth.de

1.4 Emergency telephone number

Name	Street	Postal code/city	Telephone	Website
NSW Poisons Information Centre Childrens Hospital	Hawkesbury Road	2145 Westmead, NSW	131126	

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

Section	Hazard class	Category	Hazard class and category	Hazard statement
2.6	Flammable liquid	3	Flam. Liq. 3	H226
3.10	Acute toxicity (oral)	4	Acute Tox. 4	H302
3.1D	Acute toxicity (dermal)	3	Acute Tox. 3	H311
3.1I	Acute toxicity (inhal.)	3	Acute Tox. 3	H331

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Section	Hazard class	Cat-egory	Hazard class and category	Hazard statement
3.7	Reproductive toxicity	2	Repr. 2	H361fd

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources.

2.2 Label elements

Labelling

Signal word

Danger

Pictograms

GHS02, GHS06,
GHS08



Hazard statements

H226 Flammable liquid and vapour
H302 Harmful if swallowed
H311+H331 Toxic in contact with skin or if inhaled
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child

Precautionary statements

Precautionary statements - prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P280 Wear protective gloves/protective clothing

Precautionary statements - response

P302+P352 IF ON SKIN: Wash with plenty of soap and water
P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher for extinction

Precautionary statements - storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed
P403+P235 Store in a well-ventilated place. Keep cool

For professional users only

Hazardous ingredients for labelling:

2-Methoxyethanol, Ethylenediamine

2.3 Other hazards

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of \geq 0,1%.

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SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Morpholine
Molecular formula	C_4H_9NO
Molar mass	87.12 g/mol
CAS No	110-91-8

Impurities/additives/constituents:

Name of substance	Identifier	Wt%
Ethylenediamine	CAS No 107-15-3	≤ 0.3
2-Methoxyethanol	CAS No 109-86-4	< 0.3

Remarks

For full text of abbreviations: see SECTION 16

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off immediately all contaminated clothing. Self-protection of the first aider.

Following inhalation

Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration.

Following skin contact

Rinse skin with water/shower. After contact with skin, wash immediately with plenty of water.

Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Rinse mouth with water (only if the person is conscious). In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Call a doctor.

4.2 Most important symptoms and effects, both acute and delayed

Vomiting

4.3 Indication of any immediate medical attention and special treatment needed

none

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SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings!
water spray, alcohol resistant foam, dry extinguishing powder, BC-powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Combustible. In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air.

Hazardous combustion products

In case of fire may be liberated: Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray. Avoidance of ignition sources.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

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6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation. Use extractor hood (laboratory). Handle and open container with care. Avoid exposure. Clear contaminated areas thoroughly.

Measures to prevent fire as well as aerosol and dust generation



Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharge.

Advice on general occupational hygiene

Thorough skin-cleansing after handling the product. When using do not smoke.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice:

Store locked up. Ground/bond container and receiving equipment.

Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation.

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
AU	ethylenediamine (1,2-diaminoethane)	107-15-3	WES	10	25						WES

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Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
AU	2-methoxyethanol (methyl glycol) (methyl cellosolve) (ethylene glycol monomethyl ether)	109-86-4	WES	5	16					H	WES

Notation

Ceiling-C Ceiling value is a limit value above which exposure should not occur

H Absorbed through the skin

STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	36 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	72 mg/m ³	human, inhalatory	worker (industry)	acute - local effects
DNEL	0.84 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant DNELs of components						
Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Ethylenediamine	107-15-3	DNEL	25 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
Ethylenediamine	107-15-3	DNEL	3.6 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
2-Methoxyethanol	109-86-4	DNEL	0.91 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
2-Methoxyethanol	109-86-4	DNEL	3.2 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects

Environmental values

Relevant PNECs and other threshold levels				
Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.163 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.016 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	1.83 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)

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Relevant PNECs and other threshold levels				
End-point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.183 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.269 mg/kg	terrestrial organisms	soil	short-term (single instance)

Relevant PNECs of components						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Ethylenediamine	107-15-3	PNEC	0.167 mg/l	aquatic organisms	water	intermittent release
Ethylenediamine	107-15-3	PNEC	0.016 mg/l	aquatic organisms	freshwater	short-term (single instance)
Ethylenediamine	107-15-3	PNEC	0.002 mg/l	aquatic organisms	marine water	short-term (single instance)
Ethylenediamine	107-15-3	PNEC	0.5 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Ethylenediamine	107-15-3	PNEC	7.68 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Ethylenediamine	107-15-3	PNEC	0.768 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Ethylenediamine	107-15-3	PNEC	4.36 mg/kg	terrestrial organisms	soil	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	10 mg/l	aquatic organisms	freshwater	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	1 mg/l	aquatic organisms	marine water	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	1,000 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	36.8 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	3.68 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	7.3 mg/kg	aquatic organisms	water	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	1.87 mg/kg	terrestrial organisms	soil	short-term (single instance)
2-Methoxyethanol	109-86-4	PNEC	94 mg/l	aquatic organisms	water	intermittent release

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection



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Use safety goggle with side protection.

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. 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. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Aerosol or mist formation. Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	colourless
Odour	characteristic
Melting point/freezing point	-4.9 °C (ECHA)
Boiling point or initial boiling point and boiling range	128.3 °C at 1,013 hPa (ECHA)
Flammability	flammable liquid in accordance with GHS criteria
Lower and upper explosion limit	not determined

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Flash point	32 °C at 1,013 hPa (ECHA)
Auto-ignition temperature	255 °C at 1,013 hPa (ECHA)
Decomposition temperature	390 °C
pH (value)	10.6 (in aqueous solution: 5 g/l, 20 °C)
Kinematic viscosity	2.23 mm ² /s at 20 °C
Dynamic viscosity	2.23 mPa s at 20 °C

Solubility(ies)

Water solubility miscible in any proportion

Partition coefficient

Partition coefficient n-octanol/water (log value): -2.55 (pH value: 7, 25 °C) (ECHA)

Soil organic carbon/water (log KOC) 1.887 (ECHA)

Vapour pressure 9.8 hPa at 20.3 °C

Density and/or relative density

Density 1 g/cm³ at 20 °C

Relative vapour density 1.007 at 20 °C (air = 1)

Particle characteristics not relevant (liquid)

Other safety parameters

Oxidising properties none

9.2 Other information

Information with regard to physical hazard classes: There is no additional information.

Other safety characteristics:

Miscibility completely miscible with water

SECTION 10: Stability and reactivity

10.1 Reactivity

It's a reactive substance. Risk of ignition.

If heated

Risk of ignition. Vapours may form explosive mixtures with air.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

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10.3 Possibility of hazardous reactions

Violent reaction with: strong oxidiser, Strong acid

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from heat. Decomposition takes place from temperatures above: 390 °C.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification acc. to GHS

Acute toxicity

Harmful if swallowed. Toxic in contact with skin. Toxic if inhaled.

Acute toxicity					
Exposure route	Endpoint	Value	Species	Method	Source
oral	LD50	1,900 mg/kg	rat		ECHA
dermal	LD50	500 mg/kg	rabbit		ECHA

Acute toxicity estimate (ATE) of components			
Name of substance	CAS No	Exposure route	ATE
Ethylenediamine	107-15-3	oral	866 mg/kg
Ethylenediamine	107-15-3	dermal	560 mg/kg
Ethylenediamine	107-15-3	inhalation: vapour	14.7 mg/l/4h
2-Methoxyethanol	109-86-4	inhalation: vapour	11 mg/l/4h

Acute toxicity of components					
Name of substance	CAS No	Exposure route	Endpoint	Value	Species
Ethylenediamine	107-15-3	oral	LD50	866 mg/kg	rat
Ethylenediamine	107-15-3	inhalation: vapour	LC50	14.7 mg/l/4h	rat
Ethylenediamine	107-15-3	dermal	LD50	560 mg/kg	rabbit
2-Methoxyethanol	109-86-4	oral	LD50	2,257 mg/kg	rat
2-Methoxyethanol	109-86-4	dermal	LD50	3,930 mg/kg	rabbit

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

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Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Suspected of damaging the unborn child. Suspected of damaging fertility.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed

Data are not available.

• If in eyes

Data are not available.

• If inhaled

Data are not available.

• If on skin

Data are not available.

• Other information

Nausea, Vomiting, Corrosivity

11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of \geq 0,1%.

SECTION 12: Ecological information

12.1 Toxicity

Harmful to aquatic life.

Aquatic toxicity (acute)				
Endpoint	Value	Species	Source	Exposure time
LC50	$>100 \text{ mg/l}$	fish	ECHA	96 h
EC50	44.5 mg/l	aquatic invertebrates	ECHA	48 h

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Aquatic toxicity (acute)				
Endpoint	Value	Species	Source	Exposure time
ErC50	64.63 mg/l	algae	ECHA	72 h

Aquatic toxicity (acute) of components					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Ethylenediamine	107-15-3	LC50	640 mg/l	fish	96 h
Ethylenediamine	107-15-3	EC50	16.7 mg/l	aquatic invertebrates	48 h
Ethylenediamine	107-15-3	ErC50	645 mg/l	algae	72 h
2-Methoxyethanol	109-86-4	LC50	>10,000 mg/l	fish	96 h
2-Methoxyethanol	109-86-4	EC50	27,000 mg/l	aquatic invertebrates	48 h
2-Methoxyethanol	109-86-4	ErC50	25,500 mg/l	algae	72 h

Aquatic toxicity (chronic)				
Endpoint	Value	Species	Source	Exposure time
EC50	12.19 mg/l	aquatic invertebrates	ECHA	21 d

Aquatic toxicity (chronic) of components					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
2-Methoxyethanol	109-86-4	EC50	>1,000 mg/l	microorganisms	3 h

12.2 Persistence and degradability

Theoretical Oxygen Demand (without nitrification): 0.01332 mg/mg

Biodegradation

The substance is readily biodegradable.

Process of degradability		
Process	Degradation rate	Time
DOC removal	93 %	25 d

Degradability of components						
Name of substance	CAS No	Process	Degradation rate	Time	Method	Source
Ethylenediamine	107-15-3	biotic/abiotic	94 %	28 d		
Ethylenediamine	107-15-3	oxygen depletion	10 %	5 d		ECHA

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Degradability of components						
Name of substance	CAS No	Process	Degradation rate	Time	Method	Source
2-Methoxyethanol	109-86-4	biotic/abiotic	97 %	10 d		
2-Methoxyethanol	109-86-4	oxygen depletion	88 %	20 d		ECHA

12.3 Bioaccumulative potential

Does not significantly accumulate in organisms.

n-octanol/water (log KOW)	-2.55 (pH value: 7, 25 °C) (ECHA)
BCF	≤0.3 (ECHA)

Bioaccumulative potential of components

Name of substance	CAS No	BCF	Log KOW	BOD5/COD
Ethylenediamine	107-15-3		-1.62 (pH value: >12, 25 °C)	
2-Methoxyethanol	109-86-4		-0.77 (pH value: 7, 28 °C)	

12.4 Mobility in soil

Henry's law constant	0.011 Pa m ³ /mol at 25 °C (ECHA)
The Organic Carbon normalised adsorption coefficient	1.887 (ECHA)

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

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Waste treatment of containers/packagings

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

Relevant provisions relating to waste(Basel Convention)

Properties of waste which render it hazardous

H3 Flammable liquids
H8 Corrosives

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

SECTION 14: Transport information

14.1 UN number

UN RTDG	UN 2054
IMDG-Code	UN 2054
ICAO-TI	UN 2054

14.2 UN proper shipping name

UN RTDG	MORPHOLINE
IMDG-Code	MORPHOLINE
ICAO-TI	Morpholine

14.3 Transport hazard class(es)

UN RTDG	8 (3)
IMDG-Code	8 (3)
ICAO-TI	8 (3)

14.4 Packing group

UN RTDG	I
IMDG-Code	I
ICAO-TI	I

14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user

There is no additional information.

14.7 Transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

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Transport information National regulations Additional information (UN RTDG)

UN number	2054
Class	8
Subsidiary risk(s)	3
Packing group	I
Danger label(s)	8+3
	
Special provisions (SP)	- UN RTDG
Excepted quantities (EQ)	E0 UN RTDG
Limited quantities (LQ)	0 UN RTDG
Emergency Action Code	2W

International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name	MORPHOLINE
Particulars in the shipper's declaration	UN2054, MORPHOLINE, 8 (3), I, 32°C c.c.
Marine pollutant	-
Danger label(s)	8+3
	
Special provisions (SP)	-
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
EmS	F-E, S-C
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name	Morpholine
Particulars in the shipper's declaration	UN2054, Morpholine, 8 (3), I
Danger label(s)	8+3
	
Excepted quantities (EQ)	E0

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SECTION 15: Regulatory information

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

There is no additional information.

National regulations(Australia)

Australian Inventory of Chemical Substances(AICS)

Substance is listed.

Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

National inventories

Country	Inventory	Status
AU	AIIC	all ingredients are listed
CA	DSL	all ingredients are listed
CN	IECSC	all ingredients are listed
EU	ECSI	all ingredients are listed
EU	REACH Reg.	all ingredients are listed
JP	CSCL-ENCS	all ingredients are listed
JP	ISHA-ENCS	not all ingredients are listed
KR	KECI	all ingredients are listed
MX	INSQ	all ingredients are listed
NZ	NZIoC	all ingredients are listed
PH	PICCS	all ingredients are listed
TR	CICR	not all ingredients are listed
TW	TCSI	all ingredients are listed
US	TSCA	all ingredients are listed (ACTIVE)
VN	NCI	all ingredients are listed

Legend

AIIC	Australian Inventory of Industrial Chemicals
CICR	Chemical Inventory and Control Regulation
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
INSQ	National Inventory of Chemical Substances
ISHA-ENCS	Inventory of Existing and New Chemical Substances (ISHA-ENCS)
KECI	Korea Existing Chemicals Inventory
NCI	National Chemical Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

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SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
2.2		Hazard statements: change in the listing (table)	yes
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of \geq 0,1%.	yes
14.8		Emergency Action Code: 2W	yes
15.1		National inventories: change in the listing (table)	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
COD	Chemical oxygen demand
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
ED	Endocrine disruptor
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	\equiv EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code

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Abbr.	Descriptions of used abbreviations
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
log KOW	n-Octanol/water
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
STEL	Short-term exposure limit
TWA	Time-weighted average
UN RTDG	UN Recommendations on the Transport of Dangerous Good
vPvB	Very Persistent and very Bioaccumulative
WES	Safe Work Australia: Workplace exposure standards for airborne contaminants

Key literature references and sources for data

Safe Work Australia's Code of Practice for Labelling of Workplace Hazardous Chemicals (under WHS Regulations).

UN Recommendations on the Transport of Dangerous Good. International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.