

617H19 - ORTHOCRYL Lamination Resin

Material number 617H19

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1. Identification

Product identifier

Trade name: 617H19 - ORTHOCRYL Lamination Resin

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

General use: Lamination resin for orthopedic procedures
Reserved for industrial and professional use.

Details of the supplier of the safety data sheet

Company name: Otto Bock Health Care
Street/POB-No.: 3820 W. Great Lakes Drive
Zip code, city: Salt Lake City, UT 84120
USA
WWW: www.ottobockus.com
Telephone: +1 (801) 956-2400
Telefax: +1 (801) 956-2401
Department responsible for information: Quality Department,
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),
Email: USRegulatory@ottobock.com
Additional information: Corporate headquarters:
Ottobock SE & Co. KGaA
Max-Näder-Straße 15
Duderstadt
Germany

Emergency telephone number

CHEMTREC, Telephone: +1 (800) 424-9300
Transport:
CONSULTANK Lutz Harder GmbH (Contract QUALI003)
Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)

2. Hazard identification

Classification of the substance or mixture

Flammable Liquid - Category 2	Highly flammable liquid and vapor.
Skin Irritation - Category 2	Causes skin irritation.
Sensitization - skin - Category 1	May cause an allergic skin reaction.
Specific Target Organ Toxicity (Single Exposure) - Category 3	May cause respiratory irritation.

Label elements

Symbols:



Signal word:

Danger

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Hazard statements:
Highly flammable liquid and vapor.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.

Precautionary statements:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Avoid breathing mist/vapors/spray.
Wear protective gloves/protective clothing/eye protection.
Call a POISON CENTER/doctor if you feel unwell.
Take off contaminated clothing and wash it before reuse.
Store in a well-ventilated place. Keep cool.

Other hazards

Due to reducing substances and heavy metal ions polymerization with heat generation may occur. Take precautionary measures against static discharge.
Potentially explosive mixtures may form if adequate ventilation is not provided. Higher doses may lead to a narcotic effect.
Special danger of slipping by leaking/spilling product.

3. Composition/information on ingredients

Mixtures

Chemical characterization: Solution of acrylic polymers in methylmethacrylate, containing softener. (MMA)

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Relevant ingredients:

CAS No.	Designation	Concentration	Classification
CAS 80-62-6	Methyl methacrylate	50 - 100 %	Flammable Liquid - Category 2. Skin Irritation - Category 2. Sensitization - skin - Category 1. Specific Target Organ Toxicity (Single Exposure) - Category 3.
CAS 109-16-0	2,2'-Ethylenedioxydiethyl dimethacrylate	< 5 %	Sensitization - skin - Category 1B.
CAS 123-81-9	Ethylene di(S-thioacetate)	< 1 %	Acute Toxicity - oral - Category 4. Acute Toxicity - dermal - Category 4. Acute Toxicity - inhalative - Category 4. Eye Irritation - Category 2A. Sensitization - skin - Category 1A. Specific Target Organ Toxicity (Single Exposure) - Category 3.
CAS 141-32-2	n-Butyl acrylate	< 1 %	Flammable Liquid - Category 3. Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Sensitization - skin - Category 1B. Specific Target Organ Toxicity (Single Exposure) - Category 3. Aquatic toxicity - chronic - Category 3.
CAS 38668-48-3	1,1'-(p-Tolylimino) dipropan-2-ol	< 1 %	Acute Toxicity - oral - Category 2. Eye Irritation - Category 2A. Aquatic toxicity - acute - Category 3. Aquatic toxicity - chronic - Category 3.

The actual concentration or concentration range is withheld as a trade secret.

4. First aid measures

General information:	First aider: Pay attention to self-protection! If medical advice is needed, have product container or label at hand. Take off contaminated clothing and wash it before reuse.
In case of inhalation:	Move victim to fresh air, put at rest and loosen restrictive clothing. Seek medical attention.
Following skin contact:	After contact with skin, wash immediately with soap and plenty of water. In case of skin reactions, consult a physician.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently consult an ophthalmologist.
After swallowing:	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting. Immediately get medical attention.

Most important symptoms/effects, acute and delayed

May cause an allergic skin reaction. Causes skin irritation. May cause respiratory irritation. In case of inhalation: mucous membrane irritation, Cough and shortage of breath. In case of prolonged exposure: headache, drowsiness.

Information to physician

Monitor breathing.
Treat symptomatically.

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5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:

Foam, dry chemical powder, carbon dioxide

Extinguishing media which must not be used for safety reasons:

Full water jet

Specific hazards arising from the chemical

Highly flammable liquid and vapor. Concentrated vapors are heavier than air. Explosive mixtures with air may even form at room temperature.

In case of fire may be liberated: Organic materials, sulphur oxides, carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters

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

Additional information:

Cool endangered containers with water spray and, if possible, remove from danger zone. Do not allow fire water to penetrate into surface or ground water.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Plug leak if safely possible. Provide adequate ventilation.

Wear appropriate protective equipment. Take off contaminated clothing and wash it before reuse. Avoid contact with skin and eyes.

Avoid breathing mist/vapors/spray. When vapors form, use respiratory protection. Keep unprotected people away.

Environmental precautions:

Do not allow to enter into ground-water, surface water or drains.

Danger of explosion!

In case of release, notify competent authorities.

Methods and material for containment and cleaning up

Methods for clean-up:

Smaller amounts: Soak up with absorbent materials such as sand, siliceus earth, acid- or universal binder. Store in special closed containers and dispose of according to ordinance.

In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).

Additional information:

Use explosion-proof equipment and non-sparking tools/utensils.

Special danger of slipping by leaking/spilling product.

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7. Handling and storage

Precautions for safe handling

Advices on safe handling: Provide adequate ventilation, and local exhaust as needed.
Provide room air exhaust at ground level. Concentrated vapors are heavier than air.
Wear appropriate protective equipment. Avoid contact with skin and eyes.
Avoid breathing mist/vapors/spray. When vapors form, use respiratory protection.
Take off contaminated clothing and wash it before reuse. Do not eat, drink or smoke when using this product.
Work place should be equipped with a shower and an eye rinsing apparatus.
Wash hands before breaks and after work.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharges.
Flammable mixtures may form in the air when product is heated above the flash point and/or during spraying.
Use only explosion-proof equipment.

Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep only in the original container at temperature not exceeding 95 °F.
Keep container tightly closed. Protect from light.
Because oxygen (air) is necessary to stabilize product, fill container only to 90% of capacity.
Provide adequate oxygen (air) circulation for large containers to ensure product stability.
Store containers in upright position.

Hints on joint storage:

Keep away from food, drink and animal feedingstuffs.
Do not store together with organic peroxides, ammonia or persulphates.
Do not store together with heavy metals.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
80-62-6	Methyl methacrylate	USA: ACGIH: STEL	410 mg/m ³ ; 100 ppm
		USA: ACGIH: TWA	205 mg/m ³ ; 50 ppm
		USA: IDLH: TWA	1,000 ppm
		USA: NIOSH: TWA	410 mg/m ³ ; 100 ppm
		USA: OSHA: TWA	410 mg/m ³ ; 100 ppm
141-32-2	n-Butyl acrylate	USA: ACGIH: TWA	11 mg/m ³ ; 2 ppm
		USA: IDLH: TWA	113 ppm
		USA: NIOSH: TWA	55 mg/m ³ ; 10 ppm

Appropriate engineering controls

Provide for good ventilation or exhaust system or work with completely self-contained equipment. Explosion protection required.

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Personal protection equipment (PPE)

Respiratory protection:	Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. Use filter type A (= against vapors of organic substances) according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.
Hand protection:	Protective gloves according to OSHA Standard - 29 CFR: 1910.138. Glove material: butyl caoutchouc (butyl rubber) - Layer thickness 0.7 mm. Breakthrough time: 60 min Observe glove manufacturer's instructions concerning penetrability and breakthrough time. Clean skin thoroughly after working.
Eye protection:	Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.
Body protection:	Wear suitable protective clothing. When handling larger quantities: face protection, rubber boots and rubber apron.
General hygiene considerations:	Avoid breathing mist/vapors/spray. Avoid contact with skin and eyes. Wash hands before breaks and after work. Separate storage of work clothes. Keep away from sources of ignition - No smoking. Take off contaminated clothing and wash it before reuse. When using do not eat or drink. Work place should be equipped with a shower and an eye rinsing apparatus.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state at 68 °F and 101.3 kPa	liquid
Color:	colorless
Odor:	ester-like
Odor threshold:	No data available
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	212.9 °F (Methyl methacrylate)
Flammability:	Highly flammable liquid and vapor.
Explosion limits:	LEL (Lower Explosion Limit): 2.10 Vol-% (Methyl methacrylate) UEL (Upper Explosive Limit): 12.50 Vol-% (Methyl methacrylate)
Flash point/flash point range:	50 °F (Methyl methacrylate)
Evaporation rate:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
pH:	approx. 7 (aqueous solution)
Dynamic viscosity:	approx. 500 mPa*s
Water solubility:	at 68 °F: approx. 16 g/L (Methyl methacrylate)
Partition coefficient: n-octanol/water:	No data available

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Vapor pressure: at 68 °F: 38.7 hPa (Methyl methacrylate)
Density: at 68 °F: approx. 1 g/mL
Vapor density: at 68 °F: >= 1
Particle characteristics: Not applicable

Additional information

Explosive properties: Explosive mixtures with air may even form at room temperature.
Ignition temperature: 806 °F (Methyl methacrylate)
Additional information: Self-accelerating polymerisation temperature (SAPT), relating to the transport duration: > 122 °F

10. Stability and reactivity

Reactivity: Highly flammable liquid and vapor.
Concentrated vapors are heavier than air.
Explosive mixtures with air may even form at room temperature.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions:
Product is normally delivered in a stable state. However, if shelf life and/or recommended storage temperature are exceeded to a large degree, product may polymerize and generate heat.
Due to reducing substances, peroxides and heavy metal ions, polymerization with heat generation may occur.
Heating will lead to pressure increase: danger of bursting and explosion.

Conditions to avoid: Keep away from heat sources, sparks and open flames.
Protect from light.

Incompatible materials: Amines, sulphur compounds, alkali compounds, reducing agent, oxidizing agents, peroxides, heavy metals

Hazardous decomposition products:
No decomposition when used properly.

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11. Toxicological information

Information on toxicological effects

Toxicological effects: The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

Acute toxicity (oral): Based on available data, the classification criteria are not met.

ATEmix (calculated): > 5,000 mg/kg

Acute toxicity (dermal): Based on available data, the classification criteria are not met.

ATEmix (calculated): > 5,000 mg/kg

Acute toxicity (inhalative): Lack of data.

Skin corrosion/irritation: Skin Irritation - Category 2 = Causes skin irritation.

Serious eye damage/irritation: Lack of data.

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Sensitization - skin - Category 1 = May cause an allergic skin reaction.

Germ cell mutagenicity/Genotoxicity: Lack of data.

Carcinogenicity: Lack of data.

Reproductive toxicity: Lack of data.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Specific Target Organ Toxicity (Single Exposure) - Category 3 = May cause respiratory irritation.

Specific target organ toxicity (repeated exposure): Lack of data.

Aspiration hazard: Lack of data.

Other information: Information about Methyl methacrylate:

LD50 Rat, oral: > 5,000 mg/kg

LD50 Rabbit, dermal: > 5,000 mg/kg

LC50 Rat, inhalative: 29.8 mg/L/4h

For carcinogenic effects:

IARC Rating: Group 3

OSHA Carcinogen: not listed

NTP Rating: not listed

Information about 2,2'-Ethylenedioxydiethyl dimethacrylate:

LD50 Rat, oral: > 5,000 mg/kg

LD50 Mouse (male), dermal: > 2,000 mg/kg

Information about Ethylene di(S-thioacetate):

LD50 Rat (male), oral: 303 mg/kg

LC0 Rabbit, dermal: 200 mg/kg

LC0 Rat, inhalative (dust, mist, smoke): 2.25 mg/L/1h

LC0 Rat, inhalative (dust, mist, smoke): 1.125 mg/L/4h

Information about n-Butyl acrylate:

LD50 Rat, oral: 3,150 mg/kg

LD50 Rabbit (male), dermal: > 2,000 mg/kg

LC50 Rat, inhalative (dust, mist, smoke): 10.3 mg/L/4h

Information about N,N-Bis-(2-hydroxypropyl)-p-toluidine:

LD50 Rat, oral: 25 mg/kg

LD50 Rat, dermal: > 2,000 mg/kg

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Symptoms

In case of prolonged exposure: Headache, drowsiness

In case of inhalation: Mucous membrane irritation, cough and shortage of breath.

In case of ingestion:

Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract. Can damage your health.

After eye contact: May cause irritations.

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12. Ecological information

Ecotoxicity

Aquatic toxicity:

Information about Methyl methacrylate:

Fish toxicity:

LC50 Oncorhynchus mykiss: > 79 mg/L/96h (OECD 203)

NOEC Danio rerio (zebrafish): 9.4 mg/L/32d (OECD 210)

Daphnia toxicity:

EC50 Daphnia magna (Big water flea): 69 mg/L/48h (OECD 202)

NOEC Daphnia magna (Big water flea): 37 mg/L/21d (OECD 202)

Algae toxicity:

EC50 Selenastrum capricornutum: > 100 mg/L/72h (OECD 201)

NOEC Selenastrum capricornutum: > 100 mg/L/72h (OECD 201)

Information about 2,2'-Ethylenedioxydiethyl dimethacrylate:

Fish toxicity:

LC50 Danio rerio (zebrafish): 16.4 mg/L/96h (OECD 203)

Daphnia toxicity:

NOEC Daphnia magna (Big water flea): 32 mg/L/21d (OECD 211)

Algae toxicity:

EC50 Pseudokirchneriella subcapitata (green algae): > 100 mg/L/72h (OECD 201)

NOEC Pseudokirchneriella subcapitata (green algae): 18.6 mg/L/72h (OECD 201)

Information about Ethylene di(S-thioacetate):

Fish toxicity:

LC50 Leuciscus idus: 4.85 mg/L/48h (DIN 38412 Teil 15)

Information about n-Butyl acrylate:

Fish toxicity:

LC50 Oncorhynchus mykiss: > 5.2 mg/L/96h (OECD 203)

Daphnia toxicity:

EC50 Daphnia magna (Big water flea): 8.2 mg/L/48h (OECD 202)

NOEC Daphnia magna (Big water flea): 0.136 mg/L/21d (OECD 211)

Algae toxicity:

EC50 Selenastrum capricornutum: 2.65 mg/L/72h (OECD 201)

Bacterial toxicity:

EC0 activated sludge: > 150 mg/L/3d

Information about N,N-Bis-(2-hydroxypropyl)-p-toluidine:

Fish toxicity:

LC50 Danio rerio (zebrafish): 17 mg/L/96h

Daphnia toxicity:

EC50 Daphnia magna (Big water flea): 28.8 mg/L/48h (OECD 202)

Algae toxicity:

EC50 Desmodesmus subspicatus (green algae): 245 mg/L/72h (OECD 201)

Bacterial toxicity:

EC10: > 1,995 mg/L/30 min (OECD 209)

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Persistence and degradability

Further details: Information about Methyl methacrylate:
Biodegradation: 94 %/14 d (OECD 301C.)
Product is readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water:
No data available

Mobility in soil

No data available

Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains.
In case of spills of large quantities: Danger to drinking water.

13. Disposal considerations**Waste treatment methods****Product**

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.

Package

Recommendation: Dispose of waste according to applicable legislation.
Handle contaminated packages in the same way as the substance itself.
Non-contaminated packages may be recycled.
Handle empty containers with care. Incineration may cause explosion.

14. Transport information**UN number**

DOT: UN1866
IMDG, IATA-DGR: UN 1866

UN proper shipping name

DOT, IMDG, IATA-DGR: UN 1866, RESIN SOLUTION

Transport hazard class(es)

DOT: 3
IMDG: Class 3, Subrisk -
IATA-DGR: Class 3

Packing group

DOT, IMDG, IATA-DGR: II

Environmental hazards

Marine pollutant: no



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Transport in bulk according to IMO instruments

No data available

Special precautions for user

USA: Department of Transportation (DOT)

Labels: 3
Special Provisions: 149, B52, IB2, T4, TP1, TP8
Packaging – Exceptions: 150
Packaging – Non-bulk: 173
Packaging – Bulk: 242
Quantity limitations – Passenger aircraft / rail: 5 L
Quantity limitations – Cargo only: 60 L
Vessel stowage – Location: B

Sea transport (IMDG)

EmS: F-E, S-E
Special Provisions: -
Limited quantities: 5 L
Excepted quantities: E2
Package - Instructions: P001
Package - Provisions: PP1
IBC - Instructions: IBC02
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T4
Tank instructions - Provisions: TP1, TP8
Stowage and handling: Category B.
Properties and observations: Miscibility with water depends upon the composition.
Marine pollutant: no
Segregation group: none
Remarks: For packages <= 30 litres: PG III (IMDG 2.3.2.2)

Air transport (IATA)

Proper shipping name: UN 1866, RESIN SOLUTION
Hazard label: Flamm. liquid
Excepted Quantity Code: E2
Passenger and Cargo Aircraft: Ltd.Qty.: Pack.Instr. Y341 - Max. Net Qty/Pkg. 1 L
Passenger and Cargo Aircraft: Pack.Instr. 353 - Max. Net Qty/Pkg. 5 L
Cargo Aircraft only: Pack.Instr. 364 - Max. Net Qty/Pkg. 60 L
Special Provisions: A3
Emergency Response Guide-Code (ERG): 3L
Remarks: For packages <= 30 litres: PG III (IATA 3.3.3.1)

Further information

Self-accelerating polymerisation temperature (SAPT), relating to the transport duration: > 122 °F

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15. Regulatory information

National regulations - U.S. Federal Regulations

Product: TSCA: All ingredients are listed or exempt from listing.

Methyl methacrylate: Carcinogen Status: IARC Rating: Group 3
OSHA Carcinogen: not listed
NTP Rating: not listed

Clean Air Act:
CAA Hazardous Air Pollutants: yes
CAA SOCMI Chemical: yes

Clean Water Act:
CWA Hazardous Substances: Category C; RQ 1000.0 lbs

Other Environmental Laws:
CERCLA: RQ 1000 lbs.
RCRA Hazardous Wastes: Waste Code U162
RCRA Groundwater Monitoring: listed
SARA Title III, Section 313, Toxic Release: NPFAS; De Minimis <=1.0 %;
Thresholds 25000/10000 lbs

NIOSH Recommendations:
Occupational Health Guideline: 0426

n-Butyl acrylate: Clean Air Act:
CAA SOCMI Chemical: yes

Other Environmental Laws:
SARA Title III, Section 313, Toxic Release: NPFAS; De Minimis <=1.0 %;
Thresholds 25000/10000 lbs

National regulations - U.S. State Regulations

Methyl methacrylate: New York Right-To-Know: listed

Further regulations, limitations and legal requirements

No data available

16. Other information

Text for labeling: Contains 50 - 100 % Methyl methacrylate, < 5 % 2,2'-Ethylenedioxydiethyl dimethacrylate, < 1 % Ethylene di(S-thioacetate), < 1 % n-Butyl acrylate, < 1 % 1,1'-(p-Tolylimino)dipropen-2-ol.

Revision date: 11/28/2025

Date of first version: 10/26/1994

Reason of change: General revision: Safety Data Sheet according to HCS 2024 (29 CFR 1910.1200)

Hazard rating systems:



NFPA Hazard Rating:

Health: 2 (Moderate)

Fire: 3 (Serious)

Reactivity: 1 (Slight)

HMIS Version III Rating:

Health: 2 (Moderate)

Flammability: 3 (Serious)

Physical Hazard: 1 (Slight)

Personal Protection: X = Consult your supervisor

JT Baker Storage Color Code: Red (Flammable Hazard)

HEALTH	2
FLAMMABILITY	3
PHYSICAL HAZARD	1
	X

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity
Aquatic toxicity - acute: Hazardous to the aquatic environment - acute
Aquatic toxicity - chronic: Hazardous to the aquatic environment - chronic
AS/NZS: Australian Standards/New Zealand Standards
ATEmix: Acute Toxicity Estimate of mixture
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
CLP: Classification, Labelling and Packaging
DMEL: Derived minimal effect level
DNEL: Derived no-effect level
DOT: Department of Transportation's Safety Regulations (USA)
EC: Effective Concentration
EC: European Community
EC50: Effective Concentration 50%
EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods
EN: European Standard
EQ: Excepted quantities
Eye Irritation: Eye irritation
Flammable Liquid: Flammable liquid
IATA: International Air Transport Association
IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IMDG Code: International Maritime Dangerous Goods Code
IMO: International Maritime Organization
LC0: Lethal concentration 0%
LC50: Median lethal concentration
LD50: Lethal dose 50%
LEL: Lower Explosion Limit
MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
MFSU: Manufacture, formulation, supply and use
NOEC: No Observed Effect Concentration
OECD: Organisation for Economic Co-operation and Development
OEL: Occupational Exposure Limit Value
OSHA: Occupational Safety and Health Administration
PBT: Persistent, bioaccumulative and toxic
PNEC: Predicted no-effect concentration
Sensitization - skin: Skin sensitisation
Skin Irritation: Skin irritation
STOT SE: Specific target organ toxicity - single exposure
TLV: Threshold Limit Value
TRGS: Technical Rules for Hazardous Substances
UN: United Nations
vPvB: Very persistent and very bioaccumulative
WEL: Workplace Exposure Limit

Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.