

SAFETY DATA SHEET STARCIDE®

according to Regulation (EC) No. 2015/830

Revision Date: 07-Jan-2020
Preparation Date 07-Jan-2020

Revision Number: 10
Internal ID Code HB003388

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

1.1. Product Identifier

Product Name STARCIDE®
Internal ID Code HB003388

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

Recommended Use Bactericide
Sector of uses SU2 - Mining, (including offshore industries)
Product category(ies) PC8 - Biocidal Products (e.g. Disinfectants, pest control)
Process categories PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom
+44 1224 776888

www.halliburton.com

For further information, please contact:

E-mail Address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Global Incident Response Access Code: 334305

Contract Number: 14012

Emergency telephone - Article 45 - (EC)1272/2008	
Turkey	Ulusal Zehir Danisma Merkezi (UZEM) :114 Acil Saglik Hizmetleri : 112
Europe	112
Bulgaria	Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	1401; +357 22 88 7171
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Israel	Acute poisoning (hotline): 04-7771900 (24/7)
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Portugal	CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 271
Romania	+40 21 318 36 06

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Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Acute Oral Toxicity	Category 4 - H302
Acute toxicity - Dermal	Category 3 - H311
Acute inhalation toxicity - vapor	Category 4 - H332
Skin Corrosion/Irritation	Category 1 B - H314
Skin Sensitization	Category 1 A - H317
Germ Cell Mutagenicity	Category 2 - H341
Carcinogenicity	Category 1B - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 2 - H373
Chronic Aquatic Toxicity	Category 2 - H411

2.2. Label Elements

Hazard Pictograms



Signal Word:

Danger

Hazard Statements:

H302 - Harmful if swallowed
H311 - Toxic in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H332 - Harmful if inhaled
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects
EUH071 - Corrosive to the respiratory tract

Precautionary Statements:

P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 - Immediately call a POISON CENTER or doctor/physician

Contains

Substances

reaction products of paraformal-dehyde and
2-hydroxypropylamine (ratio 3:2); [MBO]

CAS Number

Proprietary

Special Labelling of certain mixtures Use biocides safely. Always read the label and product information before use.

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2.3. Other Hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH Reg. No
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	EC No		60 - 100%	Acute Tox. 4 (H302) Acute Tox. 3 (H311) Skin Corr. 1B (H314) Skin Sens. 1A (H317) Acute Tox. 4 (H332) Muta. 2 (H341) Carc. 1B (H350) STOT RE 2 (H373) Aquatic Chronic 2 (H411) EUH071	No data available

For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

If inhaled, move victim to fresh air and seek medical attention.

Eyes

Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.

Skin

In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

Ingestion

Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

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

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction. May cause allergic skin reaction. Harmful if swallowed. Harmful if inhaled. May cause damage to organs through prolonged or repeated exposure. Toxic in contact with skin.

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

Notes to Physician

Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards in a fire

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Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area.

See Section 8 for additional information.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas. Consult local authorities.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Avoid breathing mist. Ensure adequate ventilation. Do NOT consume food, drink, or tobacco in contaminated areas. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store in original container. Store away from oxidizers. Store away from acids. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 12 months. Keep Away From Food

7.3. Specific end use(s)

Exposure scenario

No information available

Other Guidelines

No information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany	Spain	Portugal	Finland
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable

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Substances	CAS Number	Austria	Ireland	Switzerland	Norway
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Not applicable	Not applicable	Not applicable	Not applicable

Hazardous Decomposition Products	Formaldehyde
EU	Not applicable
UK	STEL: 2 ppm STEL: 2.5 mg/m ³ TWA: 2 ppm TWA: 2.5 mg/m ³
Netherlands	TWA: 0.15 mg/m ³ STEL: 0.5 mg/m ³
France	TWA [VME]: 0.5 ppm
Germany	MAK: 0.3 ppm MAK: 0.37 mg/m ³
Spain	0.3 ppm VLA-EC 0.37 mg/m ³ VLA-EC
Portugal	0.3 ppm Ceiling
Bulgaria	TWA: 1,0 mg/m ³ STEL: 2,0 mg/m ³
Finland	STEL: 1 ppm STEL: 1.2 mg/m ³ TWA: 0.3 ppm TWA: 0.37 mg/m ³
Austria	TWA [TMW]: 0.5 ppm TWA [TMW]: 0.6 mg/m ³ STEL [KZW]: 0.5 ppm STEL [KZW]: 0.6 mg/m ³
Ireland	TWA: 2 ppm TWA: 2.5 mg/m ³ STEL: 2 ppm STEL: 2.5 mg/m ³
Switzerland	TWA [MAK]: 0.3 ppm TWA [MAK]: 0.37 mg/m ³ STEL [KZW]: 0.6 ppm STEL [KZW]: 0.74 mg/m ³
Norway	STEL: 1.5 ppm STEL: 1.8 mg/m ³ TWA: 0.5 ppm TWA: 0.6 mg/m ³
Italy	0.3 ppm Ceiling 0.37 mg/m ³ Ceiling
Romania	TWA: 1.2 mg/m ³ TWA: 1 ppm STEL: 3 mg/m ³ STEL: 1 ppm
Poland	NDSch: 1 mg/m ³

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	NDS: 0.5 mg/m ³
Hungary	TWA: 0.6 mg/m ³ STEL: 0.6 mg/m ³
Czech Republic	TWA: 0.5 mg/m ³
Denmark	0.3 ppm Ceiling 0.4 mg/m ³ Ceiling

Derived No Effect Level (DNEL)
Worker No information available

General Population

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering Controls

Use in a well ventilated area.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Organic vapor respirator.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. Butyl rubber gloves. (>= 8 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Color

Colorless to slight yellow

Odor: Sweet amine

Odor

No information available

Property

Threshold:

Remarks/ - Method

Values

pH:

10 (0.15%)

Freezing Point / Range

No data available

Melting Point / Range

< -35 °C / -31 °F

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Pour Point / Range	< -39 °C / < -38.2 °F
Boiling Point / Range	204 °C / 399.2 °F
Flash Point	> 100 °C / > 212 °F (PMCC)
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	0.014 hPa
Vapor Density	No data available
Specific Gravity	1.049 - 1.069
Water Solubility	Soluble in water
Solubility in other solvents	benzene heptane
Partition coefficient: n-octanol/water	1.89
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	21 mPas @ 20°C
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	186.25
VOC Content (%)	No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable under recommended storage conditions

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers. Strong acids. Reducing agents.

10.6. Hazardous decomposition products

Formaldehyde. Oxides of nitrogen. Oxides of sulfur.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Inhalation

Harmful if inhaled. Causes severe respiratory irritation.

Eye Contact

Causes eye burns

Skin Contact

Causes severe burns. May cause an allergic skin reaction. Toxic in contact with skin.

Ingestion

Harmful if swallowed. Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity

Prolonged or repeated exposure may cause damage to the upper respiratory tract. Formaldehyde, a suspected carcinogen, is released when heated.

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Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	630 mg/kg (Rat)	760 mg/kg (Rat)	2 mg/L (Rat, 4 hr, aerosol)

Rat = Rat, Rabbit = Rabbit, dust = dust

Substances	CAS Number	Skin corrosion/irritation
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Causes severe irritation and or burns (Rabbit)

Substances	CAS Number	Serious eye damage/irritation
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Causes severe irritation and or burns (Rabbit)

Substances	CAS Number	Skin Sensitization
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		May cause sensitization by skin contact (guinea pig)

Substances	CAS Number	Respiratory Sensitization
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		No information available

Substances	CAS Number	Mutagenic Effects
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Did not show carcinogenic effects in animal experiments

Substances	CAS Number	Reproductive toxicity
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Causes damage to organs through prolonged or repeated exposure: Gastrointestinal tract (GI) Respiratory system

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3:2); [MBO]		
Substances	CAS Number	Aspiration hazard
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]		Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity effects

Toxic to aquatic life.

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	EC50(72 h)=5.7 mg/L (Desmodesmus subspicatus) EC50(=)3.35 mg/L (Skeletonema costatum)	LC50(96 h)=135.21 mg/L (Scophthalmus maximus)	EC50: 44 mg/L (activated sludge)	EC50(48 h)=37.9 mg/L (Daphnia magna) EC50(48 h)=4.1 mg/L (Acartia tonsa) NOEC(21 d)=1.3 mg/L (Daphnia magna)

growth rate = growth rate, similar substance = similar substance, activated sludge = activated sludge, reproduction = reproduction

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Readily biodegradable (69.4% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	Log Pow=-0.11

12.4. Mobility in soil

Substances	CAS Number	Mobility
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Proprietary	No information available

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	Not PBT/vPvB

12.6. Other adverse effects

Does not contain any organically bound halogen. May not increase the AOX value when discharged from treatment plants or into natural waters.

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport information

IMDG/IMO

UN Number UN2735
UN proper shipping name: Amines, Liquid, Corrosive, N.O.S. (Contains N, N' -Methylenebis[5-methyl oxazolidine])
Transport Hazard Class(es): 8
Packing Group: III
Environmental Hazards: Not applicable
EMS: EmS F-A, S-B

ADN

UN Number UN2922
UN proper shipping name: Corrosive Liquid, Toxic, N.O.S. (reaction products of paraformaldehyde and 2-hydroxypropylamine (ratio 3:2); [MBO])
Transport Hazard Class(es): 8 (6.1)
Packing Group II
Environmental Hazards: Marine Pollutant

ADR/RID

UN Number UN2922
UN proper shipping name: Corrosive Liquid, Toxic, N.O.S. (reaction products of paraformaldehyde and 2-hydroxypropylamine (ratio 3:2); [MBO])
Transport Hazard Class(es): 8 (6.1)
Packing Group II
Environmental Hazards: Marine Pollutant

IATA/ICAO

UN Number UN2735
UN proper shipping name: Amines, Liquid, Corrosive, N.O.S. (Contains N, N' -Methylenebis[5-methyl oxazolidine])
Transport Hazard Class(es): 8
Packing Group: III
Environmental Hazards: Not applicable

14.1. UN Number

UN2922

14.2. UN proper shipping name:

Corrosive Liquid, Toxic, N.O.S. (reaction products of paraformaldehyde and 2-hydroxypropylamine (ratio 3:2); [MBO])

14.3. Transport Hazard Class(es):

8 (6.1)

14.4. Packing Group

II

14.5. Environmental Hazards:

Marine Pollutant

14.6. Special Precautions for User None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

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SECTION 15: Regulatory information

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

International Inventories

US TSCA Inventory All components listed on inventory or are exempt.

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Biocidal Products Regulation (BPR) 528/2012 This product complies with the BPR and has relevant national approval (the active substance is subject to the EU Review Programme).

CTGB (Board for the Authorisation of Plant Protection Products and Biocides): This product is registered under registration number 14584 for use in Product Types 6, 12 & 13.

Denmark PR No.: 1305931

Norway PR No.: 100000

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

Substances	CAS Number	Seveso III	TA LUFT
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	@CAS	Not applicable	Not applicable

Substances	CAS Number	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization
reaction products of paraformal-dehyde and 2-hydroxypropylamine (ratio 3:2); [MBO]	@CAS	Not applicable	Not applicable

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed

H311 - Toxic in contact with skin

H314 - Causes severe skin burns and eye damage

H317 - May cause an allergic skin reaction

H332 - Harmful if inhaled

H341 - Suspected of causing genetic defects

H350 - May cause cancer

H373 - May cause damage to organs through prolonged or repeated exposure

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H411 - Toxic to aquatic life with long lasting effects
EUH071 - Corrosive to the respiratory tract

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit
SU – Sector of Use category
TWA – Time-Weighted Average
UN – United Nations
VOC – Volatile Organic Carbon
vPvB – very Persistent and very Bioaccumulative
VLA-ED - time-weighted average values for a whole work shift [Spain valores límite ambientales para la exposición diaria]
NDS - najwyższe dopuszczalne stężenie na stanowisku pracy
SZW - Netherlands Ministry of Social Affairs and Employment
ADR - The European Agreement concerning the International Carriage of Dangerous Goods by Road
AS/NZS 1715 - New Zealand Standard on Selection, use and maintenance of respiratory protective equipment
C - Celsius
EN 149 - European standard on filtering halfmasks to protect against particles
EN 374 - European standard on Protective gloves against chemicals and micro-organisms
FFP - Filtering Facepieces
h - hour
IATA/ICAO - International Air Transport Association / International Civil Aviation Organization
IMDG/IMO - International Maritime Dangerous Goods / International Maritime Organization
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NDS - OEL-TWA [Poland najwyższe dopuszczalne stężenie na stanowisku pracy]
R/H-phrases - Risk/Hazard-phrases
RID - The European Agreement concerning the International Carriage of Dangerous Goods by Rail
UK - United Kingdom
w/w - weight/weight

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VLA-EC - short-time excursion limits [Spain valores límite ambientales para la exposición de corta duración]
MAK - Maximum Workplace Concentration
d - day

Key literature references and sources for data

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Revision Note

SDS sections updated:

14

This safety data sheet complies with the requirements of Regulation (EC) No. 2015/830

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End of Safety Data Sheet