

Hilti Zinc spray MZN-400

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

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

1.1. Product identifier

Product form	Mixture
Name	Hilti Zinc spray MZN-400
Product code	BU Installation
Vaporizer	Aerosol



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

1.2.1. Relevant identified uses

Main use category	Professional use
Use of the substance/mixture	Paint Corrosion inhibitor

1.2.2. Uses advised against

Restrictions on use	For professional use only
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1.3. Details of the supplier of the safety data sheet

Supplier

Hilti France S.A.S.
126 rue Gallieni
FR- 92100 Boulogne-Billancourt
France
T +33 825 01 05 05
fr-contactez-nous@hilti.com

Department issuing data specification sheet

Hilti Entwicklungsgesellschaft mbH
Hiltistraße 6
DE- 86916 Kaufering
Deutschland
T +49 8191 906876
anchor.hse@hilti.com

1.4. Emergency telephone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Aerosol, Category 1	H222;H229
Hazardous to the aquatic environment – Acute Hazard, Category 1	H400
Hazardous to the aquatic environment – Chronic Hazard, Category 1	H410

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

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS02

GHS09

Signal word (CLP)

Danger



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Hazard statements (CLP)	H222 - Extremely flammable aerosol. H229 - Pressurised container: May burst if heated. H410 - Very toxic to aquatic life with long lasting effects.
Precautionary statements (CLP)	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P211 - Do not spray on an open flame or other ignition source. P251 - Do not pierce or burn, even after use. P260 - Do not breathe spray, vapours. P271 - Use only outdoors or in a well-ventilated area. P410+P412 - Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. For professional users only.
Extra phrases	

2.3. Other hazards

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Component	
zinc (7440-66-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Butane (106-97-8)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
ethyl acetate (141-78-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
1-methoxypropan-2-ol (107-98-2)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
xylene (1330-20-7)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Solvent naphtha (petroleum), light arom. (64742-95-6)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
ethylbenzene (100-41-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
zinc oxide (1314-13-2)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

Component	
zinc(7440-66-6)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
Butane(106-97-8)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
ethyl acetate(141-78-6)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

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Component	
1-methoxypropan-2-ol(107-98-2)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
xylene(1330-20-7)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
Solvent naphtha (petroleum), light arom.(64742-95-6)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
ethylbenzene(100-41-4)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605
zinc oxide(1314-13-2)	The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
zinc	CAS-No.: 7440-66-6 EC-No.: 231-175-3 EC Index-No.: 030-001-01-9	25 – 40	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Butane (Propellant gas (Aerosol)) substance with national workplace exposure limit(s) (FR)	CAS-No.: 106-97-8 EC-No.: 203-448-7 EC Index-No.: 601-004-00-0 REACH-no: 01-2119474691-32	10 – 25	Flam. Gas 1A, H220 Press. Gas (Liq.), H280
ethyl acetate substance with national workplace exposure limit(s) (FR); substance with a Community workplace exposure limit	CAS-No.: 141-78-6 EC-No.: 205-500-4 EC Index-No.: 607-022-00-5 REACH-no: 01-2119475103-46	5 – 10	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336 EUH066
1-methoxypropan-2-ol substance with national workplace exposure limit(s) (FR); substance with a Community workplace exposure limit	CAS-No.: 107-98-2 EC-No.: 203-539-1 EC Index-No.: 603-064-00-3 REACH-no: 01-2119457435-35	5 – 10	Flam. Liq. 3, H226 STOT SE 3, H336

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
xylene substance with national workplace exposure limit(s) (FR); substance with a Community workplace exposure limit	CAS-No.: 1330-20-7 EC-No.: 215-535-7 REACH-no: 01-2119488216-32	5 – 10	Flam. Liq. 3, H226 Acute Tox. 4 (Dermal), H312 (ATE=1100 mg/kg bodyweight) Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h) Skin Irrit. 2, H315
Solvent naphtha (petroleum), light arom.	CAS-No.: 64742-95-6 EC-No.: 265-199-0 EC Index-No.: 649-356-00-4	5 – 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
ethylbenzene substance with national workplace exposure limit(s) (FR); substance with a Community workplace exposure limit	CAS-No.: 100-41-4 EC-No.: 202-849-4 EC Index-No.: 601-023-00-4 REACH-no: 01-2119489370-35	3 – 5	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h) STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 3, H412
zinc oxide substance with national workplace exposure limit(s) (FR)	CAS-No.: 1314-13-2 EC-No.: 215-222-5 EC Index-No.: 030-013-00-7	1 – 5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Product subject to CLP Article 1.1.3.7. The disclosure rules of the components is modified in this case.

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

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	Take off immediately all contaminated clothing. Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation	Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	Gently wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
First-aid measures after ingestion	Get immediate medical advice/attention.

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

Symptoms/effects after inhalation	May cause drowsiness or dizziness.
Symptoms/effects after skin contact	Irritation.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Carbon dioxide. Foam. Dry powder.
Unsuitable extinguishing media	Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	Extremely flammable aerosol.
Explosion hazard	Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

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Hazardous decomposition products in case of fire Toxic fumes may be released. Thermal decomposition generates : Carbon dioxide. Carbon monoxide. Nitrogen oxides.

5.3. Advice for firefighters

Precautionary measures fire	Fight fire remotely due to the risk of explosion.
Firefighting instructions	DO NOT fight fire when fire reaches explosives. Evacuate area.
Protection during firefighting	Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures Evacuate area. No flames, no sparks. Eliminate all sources of ignition.

6.1.1. For non-emergency personnel

Emergency procedures Ventilate spillage area. Avoid breathing spray, vapours. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment	Do not attempt to take action without suitable protective equipment. Breathing apparatus.
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Do not flush with water. Take up liquid spill into absorbent material. This material and its container must be disposed of in a safe way, and as per local legislation.
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6.4. Reference to other sections

For further information refer to section 13. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	Hazardous waste due to potential risk of explosion. Do not pierce or burn, even after use.
Precautions for safe handling	Do not eat, drink or smoke when using this product. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.
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7.2. Conditions for safe storage, including any incompatibilities

Technical measures	Proper grounding procedures to avoid static electricity should be followed.
Storage conditions	Keep cool. Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F. Keep in fireproof place.
Incompatible materials	Oxidizing materials. Paper. Strong acids. Strong bases.
Storage temperature	5 – 25 °C
Heat and ignition sources	Keep away from heat and direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. National occupational exposure and biological limit values



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EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Ethylbenzene
IOEL TWA	442 mg/m ³
IOEL TWA [ppm]	100 ppm
IOEL STEL	884 mg/m ³
IOEL STEL [ppm]	200 ppm
Remark	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
France - Occupational Exposure Limits	
Local name	Ethylbenzène
VME (OEL TWA)	88.4 mg/m ³
VME (OEL TWA) [ppm]	20 ppm
VLE (OEL C/STEL)	442 mg/m ³
VLE (OEL C/STEL) [ppm]	100 ppm
Remark	Valeurs réglementaires contraignantes; risque de pénétration percutanée
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
Butane (106-97-8)	
France - Occupational Exposure Limits	
Local name	n-Butane
VME (OEL TWA)	1900 mg/m ³
VME (OEL TWA) [ppm]	800 ppm
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)
ethyl acetate (141-78-6)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Ethyl acetate
IOEL TWA	734 mg/m ³
IOEL TWA [ppm]	200 ppm
IOEL STEL	1468 mg/m ³
IOEL STEL [ppm]	400 ppm
Regulatory reference	COMMISSION DIRECTIVE (EU) 2017/164
France - Occupational Exposure Limits	
Local name	Acétate d'éthyle
VME (OEL TWA)	1400 mg/m ³
VME (OEL TWA) [ppm]	400 ppm



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ethyl acetate (141-78-6)	
VLE (OEL C/STEL)	1468 mg/m ³
VLE (OEL C/STEL) [ppm]	400 ppm
Remark	Valeurs réglementaires contraignantes
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
1-methoxypropan-2-ol (107-98-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	1-Methoxypropanol-2
IOEL TWA	375 mg/m ³
IOEL TWA [ppm]	100 ppm
IOEL STEL	568 mg/m ³
IOEL STEL [ppm]	150 ppm
Remark	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
France - Occupational Exposure Limits	
Local name	1-Méthoxy-2-propanol
VME (OEL TWA)	188 mg/m ³
VME (OEL TWA) [ppm]	50 ppm
VLE (OEL C/STEL)	375 mg/m ³
VLE (OEL C/STEL) [ppm]	100 ppm
Remark	Valeurs réglementaires contraignantes; risque de pénétration percutanée
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
xylene (1330-20-7)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Xylene, mixed isomers, pure
IOEL TWA	221 mg/m ³
IOEL TWA [ppm]	50 ppm
IOEL STEL	442 mg/m ³
IOEL STEL [ppm]	100 ppm
Remark	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
France - Occupational Exposure Limits	
Local name	Xylène, isomères mixtes, purs
VME (OEL TWA)	221 mg/m ³
VME (OEL TWA) [ppm]	50 ppm
VLE (OEL C/STEL)	442 mg/m ³



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xylylene (1330-20-7)	
VLE (OEL C/STEL) [ppm]	100 ppm
Remark	Valeurs réglementaires contraignantes; risque de pénétration percutanée
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
ethylbenzene (100-41-4)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Ethylbenzene
IOEL TWA	442 mg/m ³
IOEL TWA [ppm]	100 ppm
IOEL STEL	884 mg/m ³
IOEL STEL [ppm]	200 ppm
Remark	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
France - Occupational Exposure Limits	
Local name	Ethylbenzène
VME (OEL TWA)	88.4 mg/m ³
VME (OEL TWA) [ppm]	20 ppm
VLE (OEL C/STEL)	442 mg/m ³
VLE (OEL C/STEL) [ppm]	100 ppm
Remark	Valeurs réglementaires contraignantes; risque de pénétration percutanée
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
zinc oxide (1314-13-2)	
France - Occupational Exposure Limits	
Local name	Zinc (oxyde de)
VME (OEL TWA)	5 mg/m ³ (fumées) 10 mg/m ³ (poussières)
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 984, 2016)

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

ethyl acetate (141-78-6)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	1468 mg/m ³
Acute - local effects, inhalation	1468 mg/m ³

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ethyl acetate (141-78-6)	
Long-term - systemic effects, dermal	63 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	734 mg/m ³
Long-term - local effects, inhalation	734 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	734 mg/m ³
Acute - local effects, inhalation	734 mg/m ³
Long-term - systemic effects, oral	4.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	367 mg/m ³
Long-term - systemic effects, dermal	37 mg/kg bodyweight/day
Long-term - local effects, inhalation	367 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.24 mg/l
PNEC aqua (marine water)	0.024 mg/l
PNEC aqua (intermittent, freshwater)	1.65 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	1.15 mg/kg dwt
PNEC sediment (marine water)	0.115 mg/kg dwt
PNEC (Soil)	
PNEC soil	0.148 mg/kg dwt
PNEC (Oral)	
PNEC oral (secondary poisoning)	0.2 g/kg food
PNEC (STP)	
PNEC sewage treatment plant	650 mg/l
xylene (1330-20-7)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	442 mg/m ³
Acute - local effects, inhalation	442 mg/m ³
Long-term - systemic effects, dermal	212 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	221 mg/m ³
Long-term - local effects, inhalation	221 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, inhalation	260 mg/m ³
Acute - local effects, inhalation	260 mg/m ³
Long-term - systemic effects, oral	12.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	65.3 mg/m ³
Long-term - systemic effects, dermal	125 mg/kg bodyweight/day

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xylene (1330-20-7)	
Long-term - local effects, inhalation	65.3 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.327 mg/l
PNEC aqua (marine water)	0.327 mg/l
PNEC aqua (intermittent, freshwater)	0.327 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	12.46 mg/kg dwt
PNEC sediment (marine water)	12.46 mg/kg dwt
PNEC (Soil)	
PNEC soil	2.31 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	6.58 mg/l
ethylbenzene (100-41-4)	
DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	884 mg/m ³
Acute - local effects, inhalation	884 mg/m ³
Long-term - systemic effects, inhalation	442 mg/m ³
Long-term - local effects, inhalation	442 mg/m ³
PNEC (Water)	
PNEC aqua (freshwater)	0.1 mg/l
PNEC aqua (marine water)	0.1 mg/l

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Chemical goggles or safety glasses. EN 166. EN 170

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8.2.2.2. Skin protection

Hand protection:

In case of repeated or prolonged contact wear gloves

Hand protection					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	0,4		EN ISO 374

8.2.2.3. Respiratory protection

Respiratory protection:

During spraying wear suitable respiratory equipment

Respiratory protection			
Device	Filter type	Condition	Standard
Aerosol mask			

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

No additional information available

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Colour	Grey.
Appearance	Aerosol.
Odour	characteristic.
Odour threshold	Not available
Melting point	Not available
Freezing point	Not available
Boiling point	-42 °C
Flammability	Extremely flammable aerosol.
Lower explosion limit	1 vol %
Upper explosion limit	13.1 vol %
Flash point	-25 °C (DIN EN ISO 1523)
Auto-ignition temperature	273 °C (DIN 51794)
Decomposition temperature	Not available
pH	Not available
Viscosity, kinematic	32 mm ² /s (ISO 2431 (3mm))
Solubility	Not available
Partition coefficient n-octanol/water (Log Kow)	Not available
Vapour pressure	3.2 hPa (DIN EN 12)
Vapour pressure at 50°C	Not available
Density	1.051 g/cm ³
Relative density	Not available
Relative vapour density at 20°C	Not available
Particle characteristics	Not applicable

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9.2. Other information

9.2.1. Information with regard to physical hazard classes

% of flammable ingredients :

9.2.2. Other safety characteristics

VOC content 611.4 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

No additional information available

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat. Sparks. Open flame. Direct sunlight. Overheating.

10.5. Incompatible materials

Oxidizing agents and bases.

10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide.

SECTION 11: Toxicological information

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

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

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

Acute toxicity (inhalation) Not classified (Based on available data, the classification criteria are not met)

zinc (7440-66-6)	
LD50 oral rat	> 2000 mg/kg (OECD 401 method)
LC50 Inhalation - Rat (Dust/Mist)	> 5.41 mg/l/4h no mortalities;(OECD 403 method)
Butane (106-97-8)	
LC50 Inhalation - Rat [ppm]	> 800000 ppm/4h
ethyl acetate (141-78-6)	
LD50 oral rat	> 2000 mg/kg ((OECD 401 method))
LD50 dermal rabbit	> 20000 mg/kg (male)
LC50 Inhalation - Rat [ppm]	> 6000 ppm (6 h)
1-methoxypropan-2-ol (107-98-2)	
LD50 oral rat	4016 mg/kg bodyweight
LD50 dermal rat	> 2000 mg/kg bodyweight
xylene (1330-20-7)	
LD50 oral rat	3523 mg/kg (male; EU Method B.1)
LD50 dermal rabbit	> 5000 mg/kg

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xylene (1330-20-7)	
LC50 Inhalation - Rat (Vapours)	29.091 mg/l/4h (male; EU Method B.2)
Solvent naphtha (petroleum), light arom. (64742-95-6)	
LD50 oral rat	> 6800 mg/kg bodyweight
LD50 dermal rabbit	> 3400 mg/kg bodyweight
LC50 Inhalation - Rat (Vapours)	> 10.2 mg/l/4h
ethylbenzene (100-41-4)	
LD50 oral rat	≈ 3500 mg/kg bodyweight
LD50 dermal rabbit	17.8 ml/kg (male)
LC50 Inhalation - Rat (Vapours)	17.8 mg/l/4h
zinc oxide (1314-13-2)	
LD50 oral rat	> 5000 mg/kg bodyweight (OECD 401 method)
LD50 dermal rat	> 2000 mg/kg bodyweight (OECD 402 method)
LC50 Inhalation - Rat (Dust/Mist)	> 5.7 mg/l/4h (OECD 403 method)No mortality with the given dose
Skin corrosion/irritation	Not classified
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity	Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity	Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	Not classified
ethyl acetate (141-78-6)	
STOT-single exposure	May cause drowsiness or dizziness.
1-methoxypropan-2-ol (107-98-2)	
STOT-single exposure	May cause drowsiness or dizziness.
Solvent naphtha (petroleum), light arom. (64742-95-6)	
STOT-single exposure	May cause drowsiness or dizziness.
STOT-repeated exposure	Not classified (Based on available data, the classification criteria are not met)
ethylbenzene (100-41-4)	
STOT-repeated exposure	May cause damage to organs (hearing organs) through prolonged or repeated exposure.
Aspiration hazard	Not classified (Based on available data, the classification criteria are not met)
Hilti Zinc spray MZN-400	
Vaporizer	Aerosol
Viscosity, kinematic	32 mm ² /s (ISO 2431 (3mm))

11.2. Information on other hazards

No additional information available

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SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute)	Very toxic to aquatic life. (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	Very toxic to aquatic life with long lasting effects. (Based on available data, the classification criteria are not met)

zinc (7440-66-6)	
LC50 - Fish [1]	169 µg/l (96h; Oncorhynchus Mykiss)
EC50 - Crustacea [1]	< 0.1 µg/l (48h; Ceriodaphnia dubia)
NOEC chronic fish	26 µg/L (30 d; Jordanella floridae)
NOEC chronic crustacea	48 µg/L (21d; Daphnia magna; (OECD 211 method))
Butane (106-97-8)	
LC50 - Fish [1]	24 – 148 mg/l (Quantitative structure-activity relationship (QSAR))
EC50 - Crustacea [1]	7 – 70 mg/l (Quantitative structure-activity relationship (QSAR))
EC50 72h - Algae [1]	7 – 17 mg/l (Quantitative structure-activity relationship (QSAR))
ethyl acetate (141-78-6)	
LC50 - Fish [1]	220 mg/l (96 h; Pimephales promelas; US EPA E03-05)
NOEC chronic crustacea	2.4 mg/l (21 d; Daphnia magna; (OECD 211 method))
NOEC chronic algae	> 100 mg/l (72 h; Desmodesmus subspicatus; (OECD 201 method))
1-methoxypropan-2-ol (107-98-2)	
LC50 - Fish [1]	6812 mg/l (96 h; Leuciscus idus; DIN 38 412, part L15)
EC50 - Crustacea [1]	> 100 mg/l (48 h; Daphnia magna)
xylene (1330-20-7)	
LC50 - Fish [1]	2.6 mg/l (96 h; Oncorhynchus mykiss; (OECD 203 method))
EC50 - Crustacea [1]	2.2 mg/l (24 h; Daphnia magna; (OECD 202 method))
ErC50 algae	2.2 mg/l (72 h; Pseudokirchneriella subcapitata; (OECD 201 method))
NOEC chronic fish	> 1.3 mg/l (56 d; Oncorhynchus mykiss)
NOEC chronic crustacea	0.96 mg/l (7 d; Ceriodaphnia dubia; US EPA 600/4-91-003)
Solvent naphtha (petroleum), light arom. (64742-95-6)	
LC50 - Fish [1]	8.2 mg/l (96h; Pimephales promelas; EPA 66013-75-009)
EC50 - Crustacea [1]	4.5 mg/l (48h; Daphnia magna; (OECD 202 method))
ErC50 algae	3.7 mg/l (96h; Pseudokirchneriella subcapitata; (OECD 201 method))
NOEC chronic crustacea	2.6 mg/l (21d; Daphnia magna; (OECD 211 method))
ethylbenzene (100-41-4)	
LC50 - Fish [1]	5.1 mg/l (96h; Menidia menidia)
LC50 - Fish [2]	4.2 mg/l (96; Oncorhynchus mykiss (Rainbow trout); (OECD 203 method))
EC50 - Crustacea [1]	1.8 – 2.4 mg/l (48h; Daphnia magna)
EC50 72h - Algae [1]	4.9 mg/l (72h; Skeletonema costatum)

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ethylbenzene (100-41-4)	
EC50 72h - Algae [2]	5.2 mg/l (72h; Pseudokirchnerella subcapitata)
ErC50 algae	4.9 mg/l (72h; Skeletonema costatum)
NOEC chronic crustacea	0.96 mg/l (7d; Ceriodaphnia dubia)
zinc oxide (1314-13-2)	
LC50 - Fish [1]	1.55 mg/l (96 h; Danio rerio)
EC50 - Crustacea [1]	1 mg/l (48 h; Daphnia magna; (OECD 202 method))
EC50 72h - Algae [1]	0.136 mg/l (72 h; Pseudokirchnerella subcapitata; (OECD 201 method))
NOEC chronic fish	0.039 mg/l (30 d; Oncorhynchus mykiss; (OECD 215 method); <tx:KFT_READ-ACROSS>)
NOEC chronic crustacea	0.04 mg/l (21 d; Daphnia magna; (OECD 211 method); <tx:KFT_READ-ACROSS>)
NOEC chronic algae	0.01 mg/l (4 d; Dunaliella tertiolecta)

12.2. Persistence and degradability

zinc (7440-66-6)	
Persistence and degradability	Not applicable for inorganic products.
ethyl acetate (141-78-6)	
Persistence and degradability	Readily biodegradable.
Biodegradation	≈ 69 % (20 d)
1-methoxypropan-2-ol (107-98-2)	
Persistence and degradability	Readily biodegradable.
Biodegradation	96 % (28 d; (OECD 301E method))
xylene (1330-20-7)	
Persistence and degradability	Readily biodegradable.
Biodegradation	87.8 % (28 d; (OECD 301F method))
ethylbenzene (100-41-4)	
Persistence and degradability	Readily biodegradable.
Biodegradation	70 – 80 % (28d; ISO 14593-CO2-Headspace Test)
zinc oxide (1314-13-2)	
Persistence and degradability	Not applicable for inorganic products.

12.3. Bioaccumulative potential

zinc (7440-66-6)	
Bioaccumulative potential	Bioaccumulation unlikely.
ethyl acetate (141-78-6)	
BCF - Fish [1]	30 (3 d; Leuciscus idus melanotus)
Bioaccumulative potential	Bioaccumulation unlikely.
1-methoxypropan-2-ol (107-98-2)	
Partition coefficient n-octanol/water (Log Kow)	0.37 (20 °C)

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1-methoxypropan-2-ol (107-98-2)	
Bioaccumulative potential	Bioaccumulation unlikely.
xylene (1330-20-7)	
Bioconcentration factor (BCF REACH)	< 25.9
Bioaccumulative potential	No additional information available.
zinc oxide (1314-13-2)	
Bioaccumulative potential	Bioaccumulation unlikely.

12.4. Mobility in soil

1-methoxypropan-2-ol (107-98-2)	
Surface tension	70.7 mN/m (1 g/L; 20°C)
xylene (1330-20-7)	
Surface tension	28 – 29.8 mN/m
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.73
ethylbenzene (100-41-4)	
Surface tension	71.2 N/m (23 °C)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.12 (calculated)

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	Disposal must be done according to official regulations.
Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	Container under pressure. Do not drill or burn even after use.
Additional information	Flammable vapours may accumulate in the container.
European List of Waste (LoW) code	14 06 03* - other solvents and solvent mixtures
	16 05 04* - gases in pressure containers (including halons) containing dangerous substances
	15 01 04 - metallic packaging

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HP Code

HP3 - "Flammable:"

- flammable liquid waste: liquid waste having a flash point below 60 °C or waste gas oil, diesel and light heating oils having a flash point > 55 °C and ≤ 75 °C;
- flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air;
- flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction;
- flammable gaseous waste: gaseous waste which is flammable in air at 20 °C and a standard pressure of 101.3 kPa;
- water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities;
- other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste.

HP14 - "Ecotoxic:" waste which presents or may present immediate or delayed risks for one or more sectors of the environment

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / RID

ADR	IMDG	IATA	RID
14.1. UN number or ID number			
UN 1950	UN 1950	UN 1950	UN 1950
14.2. UN proper shipping name			
AEROSOLS	AEROSOLS	Aerosols, flammable	AEROSOLS
Transport document description			
UN 1950 AEROSOLS, 2.1, (D)	UN 1950 AEROSOLS, 2.1	UN 1950 Aerosols, flammable, 2.1	UN 1950 AEROSOLS, 2.1
14.3. Transport hazard class(es)			
2.1	2.1	2.1	2.1
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
Environmentally hazardous substances derogation applies (quantity of liquids ≤ 5 litres or net mass of solids ≤ 5 kg). The environmentally hazardous substance mark is therefore not required, as stated in the ADR regulation, section 5.2.1.8.1.			
No supplementary information available			

14.6. Special precautions for user

Overland transport

Classification code (ADR)	5F
Special provisions (ADR)	190, 327, 344, 625
Limited quantities (ADR)	1I
Excepted quantities (ADR)	E0



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Packing instructions (ADR)	P207, LP200
Special packing provisions (ADR)	PP87, RR6, L2
Transport category (ADR)	2
Special provisions for carriage - Packages (ADR)	V14
Special provisions for carriage - Loading, unloading and handling (ADR)	CV9, CV12
Special provisions for carriage - Operation (ADR)	S2
Tunnel restriction code (ADR)	D

Transport by sea

Special provisions (IMDG)	63, 190, 277, 327, 344, 381, 959
Limited quantities (IMDG)	SP277
Excepted quantities (IMDG)	E0
Packing instructions (IMDG)	P207, LP200
Special packing provisions (IMDG)	PP87, L2
EmS-No. (Fire)	F-D
EmS-No. (Spillage)	S-U
Stowage category (IMDG)	None

Air transport

PCA Excepted quantities (IATA)	E0
PCA Limited quantities (IATA)	Y203
PCA limited quantity max net quantity (IATA)	30kgG
PCA packing instructions (IATA)	203
PCA max net quantity (IATA)	75kg
CAO packing instructions (IATA)	203
CAO max net quantity (IATA)	150kg
Special provisions (IATA)	A145, A167, A802
ERG code (IATA)	10L

Rail transport

Classification code (RID)	5F
Special provisions (RID)	190, 327, 344, 625
Limited quantities (RID)	1L
Excepted quantities (RID)	E0
Packing instructions (RID)	P207, LP200
Special packing provisions (RID)	PP87, RR6, L2
Mixed packing provisions (RID)	MP9
Transport category (RID)	2
Special provisions for carriage – Packages (RID)	W14
Special provisions for carriage - Loading, unloading and handling (RID)	CW9, CW12
Colis express (express parcels) (RID)	CE2
Hazard identification number (RID)	23

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

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SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
3(a)	Hilti Zinc spray MZN-400 ; ethyl acetate ; 1-methoxypropan-2-ol ; xylene ; Solvent naphtha (petroleum), light arom. ; ethylbenzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	Hilti Zinc spray MZN-400 ; ethyl acetate ; 1-methoxypropan-2-ol ; xylene ; Solvent naphtha (petroleum), light arom. ; ethylbenzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	Hilti Zinc spray MZN-400 ; Solvent naphtha (petroleum), light arom. ; ethylbenzene	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1
40.	propane ; Butane ; ethyl acetate ; 1-methoxypropan-2-ol ; xylene ; Solvent naphtha (petroleum), light arom. ; ethylbenzene	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

VOC Directive (2004/42)

VOC content 611.4 g/l

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Seveso Directive (Disaster Risk Reduction)

Seveso III Part I (Categories of dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
P3a FLAMMABLE AEROSOLS 'Flammable' aerosols Category 1 or 2, containing flammable gases Category 1 or 2 or flammable liquids Category 1	150	500
E1 Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1	100	200

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

France

Occupational diseases	
Code	Description
RG 4 BIS	Gastrointestinal disorders caused by benzene, toluene, xylenes and all products containing them
RG 84	Conditions caused by liquid organic solvents for professional use: saturated or unsaturated aliphatic or cyclic liquid hydrocarbons and mixtures thereof; liquid halogenated hydrocarbons; nitrated derivatives of aliphatic hydrocarbons; alcohols; glycols, glycol ethers; ketones; aldehydes; aliphatic and cyclic ethers, including tetrahydrofuran; esters; dimethylformamide and dimethylacetamide; acetonitrile and propionitrile; pyridine; dimethylsulfone and dimethylsulfoxide

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
	General	Modified	SDS EU format according to COMMISSION REGULATION (EU) 2020/878
9	Physical and chemical properties	Modified	
11	Toxicological information	Modified	
12.1	Ecotoxicological information	Modified	
15	Regulatory information	Added	

Abbreviations and acronyms:	
CAS-No.	Chemical Abstract Service number
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road



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Abbreviations and acronyms:	
ATE	Acute Toxicity Estimate
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DNEL	Derived-No Effect Level
EC50	Median effective concentration
ED	Endocrine disrupting properties
EC-No.	European Community number
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
IOELV	Indicative Occupational Exposure Limit Value
LC50	Median lethal concentration
LD50	Median lethal dose
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
N.O.S.	Not Otherwise Specified
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TLM	Median Tolerance Limit
TRGS	Technical Rules for Hazardous Substances
VOC	Volatile Organic Compounds
WGK	Water Hazard Class
vPvB	Very Persistent and Very Bioaccumulative
NOAEL	No-Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
LOAEL	Lowest Observed Adverse Effect Level

Data sources

Source: European Chemicals Agency, <http://echa.europa.eu/>. manufacturer.

Full text of H- and EUH-statements:	
Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Aerosol 1	Aerosol, Category 1



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Full text of H- and EUH-statements:	
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
Asp. Tox. 1	Aspiration hazard, Category 1
EUH066	Repeated exposure may cause skin dryness or cracking.
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Liq. 2	Flammable liquids, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
H220	Extremely flammable gas.
H222	Extremely flammable aerosol.
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H229	Pressurised container: May burst if heated.
H280	Contains gas under pressure; may explode if heated.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis

SDS EU Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.