DX-Cartridge

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Date of issue: 12/04/2017 Revision date: 12/04/2017 Supersedes: 03/02/2017

Version: 2.5

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

1.1. Product identifier

Product form	Article
Name	DX-Cartridge
Product code	BU Direct Fastening

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

Use of the substance/mixture	CARTRIDGES FOR TOOLS, BLANK

1.3. Details of the supplier of the safety data sheet

Supplier
Hilti (Aust.) Pty. Ltd.
Level 5, 1G Homebush Bay Drive
2138 Rhodes NSW - Australia
T +61 131 292 - F +61 1300 135 042
serviceaustralia@hilti.com

Department issuing data specification sheet
Hilti Entwicklungsgesellschaft mbH
Hiltistrasse 6
86916 Kaufering - Deutschland
T +49 8191 906310 - F +49 8191 90176310
df-hse@hilti.com

1.4. Emergency telephone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international) +61 2 8748 1000

SECTION 2: Hazards identification

The dismantling of the article is prohibited!,This article contains hazardous substances or preparations not intended to be released under normal or reasonably foreseeable conditions of use

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS (Rev. 4, 2011)

Expl. 1.4 H204
Full text of hazard classes and H-statements : see section 16

2.2. Label elements

Labelling according to the United Nations GHS (Rev. 4, 2011)

Hazard pictograms (GHS-UN)

GHS01

Signal word (GHS-UN)	Warning
Hazard statements (GHS-UN)	H204 - Fire or projection hazard
Precautionary statements (GHS-UN)	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking heat P250 - Do not subject to shock P280 - Wear eye protection

2.3. Other hazards

No additional information available

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SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to the United Nations GHS
copper	(CAS No) 7440-50-8	25 - 35	Aquatic Acute 1, H400 Aquatic Chronic 3, H412
zinc	(CAS No) 7440-66-6	2.5 - 25	Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410
Cellulose nitrate	(CAS No) 9004-70-0	5 - 10	Expl. 1.1, H201
glycerol trinitrate	(CAS No) 55-63-0	3 - 10	Unst. Expl, H200 Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation:dust,mist), H330 STOT RE 2, H373 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Barium nitrate	(CAS No) 10022-31-8	0 - 5	Acute Tox. 4 (Oral), H302 Aquatic Acute Not classified
lead styphnate	(CAS No) 15245-44-0	0,1 - 5	Unst. Expl, H200 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
diphenylamine	(CAS No) 122-39-4	0 - 1	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation:dust,mist), H331 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Tetrazen	(CAS No) 109-27-3	0 - 0.2	Unst. Expl, H200 Eye Irrit. 2A, H319

Comments (on top of composition)

max. net explosives weight each cartridge in mg:
Caliber 6.8/11 (cal .27 short) white: 130; brown: 140; green: 160; yellow: 180; red: 230; black: 260
Caliber 6.8/18 (cal .27 long) green: 190; yellow: 220; blue: 300; red: 330; black: 410
Caliber 6.3/10 (cal. 25) green 120; yellow: 190; red: 230; black: 250
Caliber 5.5/16 (cal .22) grey: 105; brown: 120; green: 175; yellow: 210; red: 270,Within the cartridges the explosive ingredients (gun powder and priming composition) are hermetically separated from the
environment. They will be only opened with effort and under destruction of the article.
Propellant powder: Single base powder, containing glyceroltrinittate
Mass per cartridge: essentially dependent on the required power (100-400 mg)
Priming composition: SINOXID (initiating explosive) Mass per cartridge: 22-33 mg in the mean,Exposed propellant powder outside a cartridge is harmful if swallowed and highly flammable; without tamping no explosion risk.
Packed safety cartridges don't represent a significant risk.
In case of reaction no dangerous fragments or projectiles will be formed.
Mechanical or thermal attempts to expose the primer composition lead to an immediate reaction of the dangerous ingredients

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation

Assure fresh air breathing. Allow the victim to rest.

First-aid measures after skin contact	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
First-aid measures after eye contact	Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

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

Symptoms/effects	Not expected to present a significant hazard under anticipated conditions of normal use.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
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	Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1.For non-emergency personnel

Emergency procedures	Evacuate unnecessary personnel.

6.1.2.For emergency responders

Protective equipment	Equip cleanup crew with proper protection.
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Pick up loose cartridges only by hand. Exposed ingredients must be swept up carefully and phlegmatized in a water container, labelled according the regulations, wipe down with water the contamined area. Store away from other materials.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	Hazardous waste due to potential risk of explosion.

Precautions for safe handling	Do not subject to grinding,shock, friction. Take precautionary measures against static discharge. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep only in the original container in a cool, well ventilated place away from : Direct sunlight, Heat sources. Store in a dry place.
Incompatible products	Strong bases. Strong acids.
Incompatible materials	Sources of ignition. Direct sunlight.
Storage temperature	5 - 25 °C
Prohibitions on mixed storage	KEEP SUBSTANCE AWAY FROM: highly flammable materials. ignition sources.
Storage area	Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

glycerol trinitrate (55-63-0)		
Australia	Local name	Nitroglycerin (NG)
Australia	TWA (mg/m³)	0.46 mg/m³
Australia	TWA (ppm)	0.05 ppm
diphenylamine (122-39-4)		
Australia	Local name	Diphenylamine
Australia	TWA (mg/m³)	10 mg/m³

8.2. Appropriate engineering controls

Other information: Do not eat, drink or smoke during use.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Eye protection: Safety glasses

Skin and body protection: When using setting tools, sufficient ear protection must be worn

8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Colour	According to product specification.
Odour	No data available
Odour threshold	No data available
pH	No data available
Relative evaporation rate (butylacetate=1)	No data available
Melting point	No data available
Freezing point	No data available

Boiling point	No data available
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	No data available
Vapour pressure	No data available
Relative vapour density at 20 °C	No data available
Relative density	No data available
Solubility	No data available
Log Pow	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available
Explosive properties	Fire or projection hazard.
Oxidising properties	No data available
Explosive limits	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Heat. Sparks. Open flame. Overheating.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. Nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) Not classified

zinc (7440-66-6)	
LD50 oral rat	> 2000 mg/kg bodyweight (Rat; Equivalent or similar to OECD 401; Experimental value)
LD50 dermal rat	> 2000 mg/kg bodyweight (Rat; Read-across; Equivalent or similar to OECD 402)

glycerol trinitrate (55-63-0)	
LD50 oral	685 mg/kg

Barium nitrate (10022-31-8)	
LD50 oral rat	355 mg/kg (Rat)
LD50 oral	355 mg/kg

diphenylamine (122-39-4)	
LD50 oral	1120 mg/kg

Skin corrosion/irritation	Not classified
Serious eye damage/irritation	Not classified
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified
Potential adverse human health effects and symptoms	Based on available data, the classification criteria are not met. No harmful effects are to be expected if used properly. The contained ingredients can be harmful, but they are hermetically enclosed in the article and can not be released. The dismantling of the article is prohibited.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	No harmful effects are to be expected if used properly. The contained ingredients can be harmful, but they are hermetically enclosed in the article and can not be released. The dismantling of the article is prohibited.

copper (7440-50-8)	
LC50 fish 1	200 µg/l (LC50; 96 h; Salmo gairdneri; Flow-through system; Fresh water)
EC50 Daphnia 1	109 - 798 µg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system; Fresh water; Weight of evidence)
Threshold limit algae 1	230 µg/l (EC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Pseudokirchneriella subcapitata; Static system; Fresh water; Weight of evidence)

zinc (7440-66-6)	
LC50 fish 1	0.14 mg/l (96 h; Salmo gairdneri (Oncorhynchus mykiss); Zinc ion)
EC50 Daphnia 1	0.07 mg/l (48 h; Daphnia magna; Zinc ion)
LC50 fish 2	0.169 mg/l (96 h; Oncorhynchus mykiss; Zinc ion)
EC50 Daphnia 2	1.833 mg/l (48 h; Daphnia magna; Zinc ion)
ErC50 (algae)	0.15 mg/l
Threshold limit algae 1	0.150 mg/l (72 h; Selenastrum capricornutum; Zinc ion)
Threshold limit algae 2	0.050 mg/l (72 h; Selenastrum capricornutum; Zinc ion)

glycerol trinitrate (55-63-0)	
LC50 fish 1	2.1 mg/l (96 h; Pimephales promelas)
EC50 Daphnia 1	25 mg/l (168 h; Daphnia magna)
LC50 fish 2	1.3 mg/l (96 h; Lepomis macrochirus)
ErC50 (algae)	0.4 mg/l
NOEC chronic fish	0.03 mg/l
Threshold limit algae 1	> 6.5 mg/l (Scenedesmus quadricauda)

lead styphnate (15245-44-0)	
EC50 Daphnia 1	7 mg/l
TLM fish 1	7.48 mg/l (96 h; Pimephales promelas; Lead ion)
Threshold limit algae 1	0.14 mg/l (Selenastrum capricornutum; Lead ion)

Barium nitrate (10022-31-8)	
LC50 fish 1	1900 mg/l
LC50 other aquatic organisms 1	> 1000 mg/l (96 h)
Threshold limit other aquatic organisms 1	> 1000 mg/l (96 h)

diphenylamine (122-39-4)	
LC50 fish 1	> 20 mg/l (48 h; Leuciscus idus)
EC50 Daphnia 1	2.3 mg/l (24 h; Daphnia magna)
LC50 fish 2	2.2 - 5.1 mg/l (48 h; Oryzias latipes)

ErC50 (algae)	0.36 mg/l
Threshold limit other aquatic organisms 1	1000 mg/l (24 h; Pseudomonas fluorescens)
Threshold limit algae 1	0.048 mg/l (72 h; Scenedesmus subspicatus; Inhibitory)

12.2. Persistence and degradability

DX-Cartridge	
Persistence and degradability	Not established.

copper (7440-50-8)	
Persistence and degradability	Biodegradability: not applicable. Biodegradability in soil: not applicable. Adsorbs into the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

zinc (7440-66-6)	
Persistence and degradability	Biodegradability: not applicable. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

glycerol trinitrate (55-63-0)	
Persistence and degradability	Biodegradable in water.
Biochemical oxygen demand (BOD)	53.6 g O_2/g substance

Barium nitrate (10022-31-8)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

diphenylamine (122-39-4)	
Persistence and degradability	Not readily biodegradable in water.
ThOD	2.39 g O_2/g substance

12.3. Bioaccumulative potential

DX-Cartridge	
Bioaccumulative potential	Not established.

copper (7440-50-8)	
Bioaccumulative potential	Bioaccumulation: not applicable.

zinc (7440-66-6)	
Bioaccumulative potential	Bioaccumulation: not applicable.

glycerol trinitrate (55-63-0)	
Log Pow	1.62
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Barium nitrate (10022-31-8)	
Bioaccumulative potential	Not bioaccumulative.

diphenylamine (122-39-4)	
BCF fish 1	51 - 253 (Cyprinus carpio; Test duration: 8 weeks)
Log Pow	3.22 - 3.50
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

diphenylamine (122-39-4)	
Surface tension	0.03 N/m (60 °C)
Ecology - soil	May be harmful to plant growth, blooming and fruit formation.

12.5. Other adverse effects

Other information: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Refer to manufacturer/supplier for information on recovery/recycling.

Additional information: Hazardous waste due to potential risk of explosion.

Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	RID
14.1. UN number			
0323	0323	0323	0323
14.2. UN proper shipping name			
CARTRIDGES, POWER DEVICE	CARTRIDGES, POWER DEVICE	Cartridges, power device	CARTRIDGES, POWER DEVICE
Transport document description			
UN 0323 CARTRIDGES, POWER DEVICE, (E)	UN 0323 CARTRIDGES, POWER DEVICE, 1.4S		
14.3. Transport hazard class(es)			
1.4S	1.4S	1.4S	1.4S
			
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available			

14.6. Special precautions for user

- Overland transport

Special provisions (ADR): 347

Limited quantities (ADR): 0

Packing instructions (ADR): P134, LP102

Mixed packing provisions (ADR): MP23

Tunnel restriction code (ADR): E

- Transport by sea

Special provisions (IMDG): 347

Limited quantities (IMDG)	0
Packing instructions (IMDG)	P134, LP102
EmS-No. (Fire)	F-B
EmS-No. (Spillage)	S-X
Stowage category (IMDG)	01
Stowage and segregation (IMDG)	Protected from sources of heat
MFAG-No	114

- Air transport

PCA packing instructions (IATA)	134
PCA max net quantity (IATA)	25kg
CAO packing instructions (IATA)	134
Special provisions (IATA)	A165

- Rail transport

Special provisions (RID)	347
Limited quantities (RID)	0
Packing instructions (RID)	P134, LP102
Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

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

No additional information available

SECTION 16: Other information

Indication of changes:

3	Composition/information on ingredients	Added	
3	Comments	Modified	

Full text of H-statements:

H200	Unstable explosives
H204	Fire or projection hazard
H300	Fatal if swallowed
H301	Toxic if swallowed
H302	Harmful if swallowed
H310	Fatal in contact with skin
H311	Toxic in contact with skin
H330	Fatal if inhaled
H331	Toxic if inhaled
H332	Harmful if inhaled
H360	May damage fertility or the unborn child
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

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DX-Cartridge

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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