

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 02/08/2018

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Supersedes: 04/12/2017

Version: 2.5

SECTION 1: Identification

1.1. Identification

Product form	Article
Product 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
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1.3. Details of the supplier of the safety data sheet

Supplier Hilti, Inc. Legacy Tower, Suite 1000 7250 Dallas Parkway 75024 Plano - USA T +1 9724035800 1-800-879-8000 toll free - F +1 918 254 0522	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
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1.4. Emergency telephone number

Emergency number	Chem-Trec Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada) Tel.: 703 527 3887 (Other countries) +1 918 8723000 1-800-879-8000 toll free
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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

GHS-US classification

Expl. 1.4 H204 - Fire or projection hazard.
Full text of H statements : see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US)



GHS01

Signal word (GHS-US)

Warning

Hazard statements (GHS-US)

H204 - Fire or projection hazard.

Precautionary statements (GHS-US)

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.

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

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 glyceroltrinitrate

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.

Name	Product identifier	%	GHS-US classification
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 Chronic 2, H411
Barium nitrate	(CAS-No.) 10022-31-8	0 - 5	Acute Tox. 4 (Oral), H302
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

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.

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

First-aid measures after ingestion

Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects (acute and delayed)

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.

Symptoms/effects

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

4.3. Immediate medical attention and special treatment, if necessary

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 contaminated area. Store away from other materials.

6.4. Reference to other sections

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

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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
Information 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)		
ACGIH	ACGIH TWA (ppm)	0.05 ppm
ACGIH	Remark (ACGIH)	Vasodilation
OSHA	OSHA PEL (Ceiling) (mg/m ³)	2 mg/m ³
OSHA	OSHA PEL (Ceiling) (ppm)	0.2 ppm
lead styphnate (15245-44-0)		
Not applicable		
Barium nitrate (10022-31-8)		
ACGIH	ACGIH TWA (mg/m ³)	0.5 mg/m ³
diphenylamine (122-39-4)		
ACGIH	ACGIH TWA (mg/m ³)	10 mg/m ³
ACGIH	Remark (ACGIH)	Liver & kidney dam; hematologic eff
Tetrazen (109-27-3)		
Not applicable		

8.2. Exposure controls

Personal protective equipment Avoid all unnecessary exposure. Safety glasses. Protective clothing.



Eye protection	Safety glasses.
Skin and body protection	When using setting tools, sufficient ear protection must be worn.
Other information	Do not eat, drink or smoke during use.

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Colour	According to product specification
Odour	There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour: Sweet odour Pleasant odour Floral odour Odourless
Odour threshold	No data available
pH	No data available
Melting point	No data available
Freezing point	No data available
Boiling point	No data available
Flash point	No data available
Relative evaporation rate (butylacetate=1)	No data available
Flammability (solid, gas)	No data available
Explosive limits	No data available
Explosive properties	Fire or projection hazard.
Oxidising properties	No data available
Vapour pressure	No data available
Relative density	No data available
Relative vapour density at 20 °C	No data available
Solubility	No data available
Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	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.

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. Nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Not classified

glycerol trinitrate (55-63-0)	
LD50 oral rat	685 mg/kg bodyweight (Rat, Male/female, Experimental value)
LD50 dermal rat	> 9560 mg/kg bodyweight (Equivalent or similar to OECD 402, Rat, Male/female, Experimental value)
ATE US (oral)	5 mg/kg bodyweight
ATE US (dermal)	5 mg/kg bodyweight
ATE US (dust,mist)	0.05 mg/l/4h
lead styphnate (15245-44-0)	
ATE US (oral)	500 mg/kg bodyweight
ATE US (dust,mist)	1.5 mg/l/4h
Barium nitrate (10022-31-8)	
LD50 oral rat	50 - 300 mg/kg bodyweight (Rat, Female, Experimental value)
LC50 inhalation rat (mg/l)	> 1.1 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male/female, Experimental value)
ATE US (oral)	355 mg/kg bodyweight
diphenylamine (122-39-4)	
ATE US (oral)	100 mg/kg bodyweight
ATE US (dermal)	300 mg/kg bodyweight
ATE US (dust,mist)	0.5 mg/l/4h

Skin corrosion/irritation

Not classified

Serious eye damage/irritation

Not classified

Respiratory or skin sensitisation

Not classified

Germ cell mutagenicity

Not classified

Based on available data, the classification criteria are not met

Carcinogenicity

Not classified

Reproductive toxicity

Not classified

Based on available data, the classification criteria are not met

STOT-single exposure

Not classified

STOT-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.
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DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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.

glycerol trinitrate (55-63-0)	
LC50 fish 1	1.9 mg/l (ASTM E729-80, 96 h, Oncorhynchus mykiss, Flow-through system, Fresh water, Experimental value)
ErC50 (algae)	0.4 mg/l
NOEC chronic fish	0.03 mg/l
lead styphnate (15245-44-0)	
EC50 Daphnia 1	7 mg/l
TLM fish 1	7.48 mg/l (96 h, Pimephales promelas)
Barium nitrate (10022-31-8)	
LC50 fish 1	1900 mg/l
diphenylamine (122-39-4)	
LC50 fish 1	2.2 - 5.1 mg/l (48 h, Oryzias latipes)
EC50 Daphnia 1	2.3 mg/l (24 h, Daphnia magna)
NOEC chronic algae	0.0273 mg/l
Tetrazen (109-27-3)	
EC50 Daphnia 1	0.14 mg/l

12.2. Persistence and degradability

DX-Cartridge	
Persistence and degradability	Not established.
glycerol trinitrate (55-63-0)	
Persistence and degradability	Readily 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.
glycerol trinitrate (55-63-0)	
Log Pow	2.04 (Experimental value, 21 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
Barium nitrate (10022-31-8)	
Bioaccumulative potential	Not bioaccumulative.

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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

glycerol trinitrate (55-63-0)	
Log Koc	2.63 - 2.91 (log Koc, Calculated value)
Ecology - soil	Low potential for adsorption in soil.
Barium nitrate (10022-31-8)	
Ecology - soil	No (test) data on mobility of the substance available.
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

Product/Packaging disposal recommendations

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

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	UN 0323 Cartridges, power device, 1.4S	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

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

ADR	IMDG	IATA	RID
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. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

glycerol trinitrate	CAS-No. 55-63-0	3 - 10%
diphenylamine	CAS-No. 122-39-4	0 - 1%

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

glycerol trinitrate (55-63-0)	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	10 lb
SARA Section 313 - Emission Reporting	1 %
diphenylamine (122-39-4)	
Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 %

15.2. International regulations

CANADA

glycerol trinitrate (55-63-0)	
Listed on the Canadian DSL (Domestic Substances List)	
lead styphnate (15245-44-0)	
Listed on the Canadian DSL (Domestic Substances List)	
Barium nitrate (10022-31-8)	
Listed on the Canadian DSL (Domestic Substances List)	
diphenylamine (122-39-4)	
Listed on the Canadian DSL (Domestic Substances List)	
Tetrazen (109-27-3)	
Listed on the Canadian NDSL (Non-Domestic Substances List)	

EU-Regulations

No additional information available

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

Expl. 1.4 H204

Full text of H statements : see section 16

15.1.1. EU-Regulations

Contains one substance (s) from the list of candidate substances of REACH in a concentration > 0,1%: Lead styphnate (EC 239-290-0, CAS 15245-44-0)

15.3. US State regulations

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer, and which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Lead compounds				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
Yes	Yes	Yes	Yes	

SECTION 16: Other information

Revision date

04/12/2017

DX-Cartridge

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-statements:

H200	Unstable explosives.
H300	Fatal if swallowed.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H311	Toxic in contact with skin.
H319	Causes serious eye irritation.
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.

NFPA health hazard

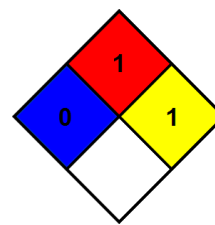
0 - Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard

1 - Materials that must be preheated before ignition can occur.

NFPA reactivity

1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



Indication of changes:

Section	Changed item	Change	Comments
3	Comments	Modified	

SDS_US_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