

Safety Data Sheet

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

Issue date: 04/11/2021 Revision date: 04/11/2021 Supersedes: 12/02/2016 Version: 3.2

SECTION 1: Identification

1.1. GHS Product identifier

Product form Article

Trade name DX-Cartridge Clean-Tec

UN-No. (ADR) 0323

Product code BU Direct Fastening

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Use of the substance/mixture CARTRIDGES FOR TOOLS, BLANK

Recommended use For professional use only

1.4. Supplier's details

Supplier Department issuing data specification sheet

Hilti Qatar W.L.L. Hilti Entwicklungsgesellschaft mbH

Souq Al Rawda Hiltistraße 6

Salwa Road 86916 Kaufering - Deutschland

P.O. Box 24097 T +49 8191 906876

Doha Ad Dawhah - Qatar

T +974 4406 3600 - F +974 4406 3669

1.5. Emergency phone number

Emergency number Schweizerisches Toxikologisches Informationszentrum – 24h Service

+41 44 251 51 51 (international)

+974 4406 3600

SECTION 2: Hazard 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

Explosives, Division 1.4 H204 Expert judgment

Full text of H-statements: see section 16

2.2. GHS Label elements, including precautionary statements

Labelling according to the United Nations GHS

Hazard pictograms (GHS UN)



GHS01

Signal word (GHS UN) Warnin

Hazard statements (GHS UN) H204 - Fire or projection hazard

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Precautionary statements (GHS UN)

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

No smoking.

P250 - Do not subject to shock, friction, grinding.

P280 - Wear eye protection. P372 - Explosion risk.

P370+P380+P375 - In case of fire: Evacuate area. Fight fire remotely due to the risk of

explosion.

P401 - Store in accordance with local regulations on explosives.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification

This article contains hazardous substances or preparations not intended to be released under normal or reasonably foreseeable conditions of use., The dismantling of the article is prohibited!, Keep away from ignition sources (including static discharges)

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Comments

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;

titanium: 230; black: 260

Caliber 6.8/18 (cal .27 long) green: 190; yellow: 220; blue: 300; red: 330; black: 410

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: glycerol trinitrate containing nitrocellulose powder

Mass per cartridge: essentially dependent on the required power (100-400 mg)

Priming composition: SINTOX (initiating explosive) Mass per cartridge: 20,9 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	%	Classification according to the United Nations GHS
cellulose nitrate	(CAS-No.) 9004-70-0	5 - 17	Explosives, Division 1.1, H201
glycerol trinitrate	(CAS-No.) 55-63-0	2-7	Explosives, Unstable explosives, H200 Acute toxicity (oral), Category 2, H300 Acute toxicity (dermal), Category 1, H310 Acute toxicity (inhal.), Category 2, H330 Specific target organ toxicity — Repeated exposure, Category 2, H373 Hazardous to the aquatic environment — Acute Hazard, Category 2, H401 Hazardous to the aquatic environment — Chronic Hazard, Category 2, H411
diphenylamine	(CAS-No.) 122-39-4	0.1 - 1	Acute toxicity (oral), Category 3, H301 Acute toxicity (dermal), Category 3, H311 Acute toxicity (inhal.), Category 3, H331 Specific target organ toxicity — Repeated exposure, Category 2, H373 Hazardous to the aquatic environment — Acute Hazard, Category 1, H400 Hazardous to the aquatic environment — Chronic Hazard, Category 1, H410
copper	(CAS-No.) 7440-50-8	0 – 1	Hazardous to the aquatic environment — Acute Hazard, Category 1, H400 Hazardous to the aquatic environment — Chronic Hazard, Category 3, H412

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zinc	(CAS-No.) 7440-66-6	0 – 1	Hazardous to the aquatic environment — Acute Hazard, Category 1, H400 Hazardous to the aquatic environment — Chronic Hazard, Category 1, H410
tetrazene	(CAS-No.) 109-27-3	0 – 1	Explosives, Unstable explosives, H200 Serious eye damage/eye irritation, Category 2A, H319 Hazardous to the aquatic environment — Acute Hazard, Category 1, H400 Hazardous to the aquatic environment — Chronic Hazard, Category 1, H410

Full text of H-statements: see section 16

SECTION 4: First-aid measures

4.1. Description of necessary first-aid measures

First-aid measures general In all cases of doubt, or when symptoms persist, seek medical attention.

First-aid measures after inhalation Allow affected person to breathe fresh air. 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/effects, acute and delayed

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

Potential adverse human health effects and symptoms No additional information available. 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.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

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

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of Carbon monoxide. Carbon dioxide (CO2). Nitrous gasses.

fire

5.3. Special protective actions for fire-fighters

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.

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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 materials 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

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.

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

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.

Storage area Store away from heat.

Incompatible products Strong bases. Strong acids.

Information on mixed storage Keep away from : Ignition sources. Do not store with: Store according to local legislation.

Storage temperature 5-25 °C

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

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 cartridge operated tools, sufficient ear protection must be worn.

Personal protective equipment symbol(s)





8.4. Exposure limit values for the other components

No additional information available

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SECTION 9: Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state Solid

Colour According to product specification.

Odour Not available Odour threshold Not available Not available Melting point Freezing point Not available Not available **Boiling point** Flammability (solid, gas) Not available Explosive limits Not applicable Lower explosive limit (LEL) Not applicable Upper explosive limit (UEL) Not applicable Flash point Not applicable Auto-ignition temperature Not applicable Decomposition temperature Not available рΗ Not available pH solution Not available Viscosity, kinematic (calculated value) (40 °C) Not applicable Partition coefficient n-octanol/water (Log Kow) Not available Vapour pressure Not available Vapour pressure at 50 °C Not available Not available Density Relative density Not available Relative vapour density at 20 °C Not applicable

Explosive properties Fire or projection hazard.

Not available

Particle size Not available
Particle size distribution Not available
Particle shape Not available
Particle aspect ratio Not available
Particle specific surface area Not available

9.2. Data relevant with regard to physical hazard classes (supplemental)

Additional information Not applicable Article

SECTION 10: Stability and reactivity

10.1. Reactivity

Solubility

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

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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

Carbon monoxide. Carbon dioxide. Nitrogen oxides. Metal oxides. Thermal decomposition can lead to the release of irritating gases and vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)

Acute toxicity (dermal)

Acute toxicity (inhalation)

Not classified

Not classified

glycerol trinitrate (55-63-0)	
LD50 oral rat	685 mg/kg bodyweight (Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 oral	685 mg/kg
LD50 dermal rat	> 9560 mg/kg bodyweight (Equivalent or similar to OECD 402, Rat, Male / female,
	Experimental value, Dermal)
diphenylamine (122-39-4)	
LD50 oral rat	> 800 mg/kg bodyweight (Rat, Male, Experimental value, Oral)
zinc (7440-66-6)	
LD50 oral rat	> 2000 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental
	value, Oral, 14 day(s))
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 STOT-single exposure Not classified STOT-repeated exposure Not classified Not classified Aspiration hazard

Potential adverse human health effects and

symptoms

No additional information available. 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.

Hazardous to the aquatic environment, short-

term (acute)

Not classified

Hazardous to the aquatic environment, long-term

(chronic)

Not classified

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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, Lethal)	
NOEC chronic fish	0.03 mg/l	
diphenylamine (122-39-4)		
EC50 - Crustacea [1]	2 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Fresh water,	
	Experimental value, Locomotor effect)	
ErC50 algae	2.17 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata,	
	Experimental value, GLP)	
NOEC chronic algae	0.0273 mg/l	
copper (7440-50-8)		
LC50 - Fish [1]	200 μg/l (96 h, Salmo gairdneri, Flow-through system, Fresh water, Weight of evidence, Lethal)	
EC50 - Crustacea [1]	109 – 798 μg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna,	
	Static system, Fresh water, Weight of evidence, Locomotor effect)	
EC50 72h - Algae [1]	230 µg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static	
	system, Fresh water, Weight of evidence, Growth rate)	
zinc (7440-66-6)		
LC50 - Fish [1]	0.169 mg/l (Other, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Read-across, Zinc	
	ion)	
EC50 - Crustacea [1]	416 µg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Ceriodaphnia dubia, Static	
	system, Fresh water, Experimental value)	
ErC50 algae	0.15 mg/l	
tetrazene (109-27-3)		
EC50 - Crustacea [1]	0.14 mg/l	

Persistence and degradability

DX-Cartridge Clean-Tec		
Persistence and degradability	Not established.	
glycerol trinitrate (55-63-0)		
Not rapidly degradable		
1 7 5	Doodily hindogradable in water	
Persistence and degradability	Readily biodegradable in water.	
Biochemical oxygen demand (BOD)	53.6 g O₂/g substance	
diphenylamine (122-39-4)		
Not rapidly degradable		
Persistence and degradability	Not readily biodegradable in water.	
ThOD	2.39 g O ₂ /g substance	
copper (7440-50-8)		
Not rapidly degradable		
Persistence and degradability	Biodegradability in soil: not applicable. Biodegradability: not applicable.	
Biochemical oxygen demand (BOD)	Not applicable	
Chemical oxygen demand (COD)	Not applicable	
ThOD	Not applicable	
BOD (% of ThOD)	Not applicable	
zinc (7440-66-6)		
Not rapidly degradable		
Persistence and degradability	Biodegradability: not applicable.	
Chemical oxygen demand (COD)	Not applicable (inorganic)	
ThOD	Not applicable (inorganic)	
tetrazene (109-27-3)		
Not rapidly degradable		

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12.3. Bioaccumulative potential

DX-Cartridge Clean-Tec		
Bioaccumulative potential	Not established.	
absocial triaitrate (FF C2 O)		
glycerol trinitrate (55-63-0)		
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).	
diphenylamine (122-39-4)		
BCF - Fish [1]	51 – 253 (Cyprinus carpio, Literature study, Test duration: 8 weeks)	
Partition coefficient n-octanol/water (Log Kow)	3.71 – 3.84 (Weight of evidence approach, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 20.2 °C)	
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).	
copper (7440-50-8)		
Bioaccumulative potential	Bioaccumulation: not applicable.	
zinc (7440-66-6)		
BCF - Fish [1]	0.002 (40 day(s), Danio rerio, Semi-static system, Fresh water, Read-across)	
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).	

12.4. Mobility in soil

DX-Cartridge Clean-Tec		
Mobility in soil	No additional information available	
glycerol trinitrate (55-63-0)		
Ecology - soil	Low potential for adsorption in soil.	
diphenylamine (122-39-4)		
Surface tension	71.8 mN/m (20 °C, 90 %, EU Method A.5: Surface tension)	
Partition coefficient n-octanol/water (Log Koc)	2.818 – 2.917 (log Koc, SRC PCKOCWIN v2.0, Calculated value)	
Ecology - soil	Low potential for adsorption in soil. May be harmful to plant growth, blooming and fruit formation.	
copper (7440-50-8)		
Ecology - soil	Adsorbs into the soil.	
zinc (7440-66-6)		
Surface tension	No data available in the literature	
Ecology - soil	Adsorbs into the soil.	

12.5. Other adverse effects

Ozone Not classified

Other adverse effects

No additional information available

Other information

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal 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.

Additional information

Cartridge strips with unused cartridges: Hazardous waste due to risk of explosion. European waste catalogue: 16 04 01* - waste ammunition. If possible use up the cartridges or store them for your next project.

If not possible to use up the cartridges - The strip is mixed municipal waste and the cartridge itself is "waste ammunition" and has to be disposed of by an authorized/certified company. If cartridges are used up: European waste catalogue: 20 03 01 - mixed municipal waste. The product (cartridges and strip) can be disposed of as household or factory waste.

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SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / RID

III accordance with ADIC/ IIIIDO / IA I	A, AB		
ADR	IMDG	IATA	RID
14.1. UN number or ID number	r		
UN 0323	UN 0323	UN 0323	UN 0323
14.2. UN proper shipping nam	ie		
CARTRIDGES, POWER DEVICE Transport document description	CARTRIDGES, POWER DEVICE	Cartridges, power device	CARTRIDGES, POWER DEVICE
UN 0323 CARTRIDGES, POWER DEVICE, 1.4S, (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)		
1.45	1.4\$	1.4S	1.4S
1.4	1.4	1.4	1.4
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 avail	able		

14.6. Special precautions for user

Overland transport

Classification code (ADR) 1.4S
Special provisions (ADR) 347
Limited quantities (ADR) 0

Packing instructions (ADR) P134, LP102
Mixed packing provisions (ADR) MP23
Transport category (ADR) 4
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-BEmS-No. (Spillage)S-XStowage category (IMDG)01Stowage and handling (IMDG)SW1MFAG-No114

Air transport

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

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Rail transport

Special provisions (RID) 347 Limited quantities (RID) 0

Packing instructions (RID) P134, LP102

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations specific for the product in question

No additional information available

SECTION 16: Other information

 SDS Major/Minor
 None

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Section	Changed item	Change	Comments
2.2	Precautionary statements (GHS UN)	Modified	
3	Composition/information on ingredients	Modified	

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Abbreviations and acronyms

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

ATE - Acute Toxicity Estimate

BCF - Bioconcentration factor

CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

DMEL - Derived Minimal Effect level

DNEL - Derived-No Effect Level

EC50 - Median effective concentration

IARC - International Agency for Research on Cancer

IATA - International Air Transport Association

IMDG - International Maritime Dangerous Goods

LC50 - Median lethal concentration

LD50 - Median lethal dose

LOAEL - Lowest Observed Adverse Effect Level

NOAEC - No-Observed Adverse Effect Concentration

NOAEL - No-Observed Adverse Effect Level

NOEC - No-Observed Effect Concentration

OECD - Organisation for Economic Co-operation and Development

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

vPvB - Very Persistent and Very Bioaccumulative

Full text of H-statements:		
H200	Unstable explosives	
H201	Explosive; mass explosion hazard	
H204	Fire or projection hazard	
H300	Fatal if swallowed	
H301	Toxic 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	
H373	May cause damage to organs through prolonged or repeated exposure	
H400	Very toxic to aquatic life	
H401	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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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.

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