

DX-Cartridge Clean-Tec

Product Safety Information Sheet

A safety data sheet is not required for this product. This Product Safety Information Sheet has been created on a voluntary basis

Issue date: 7/4/2025

Revision date: 7/4/2025

Version: 5.0

SECTION 1: Identification

1.1. Product identifier

Trade name	DX-Cartridge Clean-Tec
Product code	BU Direct Fastening
Product form	Article

1.2. Other means of identification

No additional information available

1.3. Recommended use of the chemical and restrictions on use

Recommended uses and restrictions

Recommended use CARTRIDGES FOR TOOLS, BLANK

Restrictions on use For professional use only

1.4. Supplier's details

Supplier

Hilti Far East Private Ltd.

80 Pasir Panjang Road, #16-83/84 Mapletree Business City Singapore
Singapur 117372

T +65 6777 7887 - F +65 6777 3057

sg-customerservice@hilti.com

Department issuing data specification sheet

Hilti AG

Feldkircherstraße 100 Schaan Liechtenstein 9494
T +423 234 2111

product.compliance-direct.fastening@hilti.com

1.5. Emergency phone number

Emergency number	GBK GmbH Global Regulatory Compliance +49 (0)6132-84463
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SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Physical hazards	Explosives, Division 1.4
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2.2. GHS label elements, including precautionary statements

Hazard pictograms (GHS SG)



Warning

Signal word (GHS SG)

Hazard statements (GHS SG)

H204 : Fire or projection hazard

Precautionary statements

Prevention

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.

Response

P372 : Explosion risk.

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

Storage

P401 : Store in accordance with in accordance with local regulations on explosives.

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2.3. Other hazards which do not result in classification

Other hazards which do not result in classification

Restricted to professional users

Category of the pyrotechnic article: other pyrotechnic articles Cat. P1

(BAM EC-Type-Examination Certificate No. 0589.PYR.3800/12 or 0589.PYR.3804/12 respectively)

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).

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	Synonyms	Concentration (%)	Formula	Product identifier
Iron	-	50 – 70	Fe	CAS-No.: 7439-89-6 EC-No.: 231-096-4
Plastics (PP / PA / PC)	-	15 – 40	-	-
cellulose nitrate	-	5 - 17	HNO ₃ .x No especificado	CAS-No.: 9004-70-0
glycerol trinitrate	-	2 – 7	C ₃ H ₅ N ₃ O ₉	CAS-No.: 55-63-0 EC-No.: 200-240-8 EC Index-No.: 603-034-00-X
Diphenylamine	-	0.1 - 1	C ₁₂ H ₁₁ N	CAS-No.: 122-39-4 EC-No.: 204-539-4 EC Index-No.: 612-026-00-5
copper	-	0 – 1	Cu	CAS-No.: 7440-50-8 EC-No.: 231-159-6
zinc	-	0 – 1	Zn	CAS-No.: 7440-66-6 EC-No.: 231-175-3 EC Index-No.: 030-001-01-9

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tetrazene	-	0 – 1	C2H8N10O	CAS-No.: 109-27-3
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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.
Inhalation	Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.
Skin contact	Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
Eye contact	Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists. Rinse eyes with water as a precaution.
Ingestion	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects	Not expected to present a significant hazard under anticipated conditions of normal use.
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4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment	No additional information available.
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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

Explosion hazard	Explosion risk in case of fire.
Hazardous decomposition products in case of fire	Carbon monoxide. Carbon dioxide (CO ₂). Nitrous gasses.

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.
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.

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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.

Other information

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

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.

Storage temperature

5 – 25 °C

Information on mixed storage

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

Storage area

Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters/Occupational exposure limits

glycerol trinitrate (55-63-0)	
Singapore - Occupational Exposure Limits	
Local name	Nitroglycerin (NG)
PEL (OEL TWA)	0.46 mg/m ³
	0.05 ppm
Regulatory reference	WSH Regulations 2014
Diphenylamine (122-39-4)	
Singapore - Occupational Exposure Limits	
Local name	Diphenylamine
PEL (OEL TWA)	10 mg/m ³
Regulatory reference	WSH Regulations 2014
copper (7440-50-8)	
Singapore - Occupational Exposure Limits	
Local name	Copper
PEL (OEL TWA)	0.2 mg/m ³ Fume
	1 mg/m ³ Dusts and mists, as Cu
Regulatory reference	WSH Regulations 2014

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SECTION 10: Stability and reactivity

10.1. Reactivity

Fire or projection hazard.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Risk of explosion by shock, friction, fire or other sources of ignition. Heating may cause an explosion. At high temperatures : > 150 °C Response.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Heat. Sparks. Open flame. Overheating. Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition.

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. Acute toxicity

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)

glycerol trinitrate (55-63-0)	
LD50 oral	685 mg/kg
LD50 dermal rat	> 9560 mg/kg bodyweight (OECD 402 method)
LD50 dermal	9560 mg/kg
Diphenylamine (122-39-4)	
LD50 oral rat	> 800 mg/kg bodyweight
LD50 oral	2480 mg/kg
LD50 dermal	5000 mg/kg
zinc (7440-66-6)	
LD50 oral rat	> 2000 mg/kg (OECD 401 method)
LD50 oral	2500 mg/kg
LC50 Inhalation - Rat (Dust/Mist)	5.41 mg/l/4h

Skin corrosion or irritation	Not classified (Based on available data, the classification criteria are not met)
Serious eye damage or irritation	Not classified (Based on available data, the classification criteria are not met)
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)

Diphenylamine (122-39-4)	
IARC group	2B - Possibly carcinogenic to humans
Reproductive toxicity	Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure	Not classified (Based on available data, the classification criteria are not met)

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glycerol trinitrate (55-63-0)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Diphenylamine (122-39-4)	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	Not classified (Based on available data, the classification criteria are not met)
Potential adverse human health effects and symptoms	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 (Based on available data, the classification criteria are not met).
Hazardous to the aquatic environment, long-term (chronic)	Not classified (Based on available data, the classification criteria are not met).
Other information	Avoid release to the environment.

glycerol trinitrate (55-63-0)	
LC50 - Fish [1]	1.9 – 3.58 mg/l (96 h; Oncorhynchus mykiss; ASTM Designation E 729-80)
EC50 - Crustacea [1]	17.83 mg/l (48 h; Ceriodaphnia dubia; ASTM Designation E 729-80)
EC50 96h - Algae [1]	1.15 mg/l (Raphidocelis subcapitata; EPA TSCA Experimental Method 797.1060)
NOEC chronic fish	0.03 mg/l
NOEC chronic crustacea	3.23 mg/l (7 d; Ceriodaphnia dubia)
Diphenylamine (122-39-4)	
EC50 - Crustacea [1]	2 mg/l (48 h; Daphnia magna; (OECD 202 method))
EC50 72h - Algae [1]	2.17 mg/l (Raphidocelis subcapitata; (OECD 201 method))
NOEC chronic algae	0.0273 mg/l
Partition coefficient n-octanol/water (Log Kow)	3.82 (20,2 °C)
zinc (7440-66-6)	
LC50 - Fish [1]	169 µg/l (96h; Oncorhynchus Mykiss)
EC50 - Crustacea [1]	< 0.1 µg/l (48h; Ceriodaphnia dubia)
ErC50 algae	0.15 mg/l
NOEC chronic fish	26 µg/L (30 d; Jordanella floridae)
NOEC chronic crustacea	48 µg/L (21d; Daphnia magna; (OECD 211 method))
tetrazene (109-27-3)	
EC50 - Crustacea [1]	0.14 mg/l

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12.2. Persistence and degradability

DX-Cartridge Clean-Tec	
Persistence and degradability	Not established.
glycerol trinitrate (55-63-0)	
Persistence and degradability	Inherently biodegradable.
Biodegradation	92.2 % (84 h)
Diphenylamine (122-39-4)	
Persistence and degradability	Not readily biodegraded.
Biodegradation	26 % (28 d; (OECD 301D method))
cellulose nitrate (9004-70-0)	
Persistence and degradability	Rapidly degradable
copper (7440-50-8)	
Persistence and degradability	Not rapidly degradable
zinc (7440-66-6)	
Persistence and degradability	Not applicable for inorganic products.
tetrazene (109-27-3)	
Persistence and degradability	Not rapidly degradable
Iron (7439-89-6)	
Persistence and degradability	Not rapidly degradable
Plastics (PP / PA / PC)	
Persistence and degradability	Rapidly degradable

12.3. Bioaccumulative potential

DX-Cartridge Clean-Tec	
Bioaccumulative potential	Not established.
glycerol trinitrate (55-63-0)	
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).
Diphenylamine (122-39-4)	
Partition coefficient n-octanol/water (Log Kow)	3.82 (20,2 °C)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).
zinc (7440-66-6)	
Bioaccumulative potential	Bioaccumulation unlikely.

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.

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Diphenylamine (122-39-4)	
Surface tension	72.3 mN/m (20 °C; EU Method A.5)
Partition coefficient n-octanol/water (Log Kow)	3.82 (20,2 °C)

12.5. Other adverse effects




Ozone	Not classified (Based on available data, the classification criteria are not met)
Other adverse effects	No additional information available.

SECTION 13: Disposal considerations

Waste treatment methods	Must follow special treatment according to local regulation.
Product/Packaging disposal recommendations	Dispose in a safe manner in accordance with local/national regulations. Refer to manufacturer/supplier for information on recovery/recycling. At high temperatures may form : Response.
Additional information	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 cartridges are used up: European waste catalogue: 20 03 01 - mixed municipal waste . The product can be disposed of as household or factory waste.

SECTION 14: Transport information

In accordance with IMDG / IATA / UN RTDG

IMDG	IATA	UNRTDG
14.1. UN number		
0323	0323	0323
14.2. UN proper shipping name		
CARTRIDGES, POWER DEVICE	Cartridges, power device	CARTRIDGES, POWER DEVICE
Transport document description		
UN 0323 CARTRIDGES, POWER DEVICE, 1.4S	UN 0323 Cartridges, power device, 1.4S	UN 0323 CARTRIDGES, POWER DEVICE
14.3. Transport hazard class		
1.4S	1.4S	1.4S
		
14.4. Packing group, if applicable		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
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 users

UN RTDG	
Special provisions (UN RTDG)	347

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Limited quantities (UN RTDG)	0
Excepted quantities (UN RTDG)	E0
Packing instruction (UN RTDG)	P134, LP102

IMDG

Special provisions (IMDG)	347
Limited quantities (IMDG)	0
Excepted quantities (IMDG)	E0
Packing instructions (IMDG)	P134, LP102
EmS-No. (Fire)	F-B - FIRE SCHEDULE Bravo - EXPLOSIVE SUBSTANCES AND ARTICLES
EmS-No. (Spillage)	S-X - SPILLAGE SCHEDULE X-Ray - EXPLOSIVE ITEMS AND ARTICLES
Stowage category (IMDG)	01
Stowage and handling (IMDG)	SW1
Properties and observations (IMDG)	See glossary of terms in appendix B.
MFAG-No	114

IATA

PCA Excepted quantities (IATA)	E0
PCA Limited quantities (IATA)	Forbidden
PCA limited quantity max net quantity (IATA)	Forbidden
PCA packing instructions (IATA)	134
PCA max net quantity (IATA)	25kg
CAO packing instructions (IATA)	134
CAO max net quantity (IATA)	100kg
Special provisions (IATA)	A165, A802
ERG code (IATA)	3L

14.7. 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

Regulation		Component / Mixture
Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations	Applicable	glycerol trinitrate; Diphenylamine; cellulose nitrate; copper; zinc; tetrazene
Arms and Explosives Act	Not applicable	
Chemical Weapons Prohibition Act	Not applicable	
Environmental Protection and Management (Air Impurities) Regulations	Air Impurities Emission Limits	Copper
Environmental Protection and Management Act (Hazardous Substances)	Not applicable	
Environmental Public Health (Quality of Piped Drinking Water) Regulations	Drinking Water Quality Standards - Chemical Parameters	Copper
Fire Safety Act/Fire Safety (Petroleum and Flammable Materials) Regulations	Petroleum and Flammable Materials	Nitroglycerin; Nitrocellulose; Zinc
Maritime and Port Authority of Singapore (Dangerous, Petroleum and Explosives) Regulations	Maritime and Port Authority-Dangerous Goods	Nitroglycerin, desensitized; Nitrocellulose; Guanyl nitrosaminoguanyltetrazene, wetted
Misuse of Drugs Act	Not applicable	
Poisons Act	Poisons List	Glyceryl trinitrate

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Poisons Rules	First Schedule	Glyceryl trinitrate
	Third Schedule	Glyceryl trinitrate
Hazardous waste (Control of export, import and transit) Act	Not applicable	
Strategic goods (Control) Act	Military Goods - Energetic Materials and Related Substances - Exemptions	Nitroglycerin; Nitrocellulose
	Military Goods - Energetic Materials and Related Substances	Iron

15.2. International regulations

No additional information available

15.3 Chemical inventory status

SECTION 16: Other information

Issue date	7/4/2025
Revision date	7/4/2025
Data sources	Supplier Safety Data Sheet.
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 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 disruptor 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

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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.