

# DX-Cartridge

## Safety Data Sheet

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

Revision date: 6/4/2024      Issue date: 6/4/2024      Version: 1.0

## SECTION 1: Identification

### 1.1. Identification

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

### 1.2. Recommended use and restrictions on use

Recommended use	CARTRIDGES FOR TOOLS, BLANK
Restrictions on use	For professional use only

### 1.3. Supplier

<b>Supplier</b>	<b>Department issuing data specification sheet</b>
Hilti, Inc.	Hilti AG
Legacy Tower, Suite 1000	Feldkircherstraße 100
7250 Dallas Parkway	Schaan, 9494
Plano, TX 75024	Liechtenstein
USA	T +423 234 2111
T +1 9724035800	<a href="mailto:product.compliance-direct.fastening@hilti.com">product.compliance-direct.fastening@hilti.com</a>
1-800-879-8000 toll free - F +1 918 254 0522	

### 1.4. Emergency telephone number

Emergency number	Emergency CONTACT (24-Hour-Number) GBK/Infotrac ID 101022 (USA domestic) 1 800 535 5053 or international (001) 352 323 3500
------------------	--

## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

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

### 2.2. GHS Label elements, including precautionary statements

#### GHS US labelling

Hazard pictograms (GHS US)



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.

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

P280 - Wear eye protection.

# DX-Cartridge

## Safety Data Sheet

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

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

P372 - Explosion risk in case of fire.

P401 - Store in accordance with local regulations on explosives.

### 2.3. Other hazards which do not result in classification

Other hazards which do not result in 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).

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Comments

max. net explosives weight each cartridge in mg:

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

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: 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	Product identifier	%	GHS-US classification
copper	CAS-No.: 7440-50-8	25 – 35	Not classified
glycerol trinitrate	CAS-No.: 55-63-0	7 – 25	Unst. Expl., H200 Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation:dust,mist), H330 STOT RE 2, H373
zinc	CAS-No.: 7440-66-6	15 – 25	Not classified
cellulose nitrate	CAS-No.: 9004-70-0	7 – 17	Expl. 1.1, H201
barium nitrate	CAS-No.: 10022-31-8	1 – 3	Ox. Sol. 2, H272 Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2A, H319

# DX-Cartridge

## Safety Data Sheet

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

Name	Product identifier	%	GHS-US classification
lead styphnate	CAS-No.: 15245-44-0	1 – 2.5	Unst. Expl., H200 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Repr. 1A, H360 STOT RE 2, H373
diphenylamine	CAS-No.: 122-39-4	0.1 – 1	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation), H331 Eye Irrit. 2A, H319 Carc. 2, H351 STOT RE 2, H373
tetrazene	CAS-No.: 109-27-3	0 – 1	Unst. Expl., H200 Eye Irrit. 2A, H319

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general

In all cases of doubt, or when symptoms persist, seek medical attention.

First-aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing. 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. Rinse eyes with water as a precaution.

First-aid measures after 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 and effects (acute and delayed)

Potential adverse human health effects and symptoms

No harmful effects are to be expected if used properly.

Symptoms/effects

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.

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: Fire-fighting measures

### 5.1. Suitable (and unsuitable) 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<sub>2</sub>). Nitrous gasses.

# DX-Cartridge

## Safety Data Sheet

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

### 5.3. Special protective equipment and precautions 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.

### 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	Disposal must be done according to official regulations.

### 6.4. Reference to other sections

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

Technical measures	Ground/bond container and receiving equipment.
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.

# DX-Cartridge

## Safety Data Sheet

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

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### **DX-Cartridge**

No additional information available

##### **cellulose nitrate (9004-70-0)**

No additional information available

##### **glycerol trinitrate (55-63-0)**

###### **USA - ACGIH - Occupational Exposure Limits**

Local name	Nitroglycerin (NG)
ACGIH OEL TWA	0.05 ppm
Remark (ACGIH)	Vasodilation
Regulatory reference	ACGIH 2024

###### **USA - OSHA - Occupational Exposure Limits**

Local name	Nitroglycerin
OSHA PEL C	2 mg/m <sup>3</sup>
	0.2 ppm

##### **lead styphnate (15245-44-0)**

No additional information available

##### **barium nitrate (10022-31-8)**

No additional information available

##### **copper (7440-50-8)**

###### **USA - ACGIH - Occupational Exposure Limits**

Local name	Copper, as Cu
ACGIH OEL TWA	0.2 mg/m <sup>3</sup> (Fume) 1 mg/m <sup>3</sup> (Dusts and mists)
Remark (ACGIH)	TLV® Basis: Irr; GI; metal fume fever
Regulatory reference	ACGIH 2024

###### **USA - OSHA - Occupational Exposure Limits**

Local name	Copper
OSHA PEL TWA	0.1 mg/m <sup>3</sup> (Fume (as Cu)) 1 mg/m <sup>3</sup> (Dusts and mists (as Cu))
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1

# DX-Cartridge

## Safety Data Sheet

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

### **zinc (7440-66-6)**

#### **USA - ACGIH - Occupational Exposure Limits**

ACGIH OEL TWA	2 mg/m <sup>3</sup>
---------------	---------------------

### **diphenylamine (122-39-4)**

#### **USA - ACGIH - Occupational Exposure Limits**

Local name	Diphenylamine
ACGIH OEL TWA	10 mg/m <sup>3</sup>
Remark (ACGIH)	Liver & kidney dam; hematologic eff
Regulatory reference	ACGIH 2024

### **tetrazene (109-27-3)**

No additional information available

## **8.2. Appropriate engineering controls**

Appropriate engineering controls

No additional information available.

Environmental exposure controls

Avoid release to the environment.

## **8.3. Individual protection measures/Personal protective equipment**

#### **Personal protective equipment:**

When using cartridge operated tools, sufficient ear protection must be worn.

#### **Hand protection:**

Not required for normal conditions of use

#### **Eye protection:**

Chemical goggles or safety glasses. ISO 16321-1

#### **Skin and body protection:**

When using cartridge operated tools, sufficient ear protection must be worn.

#### **Respiratory protection:**

Respiratory protection not required in normal conditions

#### **Personal protective equipment symbol(s):**



#### **Thermal hazard protection:**

No information available.

#### **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.
Odour threshold	No data available
pH	No data available
Melting point	No data available
Freezing point	Not applicable
Boiling point	No data available
Flash point	Not applicable
Relative evaporation rate (butylacetate=1)	No data available
Flammability (solid, gas)	Non flammable.
Vapour pressure	No data available
Relative vapour density at 20°C	No data available
Relative density	No data available
Solubility	No data available
Partition coefficient n-octanol/water (Log Pow)	No data available
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Viscosity, kinematic	Not applicable
Viscosity, dynamic	No data available
Explosive limits	Not applicable
Explosive properties	Fire or projection hazard.
Oxidising properties	No data available

#### 9.2. Other information

Additional information	Not applicable Article
------------------------	---------------------------

### 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.

# DX-Cartridge

## Safety Data Sheet

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

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity (oral)	Not classified (Based on available data, the classification criteria are not met) (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) (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) (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)
ATE US (dermal)	5 mg/kg bodyweight
ATE US (dust,mist)	0.05 mg/l/4h

#### lead styphnate (15245-44-0)

LD50 oral rat	> 2000 mg/kg bodyweight
LC50 Inhalation - Rat (Dust/Mist)	> 5.05 mg/l/4h (OECD 403 method)
ATE US (dust,mist)	1.5 mg/l/4h

#### barium nitrate (10022-31-8)

LD50 oral	355 mg/kg
ATE US (gases)	4500 ppmv/4h
ATE US (vapours)	11 mg/l/4h
ATE US (dust,mist)	1.5 mg/l/4h

#### diphenylamine (122-39-4)

LD50 oral rat	> 800 mg/kg bodyweight
LD50 dermal	5000 mg/kg
ATE US (gases)	700 ppmv/4h
ATE US (vapours)	3 mg/l/4h
ATE US (dust,mist)	0.5 mg/l/4h

Skin corrosion/irritation Not classified (Based on available data, the classification criteria are not met) (Based on available data, the classification criteria are not met)

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

Carcinogenicity Not classified (Based on available data, the classification criteria are not met) (Based on available data, the classification criteria are not met)

# DX-Cartridge

## Safety Data Sheet

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

<b>diphenylamine (122-39-4)</b>	
IARC group	2B - Possibly carcinogenic to humans
Reproductive toxicity	Not classified (Based on available data, the classification criteria are not met) (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) (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) (Based on available data, the classification criteria are not met)
<b>glycerol trinitrate (55-63-0)</b>	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
<b>lead styphnate (15245-44-0)</b>	
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
<b>diphenylamine (122-39-4)</b>	
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) (Based on available data, the classification criteria are not met)
Viscosity, kinematic	Not applicable
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.
Symptoms/effects	The dismantling of the article is prohibited. Not expected to present a significant hazard under anticipated conditions of normal use.
<b>SECTION 12: Ecological information</b>	
<b>12.1. Toxicity</b>	
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.
<b>glycerol trinitrate (55-63-0)</b>	
LC50 - Fish [1]	1.9 – 3.58 mg/l (96 h; <i>Oncorhynchus mykiss</i> ; ASTM Designation E 729-80)
EC50 - Crustacea [1]	17.83 mg/l (48 h; <i>Ceriodaphnia dubia</i> ; ASTM Designation E 729-80)
EC50 96h - Algae [1]	1.15 mg/l ( <i>Raphidocelis subcapitata</i> ; EPA TSCA Experimental Method 797.1060)
NOEC chronic fish	0.03 mg/l
NOEC chronic crustacea	3.23 mg/l (7 d; <i>Ceriodaphnia dubia</i> )
<b>lead styphnate (15245-44-0)</b>	
LC50 - Fish [1]	0.107 mg/l (96 h; <i>Oncorhynchus mykiss</i> ; Lead)
EC50 - Crustacea [1]	7 mg/l
NOEC chronic fish	0.0189 – 1.559 mg/l (Fish; Lead)
NOEC chronic crustacea	0.0017 – 0.496 mg/l (aquatic invertebrates; Lead)

# DX-Cartridge

## Safety Data Sheet

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

<b>zinc (7440-66-6)</b>	
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))
<b>diphenylamine (122-39-4)</b>	
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
<b>tetrazene (109-27-3)</b>	
EC50 - Crustacea [1]	0.14 mg/l
<b>12.2. Persistence and degradability</b>	
<b>DX-Cartridge</b>	
Persistence and degradability	Not established.
<b>glycerol trinitrate (55-63-0)</b>	
Not rapidly degradable	
Persistence and degradability	Inherently biodegradable.
Biodegradation	92.2 % (84 h)
<b>lead styphnate (15245-44-0)</b>	
Not rapidly degradable	
<b>barium nitrate (10022-31-8)</b>	
Not rapidly degradable	
<b>copper (7440-50-8)</b>	
Not rapidly degradable	
<b>zinc (7440-66-6)</b>	
Not rapidly degradable	
Persistence and degradability	Not applicable for inorganic products.
<b>diphenylamine (122-39-4)</b>	
Not rapidly degradable	
Persistence and degradability	Not readily biodegraded.
Biodegradation	26 % (28 d; (OECD 301D method))
<b>tetrazene (109-27-3)</b>	
Not rapidly degradable	

# DX-Cartridge

## Safety Data Sheet

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

### 12.3. Bioaccumulative potential

#### DX-Cartridge

Bioaccumulative potential	Not established.
---------------------------	------------------

#### glycerol trinitrate (55-63-0)

Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).
---------------------------	--

#### lead styphnate (15245-44-0)

BCF - Fish [1]	1.553
Partition coefficient n-octanol/water (Log Kow)	-2.19 (20 °C)

#### zinc (7440-66-6)

Bioaccumulative potential	Bioaccumulation unlikely.
---------------------------	---------------------------

#### diphenylamine (122-39-4)

Partition coefficient n-octanol/water (Log Kow)	3.82 (20,2 °C)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

### 12.4. Mobility in soil

#### glycerol trinitrate (55-63-0)

Ecology - soil	Low potential for adsorption in soil.
----------------	---------------------------------------

#### diphenylamine (122-39-4)

Surface tension	72.3 mN/m (20 °C; EU Method A.5)
-----------------	----------------------------------

### 12.5. Other adverse effects

Other adverse effects No additional information available.

Other information Avoid release to the environment.

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
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.
Ecological information	Avoid release to the environment.

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / RID

# DX-Cartridge

## Safety Data Sheet

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

ADR	IMDG	IATA	RID
<b>14.1. UN number or ID number</b>			
UN 0323	UN 0323	UN 0323	UN 0323
<b>14.2. UN proper shipping name</b>			
CARTRIDGES, POWER DEVICE	CARTRIDGES, POWER DEVICE	Cartridges, power device	CARTRIDGES, POWER DEVICE
<b>Transport document description</b>			
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
<b>14.3. Transport hazard class(es)</b>			
1.4S	1.4S	1.4S	1.4S
<b>14.4. Packing group</b>			
Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>			
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

Classification code (ADR)	1.4S
Special provisions (ADR)	347
Limited quantities (ADR)	0
Excepted quantities (ADR)	E0
Packing instructions (ADR)	P134, LP102
Mixed packing provisions (ADR)	MP23
Transport category (ADR)	4
Special provisions for carriage - Loading, unloading and handling (ADR)	CV1, CV2, CV3
Special provisions for carriage - Operation (ADR)	S1
Tunnel restriction code (ADR)	E

### Transport by sea

Special provisions (IMDG)	347
Limited quantities (IMDG)	0
Excepted quantities (IMDG)	E0
Packing instructions (IMDG)	P134, LP102
EmS-No. (Fire)	F-B
EmS-No. (Spillage)	S-X
Stowage category (IMDG)	01
Stowage and handling (IMDG)	SW1
Properties and observations (IMDG)	See glossary of terms in appendix B.

# DX-Cartridge

## Safety Data Sheet

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

MFAG-No 114

### Air transport

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
ERG code (IATA)	3L

### Rail transport

Classification code (RID)	1.4S
Special provisions (RID)	347
Limited quantities (RID)	0
Excepted quantities (RID)	E0
Packing instructions (RID)	P134, LP102
Mixed packing provisions (RID)	MP23
Transport category (RID)	4
Special provisions for carriage – Packages (RID)	W2
Special provisions for carriage - Loading, unloading and handling (RID)	CW1
Colis express (express parcels) (RID)	CE1
Hazard identification number (RID)	1.4S

### 14.7. Maritime transport in bulk according to IMO instruments

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Contains chemical(s) subject to TSCA 12b export notification if product is shipped outside the U.S

zinc	CAS-No. 7440-66-6	15 – 25%
------	-------------------	----------

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	7 – 25%
copper	CAS-No. 7440-50-8	25 – 35%
zinc	CAS-No. 7440-66-6	15 – 25%
diphenylamine	CAS-No. 122-39-4	0.1 – 1%

### glycerol trinitrate (55-63-0)

CERCLA RQ	10 lb
-----------	-------

# DX-Cartridge

## Safety Data Sheet

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

### **copper (7440-50-8)**

CERCLA RQ	5000 lb
-----------	---------

### **zinc (7440-66-6)**

CERCLA RQ	1000 lb
-----------	---------

## **15.2. International regulations**

### **CANADA**

#### **cellulose nitrate (9004-70-0)**

Listed on the Canadian DSL (Domestic Substances List)

#### **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)

#### **copper (7440-50-8)**

Listed on the Canadian DSL (Domestic Substances List)

#### **zinc (7440-66-6)**

Listed on the Canadian DSL (Domestic Substances List)

#### **diphenylamine (122-39-4)**

Listed on the Canadian DSL (Domestic Substances List)

#### **tetrazene (109-27-3)**

Listed on the Canadian NDSL (Non-Domestic Substances List)

### **EU-Regulations**

No additional information available

### **National regulations**

#### **cellulose nitrate (9004-70-0)**

Listed on INSQ (Mexican National Inventory of Chemical Substances)

# 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)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### lead styphnate (15245-44-0)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### barium nitrate (10022-31-8)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### copper (7440-50-8)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### zinc (7440-66-6)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

### diphenylamine (122-39-4)

Listed on IARC (International Agency for Research on Cancer)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

## 15.3. US State regulations

### DX-Cartridge

U.S. - California - Proposition 65 - Carcinogens List	Yes
U.S. - California - Proposition 65 - Developmental Toxicity	Yes
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	Yes
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Yes

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

## SECTION 16: Other information

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

Revision date

06/04/2024

Data sources

Supplier Safety Data Sheet.

Full text of H-statements	
H200	Unstable explosives.
H201	Explosive; mass explosion hazard.
H204	Fire or projection hazard.

# DX-Cartridge

## Safety Data Sheet

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

<b>Full text of H-statements</b>	
H272	May intensify fire; oxidiser.
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.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

<b>Abbreviations and acronyms</b>	
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 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

# DX-Cartridge

## Safety Data Sheet

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

<b>Abbreviations and acronyms</b>	
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

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.