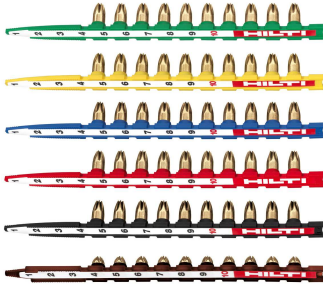


1. Identification of Substance & Company



Company Details:

Hilti (New Zealand) Ltd
 Unit 1/B, 525 Great South Rd
 Penrose
 Auckland, 1061
 PO Box 112- 030, Penrose
 Ph 09 526 7783 (between 7-30 AM and 6-30 PM)
 EMERGENCY TELEPHONE NUMBER
 0800 623 000 (National Poisons Centre)

Product

Product name	DX Cartridges
Other names	DX Cartridges, Brown/White/Green/Yellow/Red/Black
HSNO approval	HSR100249
Approval description	CARTRIDGES, POWER DEVICES
UN number	0323
Proper Shipping Name	CARTRIDGES, POWER DEVICES
Packaging group	II
Hazchem code	None
Uses	Cartridges for technical purposes

2. Hazard Identification

Approval

This product has been approved under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR100249, CARTRIDGES, POWER DEVICES), and is classified as follows:

Classes

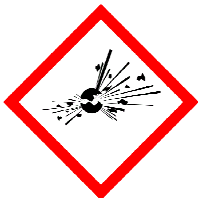
1.4S

Hazard Statements

Fire or projection hazard.

SYMBOLS

WARNING



Other Classifications

The Cartridge is made of a shell which contains hazardous substances (propellant and primer). During normal handling of the cartridge, no exposure to these substances should take place. However when the cartridge is fired, a small amount of particles may be released.

The propellant has the following hazards:

4.1.3B	solid desensitised explosive (medium hazard)
6.1D (oral)	Harmful if swallowed.
6.1D (dermal)	Toxic in contact with skin.
6.9B	May cause damage to organs.
9.1B	Toxic to aquatic life with long lasting effects.
9.3B	Toxic to terrestrial vertebrates.

The primer has the following hazards:

6.1C (oral)	Toxic if swallowed.
6.3B	Causes mild skin irritation.
6.4A	Causes eye irritation.
6.7B	Suspected of causing cancer.
6.8A	May damage fertility or the unborn child.
9.1A	Very toxic to aquatic life with long lasting effects.
9.3A	Very toxic to terrestrial vertebrates.

Precautionary Statements

Read label before use. Keep out of reach of children.
 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 Do not subject to grinding/shock/friction.
 In case of fire: Evacuate area.
 Explosion risk in case of fire.
 Fight fire with normal precautions from a reasonable distance.
 DO NOT fight fire when fire reaches explosives.

Avoid breathing dust/fumes.
 Wash hands after handling.
 Do not eat, drink or smoke when using this product.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves/eye protection.

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Avoid release to the environment. Collect spillage.

Further precautionary statements can be found in Section 4 – First Aid.

3. Composition / Information on Ingredients

Cartridges containing explosive ingredients. Cartridges are hermetically sealed from the environment. They can only be opened with effort, thereby destroying the cartridge.

The cartridge consists of a propellant powder with a mass of between 100 and 400mg dependent on the calibre AND a primer with a mass of 22-33mg.

Maximum net explosives mass in each cartridge in mg:

Calibre 6.8/11 (cal .27 short)	brown: 130; white: 150; green: 170; yellow: 210; red: 250; black: 275
Calibre 6.8/18 (cal .27 long)	green: 120; yellow: 190; blue: 310; red: 350; black: 420
Calibre 6.3/10 (cal .25)	green: 120; yellow: 190; red: 230; black: 250
Calibre 5.6/16 (cal .22)	grey: 105; brown: 120; green: 175; yellow: 21; red: 270

Propellant powder:			
Component	CAS/ Identification	Class for ingredient(s)	Conc (%)
cellulose nitrate	9004-70-0	4.1.3B	60-80%
glycerol trinitrate	55-63-0	6.1B, 6.9B, 9.1B, 9.3B	15-30%
diphenylamine	122-39-4	6.1C (oral, dermal, inhalation), 6.4A, 6.9B, 9.1A, 9.3B	<2%
Primer:			
Component	CAS/ Identification	Class for ingredient(s)	Conc (%)
lead 2,4,6-trinitroresorcinoxide	15245-44-0	6.1D (oral, inhalation), 6.8A, 6.9A, 9.1A	20-60%
Tetrazene	109-27-3	no data	0-15%
barium nitrate	10022-31-8	5.1.1B, 6.1D (oral), 6.3B, 6.4A, 6.9B, 9.3B	0-40%
lead dioxide	1309-60-0	5.1.1C, 6.1C (oral), 6.1D (Inhalation), 6.7B, 6.8A, 6.9A, 9.1A, 9.3A	0-40%

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

4. First Aid

General Information

You should call the National Poisons Centre if you feel that you may have been harmed or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service). If medical advice is needed, have product container or label at hand. IF exposed or concerned: Get medical advice.

Recommended first aid facilities Ready access to running water is required. Accessible eyewash is required.

Exposure

Swallowed	IF SWALLOWED: Do NOT induce vomiting. Rinse mouth. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering the lungs. Consult a doctor immediately.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Apply continuous irrigation with water for at least 15 minutes holding eyelids apart. If eye irritation persists: Get medical advice.
Skin contact	IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: get medical advice/attention. Take off contaminated clothing and wash before re-use.
Inhaled	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a doctor if you feel unwell.

Advice to Doctor

Treat symptomatically.

5. Firefighting Measures

Fire and explosion hazards:	Explosive material. Dangerous hazard when exposed to heat or flames. If the fire reaches the material, do not fight. Evacuate all people, including emergency responders from the area. Do not approach containers suspected to be hot. If safe to do so, remove containers from path of fire.
Suitable extinguishing substances:	Dry Chemicals, powder foams, carbon dioxide. Fight fire from a safe distance, with adequate cover. Cool fire exposed containers with water spray. If the fire reaches the material, withdraw and let fire burn.
Unsuitable extinguishing substances:	Water jets
Products of combustion:	Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. May form toxic mixtures in air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures.
Protective equipment:	Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.
Hazchem code:	none

6. Accidental Release Measures

Containment	If greater than 200kg is stored, secondary containment is required. Emergency plans to manage any potential spills must be in place. Prevent spillage from spreading or entering soil, waterways or drains.
Emergency procedures	In the event of a large spill alert the fire brigade to location and give brief description of hazard. The material may react violently or explode. Shut off all possible sources of ignition and increase ventilation. Clear area of any unprotected personnel and move upwind. Consider evacuation of larger area. Wear protective equipment to prevent skin, eye and respiratory exposure. Contain material. Avoid dust creation. Do not subject material to mechanical shock. Prevent by whatever means possible any spillage from entering drains, sewers, or water courses. (If this occurs contact your regional council immediately).
Clean-up method	Collect material carefully (avoid mechanical shock and dust creation). and seal in properly labelled containers or drums for disposal. If contamination of crops, sewers or waterways has occurred advise local emergency services.
Disposal	Collect recoverable material into labelled containers for recycling or salvage. This material may be suitable for approved landfill. Dispose of only in accord with all regulations.
Precautions	Restrict access to site where spill has occurred until clean up is complete. Wear protective equipment to prevent skin and eye contamination and the inhalation of dusts, see section 8. Work up wind or increase ventilation.

7. Storage & Handling

Storage	Avoid storage of harmful substances with food. Store out of reach of children. Store in original container only. Containers should be kept closed and locked in order to minimise contamination. Keep from extreme heat and open flames. Avoid shock or friction. Keep away from direct sunlight. Protect from dampness and humidity. Avoid contact with incompatible substances as listed in Section 10. Containers (and outer packaging) must bear the prescribed labelling, including the Hazchem code, UN number, flammability warning and name of contents.
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Handling

Use spark free tools when handling. Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of vapour, mist or aerosols. Always wash hands with soap and water after handling.

8. Exposure Controls / Personal Protective Equipment**Workplace Exposure Standards**

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 10mg/m³ for dusts and mists when limits have not otherwise been established.

NZ Workplace Exposure Stds (2013)	Ingredient	WES-TWA	WES-STEL
	cellulose nitrate	no data	no data
	glycerol trinitrate	0.05ppm, 0.46mg/m ³	no data
	diphenylamine	10mg/m ³	no data
	lead 2,4,6-trinitroresorcinoxide	0.1 mg/m ³ (lead dust and fumes)	no data
	tetrazene	no data	no data
	barium nitrate	no data	no data
	lead dioxide	0.1 mg/m ³ (lead dust and fumes)	no data

Engineering Controls

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety in Employment Act 1992 (HSE). Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

Personal Protective Equipment**Eyes**

Avoid contact with eyes. Do not discharge near eyes. Use safety glasses with side shields are possible. Avoid wearing contact lenses.

Skin

Avoid skin contact. If discomfort is felt gloves may be helpful. Replace gloves frequently. Gloves should be checked for tears or holes before use. Leather gloves are recommended when using the fastening tools.

Respiratory

Use a respirator with an particulate filter when airborne concentrations approach the WES (section 8). If using a respirator, ensure that the cartridges are correct for the potential air contamination and are in good working order.

Hearing

When using fastening tool, always use hearing protection.

WES Additional Information

Not applicable

9. Physical & Chemical Properties

Appearance	solid cartridge, colour according to product specification
Odour	characteristic
pH	no data
Vapour pressure	negligible
Viscosity	no data
Boiling point	no data
Volatile materials	no data
Freezing / melting point	no data
Solubility	not miscible in water
Specific gravity / density	no data
Flash point	not applicable
Danger of explosion	extreme risk of explosion by shock, friction, fire or other sources of ignition
Auto-ignition temperature	160°C
Upper & lower flammable limits	no data
Corrosiveness	non corrosive

10. Stability & Reactivity

Stability	Stable, but may explode in the presence of shock, friction or open flames.
Conditions to be avoided	Explosive substance. Keep away from sources of ignition at all times.
Incompatible groups	Strong acids and bases.
Substance Specific Incompatibility	Avoid heat, sparks, flames and any other sources of ignition.
Hazardous decomposition products	Nitrogen oxides, carbon dioxide, carbon monoxide, lead oxides, lead dust/fume.
Hazardous reactions	Explosive cartridge.

11. Toxicological Information

Summary

This product is a cartridge, the physical nature of which makes absorption from any route unlikely. Once the cartridge is fired a small amount of inhalable particles may be created. The particles in the cartridge are toxic if ingested or in contact with the skin or if inhaled.

Fragmented projectiles as a result of the discharge of the power load can cause puncture wounds or cuts. Dusts or vapours may cause moderate irritation.

CHRONIC TOXICITY: The cartridge contains glycerol trinitrate, which is systemic toxicant by repeated exposure. It also contains lead, which shows systemic toxicity (see supporting data below).

Supporting Data

Acute	Oral	Data considered includes: cellulose nitrate no data, glycerol trinitrate 105mg/kg (rat), diphenylamine 300 mg/kg bw (guinea pig), barium nitrate 355 mg/kg (rat), lead dioxide 50-600 mg/kg (calf) based on elemental lead.
	Dermal	Glycerol trinitrate is toxic on skin contact, LD ₅₀ dermal: >280mg/kg (rabbit).
Chronic	Inhaled	Inhalation of particles contained in the cartridge are toxic if inhaled. This includes: lead 2,4,6-trinitroresorcin oxide, lead dioxide.
	Eye	Particles from the cartridge may be irritating to the eye.
	Skin	Particles from the cartridge may be irritating to the skin.
	Sensitisation	No evidence of sensitisation.
	Mutagenicity	Some studies have found glycerol trinitrate to be mutagenic in some bacteria (weakly positive Ames test). Using GHS criteria, this is however not classed as a mutagen.
	Carcinogenicity	None of the ingredients are classified as carcinogenic by IARC.
	Reproductive / Developmental Systemic	Lead dioxide is a confirmed reproductive toxicants
	Aggravation of existing conditions	Chronic exposure may lead to lead poisoning, known as "Plumbism", causing gingival lead line and an accumulation in body tissues. Repeated oral exposure to the propellant may affect the liver (glycerol trinitrate). None known

12. Ecological Data

Summary

Intact power load is not consider harmful in the aquatic environment. However, the ingredients, if released may be ecotoxic to aquatic organisms with long lasting effects or toxic towards terrestrial vertebrates.

Supporting Data

Aquatic	Data considered includes: glycerol trinitrate: 2.05mg/L (96hr, fish), 32mg/L (48hr, crustacean), 0.4mg/L (96hr, Algae), diphenylamine 0.31 (0.27 - 0.36) mg/L (48hr, Daphnia magna), 1.50 mg/l (72hr, Scenedesmus subspicatus (Algae)), 3.79 mg/l (96hr, Pimephales promelas Fathead minnow). The primer ingredients are considered very toxic in the aquatic environment (lead compounds)
Bioaccumulation	No data
Degradability	No data
Soil	This product is not considered toxic to the soil environment.
Terrestrial vertebrate	No LC ₅₀ (diet) data for ingredients are available and the classification is based on the LD ₅₀ (oral) – see section 11 – oral toxicity.
Terrestrial invertebrate	The mixture is considered toxic to terrestrial invertebrates. (see acute toxicity)
Biocidal	Not applicable
Environmental effect levels	No EELs are available for this mixture or ingredients

13. Disposal Considerations

Restrictions	There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents.
Disposal method	Disposal of this product must comply with the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.
Contaminated packaging	Unlikely to occur. Recycle packaging if possible or send to landfill. Do not puncture or incinerate containers. Send to landfill or similar.

14. Transport Information

Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007

Considered a hazardous substance for transport.

UN number:	0323	Proper shipping name:	CARTRIDGES, POWER DEVICES
Class(es)	1.4S	Packing group:	II
Precautions:	No ignition sources.	Hazchem code:	none

IMDG

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

UN number:	0323	Proper shipping name:	CARTRIDGES, POWER DEVICES
Class(es)	1.4S	Packing group:	II
Precautions:	No ignition sources.		

IATA

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN number:	NA	Proper shipping name:	NA
Class(es)	NA	Packing group:	NA
Precautions:	NA		

15. Regulatory Information

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR100249, CARTRIDGES, POWER DEVICES.

Specific Workplace Controls (as per HSNO approval referenced to Controls Matrix)

Key workplace requirements are:

SDS	To be available within 10 minutes in workplaces storing any quantity.
Labelling	No removal of labels and/or decanting of product into other containers can
Emergency plan	Detailed Emergency Management Plan required if > 200kg is stored.
Approved handler and Tracking	Not required.
Bundling and secondary containment	Required if > 200kg is stored.
Signage	Required if > 5000kg (gross weight) is stored in any one location.
Location Test certificate	Not applicable.
Flammable zone	Not required.
Fire extinguisher	Required if 50kg present.
Controlled Substances Licence	Not required.
Import certificate requirement for shipment of explosives	Required.

Note: The above workplace requirements apply if only this particular substance is present. The complete set of controls for a lot quantities of other substances present in that location.

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health, Safety in Employment Act and Regulations, local Council Rules and Regional Council Plans.

16. Other Information**Abbreviations**

Approval Code	Approval HSR100249, CARTRIDGES, POWER DEVICES Controls, EPA. www.epa.govt.nz
CAS Number	Unique Chemical Abstracts Service Registry Number
Ceiling	Ceiling Exposure Value: The maximum airborne concentration of a biological or chemical agent to which a worker may be exposed at any time.
Controls Matrix	List of default controls linking regulation numbers to Matrix code (e.g. T1, I16).
EC₅₀	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
ERMA	Environmental Risk Management Authority (now EPA)
EPA	Environmental Protection Agency (previously known as ERMA)
HAZCHEM Code	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
HSNO	Hazardous Substances and New Organisms (Act and Regulations)
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
LD₅₀	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
LC₅₀	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
MSDS (SDS)	Material Safety Data Sheet (or Safety Data Sheet)
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
UEL	Upper Explosive Limit
UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed.

References

Data	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID) http://www.epa.govt.nz/hs/compliance/chemicals.html , for specific chemicals.
EPA Transfer Gazettes	Classifications and controls assigned for specific ingredients (consolidated gazette, 2004)
Controls Matrix	Part of the EPA New Zealand User Guide to the HSNO Control Regulations
WES 2013	The NZ Workplace Exposure Standards Effective from 2013, published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz .
Other References:	Suppliers SDS

Review

Date	Reason for review
December 2011	DRAFT SDS generated (to be reviewed)
January 2012	Reviewed (Hilti). Alternative names, address updated. SDS finalised.
November 2014	Update, review of classes for ingredients. Review of toxicological data, formatting. DoL to WorkSafe, including IATA and IMDG information.

Disclaimer

This SDS was prepared by Datachem LTD and is based on our current state of knowledge, including information obtained from suppliers. The SDS is given in good faith and constitutes a guideline (not a guarantee of safety). The level of risk each substance poses is relevant to its properties (as summarised in the SDS) AND HOW THE SUBSTANCE IS USED. While guidelines are given for personal protective equipment, such precautions must be relevant to the use. The likely HSNO classifications, are based on our experience, EPA Guidelines and international classifications. This SDS is copyright Datachem and must not be copied, edited or used for other than intended purpose. To contact the SDS author, email info@datachem.co.nz or phone: (09) 940 30 80.

