Cartridge 5.56 mm FX® Marking TOXFREE®

SECTION 1. IDENTIFICATION

Product Identifier	Cartridge 5.56 mm FX® Marking TOXFREE®
Other Means of Identification	Federal#41X
Product Family	Cartridge, 5.56 mm
Recommended Use	Cartridge for training use.
Restrictions on Use	For military and law enforcement personnel only.
Manufacturer/Supplier Identifier	General Dynamics - Ordnance and Tactical Systems - Canada Inc, 5, Montée des Arsenaux, Repentigny, Québec, J5Z 2P4, 450-581-3080
Emergency Phone No.	MD-UN, 1-888-922-3330, (Canada/U.S.A)
SDS No.	0357
Date of Preparation	mai 03, 2022

SECTION 2. HAZARD IDENTIFICATION

Classification

Explosive - Division 1.4; Skin irritation - Category 3; Reproductive toxicity - Category 2; Aquatic hazard (Acute) - Category 3

Label Elements

Signal Word:
Warning

Hazard Statement(s):
Fire or projection hazard.
Causes mild skin irritation.
Suspected of damaging fertility or the unborn child.
Harmful to aquatic life.

Prevention:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep only in original packaging.
Do not subject to grinding, shock, or friction.
Wear face protection. protective gloves
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.

Response:
In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
If skin irritation occurs: Get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.

Storage:
Store in accordance with local, regional, national and international regulations.
Dispose of contents and container in accordance with local, regional, national and international regulations.

Disposal:
Dispose of contents and container in accordance with local, regional, national and international regulations.

Other Hazards

This product is an explosive article which is composed of a finished cartridge containing various components that are sealed completely within the cartridge. Under normal conditions of handling, no exposure to any of the harmful components inside the cartridge is expected and no health effects are generally expected as supplied.
When cartridges are fired, or otherwise discharged, gases, fumes and projectiles may be formed. These gases, fumes and projectiles may contain trace amounts of the components inside the cartridges. These gases, fumes and projectiles may be irritating to the eyes, skin and respiratory tract.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	EC Number	Other Names
Copper	7440-50-8	45 - 70	231-159-6	- -
Zinc metal	7440-66-6	10 - 30	231-175-3	- -
Poly(oxymethylene)	9002-81-7	10 - 30	- -	Acetal homopolymer; POM
Polypropylene	9003-07-0	1 - 5	618-352-4	PP
Barium sulfate	7727-43-7	0.1 - 1	231-784-4	Barite
Sodium lauryl ether sulfate	68891-38-3	0.1 - 1	500-234-8	SLES
Cellulose nitrate	9004-70-0	0.1 - 1	618-392-2	Nitrocellulose; NC
Bismuth oxide	1304-76-3	0.1 - 1	215-134-7	Bismuth trioxide
Various Dyes	n. a.	trace	- -	- -
1,2-Propanediol	57-55-6	trace	200-338-0	Propylene glycol: PG
Glycerol trinitrate	55-63-0	trace	200-240-8	Nitroglycerin; NG
Aluminum Powder	7429-90-5	trace	231-072-3	- -
1-Tetrazene-1-carboximidic acid, 4-(aminoiminomethyl)-, 2-nitrosohydrazide	109-27-3	trace	203-659-4	Tetrazene
Potassium nitrate	7757-79-1	trace	231-818-8	- -
1,3-diethyldiphenylurea	85-98-3	trace	201-645-2	Ethyl centralite
Diphenylamine	122-39-4	trace	204-539-4	DPA
Graphite	7782-42-5	trace	231-955-3	- -
Dibutyl phthalate	84-74-2	trace	201-557-4	DBP
Polyester adipate	24938-37-2	trace	607-461-2	Poly(ethylene adipate); PEA
Rosin	8050-09-7	trace	232-475-7	- -
N-Nitrosodiphenylamine	86-30-6	trace	201-663-0	- -
Potassium sulfate	7778-80-5	trace	231-915-5	- -

Calcium carbonate	471-34-1	trace	207-439-9	- -
2,4-Dinitrotoluene	121-14-2	trace	204-450-0	DNT
N'-methyl-N,N-diphenyl-urea	13114-72-2	trace	236-039-7	Arkadite II
Ethyl acetate	141-78-6	trace	205-500-4	- -
Tin dioxide	18282-10-5	trace	242-159-0	- -
Pentaerythritol tetranitrate	78-11-5	trace	201-084-3	PETN
Nickel	7440-02-0	trace	231-111-4	- -

Notes

Concentrations are expressed in % weight/weight.
Concentrations listed above are the final concentration in the complete finished cartridge.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

None required under normal conditions.
If projectiles are fired, or otherwise discharged, the following treatment may be necessary:
Move to fresh air.
Get medical advice or attention if you feel unwell or are concerned.

Skin Contact

None required under normal conditions.
If cartridges are fired, or otherwise discharged, the following treatment may be necessary:
Immediately wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 15-20 minutes.
If exposed or concerned, get medical advice or attention.

Eye Contact

None required under normal conditions.
If cartridges are fired, or otherwise discharged, the following treatment may be necessary:
Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open.
If eye irritation persists, get medical advice or attention.

Ingestion

None required under normal conditions.
Not expected, based upon the current form of the product.

Most Important Symptoms and Effects, Acute and Delayed

If cartridges are fired, or otherwise discharged, gases, fumes and projections may be formed. These gases, fumes and projections may contain trace amounts of the components inside the cartridges. These gases, fumes and projections may be irritating to the eyes skin and respiratory tract.

Immediate Medical Attention and Special Treatment

Target Organs

If fired different decomposition product could have effects on: digestive system, respiratory system, nervous system.

Special Instructions

Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Explosive product: do not fight the fire.
If fire has not reached explosives:
Use flooding quantities of water or other suitable extinguishing agent. Carbon dioxide, dry chemical powder or

appropriate foam.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Can ignite if strongly heated.
Can be ignited by static discharge.
Ignites readily. When ignited burns vigorously and persistently.
Heating may cause a fire or explosion.
Explosive; fire, blast or projection hazard.
In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; nitrogen oxides; corrosive sulfur oxides.

Special Protective Equipment and Precautions for Fire-fighters

Do not fight fire when fire reaches explosives. Risk of explosion.
Evacuate area.
Fight fire from a safe distance or a protected location.
Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.
Cargo Fires: Packages bearing the 1.4 label or packages containing material classified as 1.4 are designed or packaged in such manner that when involved in a fire, may burn vigorously with localized detonations and projection of fragments.
Effects are usually confined to immediate vicinity of packages.
If fire threatens cargo area containing packages bearing the 1.4 label or packages containing material classified as 1.4, consider isolating at least 15 meters (50 feet) in all directions. Fight fire with normal precautions from a reasonable distance.
Tire or vehicle fires: Use plenty of water - FLOOD it! If water is not available, use CO2, dry chemical or dirt.
Fire-fighters may enter the area if positive pressure SCBA and full Bunker Gear is worn.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel.
Eliminate all ignition sources. Use grounded, explosion-proof equipment.
Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.
Do not allow into any sewer, on the ground or into any waterway.
Minimize the use of water to prevent environmental contamination. It is good practice to prevent releases into the environment.

Methods and Materials for Containment and Cleaning Up

Handle spilled products carefully. Do not subject product to mechanical shock. Remove all sources of ignition.Ventilate the area.
For solid, intact cartridges: pick up and arrange disposal.
If loose powder is present: dissolve with alcohol, wipe off with rag

If spill occurs in an area where there is a fire burning: EVACUATE area. Refer to section 5.
All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Do not operate radio transmitters within 100 meters (330 feet) of electric detonators. Pick up and arrange disposal without creating dust.

Other Information

Contact supplier, local fire and emergency services for help.
Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs.
Electrically bond and ground equipment. Ground clips must contact bare metal.
Avoid shock, friction or impact. Do not skid, drag or drop containers.
Only use where there is adequate ventilation.
Wear personal protective equipment to avoid direct contact with this chemical.
Disassembly/assembly operations shall be conducted only by experienced personnel qualified to perform the task.
Follow appropriate explosive safety requirements. Local ordinances may apply.

Conditions for Safe Storage

Store in an area that is: cool, temperature-controlled, well-ventilated, out of direct sunlight and away from heat and ignition sources, separate from incompatible materials (see Section 10: Stability and Reactivity).
Protect containers from impact, vibration and shock.
Store in the original, labelled, shipping container.
Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH® TLV®		OSHA PEL	
Chemical Name	**TWA**	**STEL [C]**	**TWA**	**STEL**
Copper	1 mg/m3	Not established	0.1 mg/m3	Not established
Zinc metal	Not established	Not established	Not established	Not established
1-Tetrazene-1-carboximidic acid, 4-(aminoiminomethyl)-, 2-nitrosohydrazide	Not established	Not established	Not established	Not established
Polypropylene	Not established	Not established	Not established	Not established
Sodium lauryl ether sulfate	Not established	Not established	Not established	Not established
1,2-Propanediol	Not established	Not established	Not established	Not established
Barium sulfate	5 mg/m3	Not established	10 mg/m3	Not established
Poly(oxymethylene)	Not established	Not established	5 mg/m3	Not established
Cellulose nitrate	Not established	Not established	Not established	Not established
Potassium nitrate	Not established	Not established	Not established	Not established
Glycerol trinitrate	0.05 ppm Skin	Not established	0.1 mg/m3 Skin	Not established
1,3-diethyldiphenylurea	Not established	Not established	Not established	Not established
Diphenylamine	10 mg/m3	Not established	10 mg/m3	Not established
Graphite	2 mg/m3	Not established	2.5 mg/m3	Not established
Dibutyl phthalate	5 mg/m3	Not established	5 mg/m3	Not established
Polyester adipate	Not established	Not established	Not established	Not established
Rosin	Not established	Not established	Not established	Not established
N-Nitrosodiphenylamine	Not established	Not established	Not established	Not established
Potassium sulfate	Not established	Not established	Not established	Not established
Calcium carbonate	Not established	Not established	15 mg/m3	Not established
Aluminum Powder	1 mg/m3 A4	Not established	5 mg/m3	Not established
2,4-Dinitrotoluene	0.2 mg/m3 A3 Skin	Not established	Not established	Not established
N'-methyl-N,N-diphenyl-urea	Not established	Not established	Not established	Not established
Ethyl acetate	400 ppm	Not established	400 ppm	Not established
Tin dioxide	Not established	Not established	2 mg/m3	Not established
Pentaerythritol tetranitrate	Not established	Not established	Not established	Not established
Nickel	1.5 mg/m3 A5	Not established	1 mg/m3	Not established

Bismuth oxide	Not established	Not established	Not established	Not established

Appropriate Engineering Controls

General ventilation is usually adequate.
Do not allow product to accumulate in the air in work or storage areas, or in confined spaces.

Individual Protection Measures

Eye/Face Protection

Safety glasses with side shields should be used with this product. If necessary, refer to U.S. OSHA 29 1310.133 or Canadian CSA Standard Z94.3-02.

Skin Protection

Not required, if used as directed. Prevent skin contact.

Respiratory Protection

Not normally required if product is used as directed. Use a NIOSH approved dust respirator if dust levels exceed exposure limits.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Brass cartridge ending with a plastic sabot which contains a colored compound.
Odour	Odourless
Odour Threshold	Not applicable
pH	Not applicable
Melting Point/Freezing Point	Not applicable (melting); Not applicable (freezing)
Boiling point/Initial boiling point	Not applicable
Boiling Range	Not applicable
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	Not applicable
Vapour Density (air = 1)	Not applicable
Relative Density (water = 1)	Not applicable
Solubility	Insoluble in water
Partition Coefficient, n-Octanol/Water (Log Kow)	Not applicable
Auto-ignition Temperature	>= 120 ºC (248 ºF)
Decomposition Temperature	Not applicable
Viscosity	Not applicable (kinematic)

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.
Heating may cause a fire or explosion. Explosive; fire, blast or projection hazard.
Sensitive to mechanical impact.

Chemical Stability

Normally stable.
Unstable under certain conditions - see Conditions to Avoid.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use.

Conditions to Avoid

May igniter if primer is struck.
Mechanical shock or impact. Friction.
Open flames, sparks, static discharge, heat and other ignition sources. Temperatures above 120.0 ºC (248.0 ºF)

Incompatible Materials

Oils, acids, alkalis, ammonium salts, ammonia and other corrosives materials.

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide.
Corrosive, oxidizing nitrogen oxides.
Corrosive sulfur oxides.
Decomposes in the presence of heat. May produce metal oxides and fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

The following hazards are not expected to be present unless the product is fired or otherwise discharged so that gases, fumes and/or projections are created.
Normal handling and shipping should not cause exposure to these hazards.

Likely Routes of Exposure

Inhalation; skin contact; eye contact; inhalation.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Copper	Not available	413 mg/kg (mouse)	375 mg/kg (rabbit)
Zinc metal	Not available	630 mg/kg	Not available
1-Tetrazene-1-carboximidic acid, 4-(aminoiminomethyl)-, 2-nitrosohydrazide	Not available	Not available	Not available
Polypropylene	Not available	> 8000 mg/kg (rat)	Not available
Sodium lauryl ether sulfate	Not available	> 5000 mg/kg (rat)	> 2000 mg/kg (rat)
1,2-Propanediol	44900 mg/m3 (rat) (4-hour exposure)	21800 mg/kg (rat)	20800 mg/kg (rabbit)
Barium sulfate	Not available	> 3000 mg/kg (mouse)	Not available
Poly(oxymethylene)	> 22000 mg/m3 (rat)	> 11000 mg/kg (rat)	Not available
Cellulose nitrate	Not available	5000 mg/kg (rat)	Not available
Potassium nitrate	Not available	3015 mg/kg (rat)	Not available
Glycerol trinitrate	Not available	105 mg/kg (rat)	> 280 mg/kg (rabbit)
1,3-diethyldiphenylurea	Not available	2750 mg/kg (rat)	Not available
Diphenylamine	Not available	1120 mg/kg (rat)	> 5000 mg/kg (rabbit)
Graphite	> 64 mg/L (rat)	> 10000 mg/kg (rat)	Not available
Dibutyl phthalate	12500 mg/m3 (mouse) (4-hour exposure)	8000 mg/kg (rat)	4200 mg/kg (rabbit) 90 days
Polyester adipate	Not available	Not available	Not available
Rosin	110 mg/m3 (rat)	7600 mg/kg (rat)	Not available
N-Nitrosodiphenylamine	Not available	1825 mg/kg (rat)	> 7940 mg/kg (rabbit)
Potassium sulfate	Not available	6600 mg/kg (mouse)	Not available
Calcium carbonate	Not available	6450 mg/kg (rat)	Not available
Aluminum Powder	> 1000 mg/m3 (male rat) (4-hour exposure)	Not available	Not available

2,4-Dinitrotoluene	Not available	400 mg/kg (rat)	> 2500 mg/kg (rat)
N'-methyl-N,N-diphenyl-urea	Not available	2930 mg/kg (rat)	> 280 mg/kg (rabbit)
Ethyl acetate	1500 ppm (mouse) (4-hour exposure)	4900 mg/kg (rabbit)	Not available
Tin dioxide	Not available	> 20000 mg/kg (rat)	Not available
Pentaerythritol tetranitrate	Not available	1660 mg/kg (rat)	Not available
Nickel	> 2550 mg/m3 (rat) (4-hour exposure)	> 9000 mg/kg (rat) Suspension in mineral oil	Not available
Bismuth oxide	Not available	4000 mg/kg (rat)	Not available

Skin Corrosion/Irritation

After munitions have been fired, dust, vapours and/or fumes may cause irritation.

Serious Eye Damage/Irritation

After munitions have been fired, dust, vapours and/or fumes may cause irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

After munitions have been fired, dust, vapours and/or fumes may be irritating to the respiratory system.
May cause depression of the central nervous system. (Nitroglycerin). (Ethyl acetate)
Symptoms may include coughing, shortness of breath, difficult breathing and tightness in the chest. (Bismuth oxide)
Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

Skin Absorption

After munitions have been fired, dust can be absorbed through the pores if left on the skin.

Ingestion

After munitions have been fired, dust, vapours and/or fumes may be absorbed by the digestive system and be irritating
Can cause effects as described for inhalation.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause effects similar to STOT (Specific Target Organ Toxicity) - Single Exposure, as described above.

Respiratory and/or Skin Sensitization

Not a respiratory sensitizer. Not a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP
Copper	Not Listed	Not designated	Not Listed
Zinc metal	Not Listed	Not designated	Not Listed
1-Tetrazene-1-carboximidic acid, 4-(aminoiminomethyl)-, 2-nitrosohydrazide	Not Listed	Not designated	Not Listed
Polypropylene	Group 3	Not designated	Not Listed
Sodium lauryl ether sulfate	Not Listed	Not designated	Not Listed
1,2-Propanediol	Not Listed	Not designated	Not Listed
Barium sulfate	Not Listed	Not designated	Not Listed
Poly(oxymethylene)	Not Listed	Not designated	Not Listed
Cellulose nitrate	Not Listed	Not designated	Not Listed
Potassium nitrate	Not Listed	Not designated	Not Listed
Glycerol trinitrate	Not Listed	Not designated	Not Listed
1,3-diethyldiphenylurea	Not Listed	Not designated	Not Listed

Diphenylamine	Not Listed	A4	Not Listed
Graphite	Not Listed	Not designated	Not Listed
Dibutyl phthalate	Not Listed	Not designated	Not Listed
Polyester adipate	Not Listed	Not designated	Not Listed
Rosin	Not Listed	Not designated	Not Listed
N-Nitrosodiphenylamine	Group 3	Not designated	Not Listed
Potassium sulfate	Not Listed	Not designated	Not Listed
Calcium carbonate	Not Listed	Not designated	Not Listed
Aluminum Powder	Not Listed	A4	Not Listed
2,4-Dinitrotoluene	Group 2B	A3	Not Listed
N'-methyl-N,N-diphenyl-urea	Not Listed	Not designated	Not Listed
Ethyl acetate	Not Listed	Not designated	Not Listed
Tin dioxide	Not Listed	Not designated	Not Listed
Pentaerythritol tetranitrate	Not Listed	Not designated	Not Listed
Nickel	Group 2B	A5	Reasonably anticipated
Bismuth oxide	Not Listed	Not designated	Not Listed

IARC:
Group 2B – Possibly carcinogenic to humans.
Group 3 – Not classifiable as to its carcinogenicity to humans.
ACGIH®:
A3 – Confirmed animal carcinogen.
A4 – Not classifiable as a human carcinogen.
A5 – Not suspected as a human carcinogen.

Key to Abbreviations

ACGIH® = American Conference of Governmental Industrial Hygienists.
IARC = International Agency for Research on Cancer.
NTP = National Toxicology Program.

Reproductive Toxicity

Development of Offspring

May harm the unborn child. (Dibutyl phthalate)

Sexual Function and Fertility

Animal studies show effects on sexual function and/or fertility. (Diphenylamine). (Dibutyl phthalate)

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

Ecotoxicity

Toxic to aquatic life, based on acute toxicity tests. (Copper). (Zinc metal). (Aluminum Powder). (Sodium lauryl ether sulfate). (Ethyl centralite). (Glycerol trinitrate). (Diphenylamine). (N-Nitrosodiphenylamine). (Nickel)

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Algae

Copper	0.0224 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour)	0.2 mg/L (Daphnia magna (water flea); 48-hour)	Not available
Zinc metal	0.450 mg/L (96-hour)	0.068 mg/L (Daphnia magna (water flea); 48-hour)	0.15 mg/L (72-hour)
1-Tetrazene-1-carboximidic acid, 4-(aminoiminomethyl)-, 2-nitrosohydrazide	Not available	Not available	Not available
Polypropylene	Not available	Not available	Not available
Sodium lauryl ether sulfate	10-100 mg/L (Leuciscus idus)	2.3-4.8 mg/L (Ceriodaphnia dubia (Water flea); 48-hour)	Not available
1,2-Propanediol	51600 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour; static)	> 18300 mg/L (Daphnia magna (water flea); 48-hour)	19000 mg/L (Selenastrum capricornutum (algae); 96-hour; static)
Barium sulfate	Not available	32 mg/L (Daphnia magna (water flea); 48-hour; fresh water; static)	Not available
Poly(oxymethylene)	Not available	Not available	Not available
Cellulose nitrate	Not available	Not available	730 mg/L (Selenastrum capricornutum (algae); 96-hour)
Potassium nitrate	39 mg/L (Daphnia magna (water flea); 96-hour; fresh water; static)	Not available	Not available
Glycerol trinitrate	1.28 mg/L (Lepomis macrochirus (bluegill); 96-hour; static)	Not available	Not available
1,3-diethyldiphenylurea	15.6 mg/L (96-hour; static)	14.3 mg/L (Daphnia magna (water flea); 48-hour; static)	37.8 mg/L (Desmodesmus subspicatus (algae); 72-hour; static)
Diphenylamine	3.79 mg/L (Pimephales promelas (fathead minnow); 96-hour)	0.27-0.36 mg/L (Daphnia magna (water flea); 48-hour)	0.048 mg/L (Desmodesmus subspicatus (algae); 72-hour)
Graphite	> 100 mg/L (96-hour)	> 100 mg/L (Daphnia magna (water flea); 48-hour)	> 100 mg/L (Pseudokirchneriella subcapitata (algae); 72-hour)
Dibutyl phthalate	44 mg/L (Lepomis macrochirus (bluegill); 96-hour; fresh water; static)	17 mg/L (Daphnia magna (water flea); fresh water; recirculation)	25-50 mg/L (Pseudokirchneriella subcapitata (algae); 96-hour; fresh water; static)
Polyester adipate	Not available	Not available	Not available
Rosin	60.3 mg/L (96-hour; static)	Not available	Not available
N-Nitrosodiphenylamine	5.8 mg/L (Lepomis macrochirus (bluegill); 96-hour)	7.8 mg/L (Daphnia magna (water flea); 48-hour)	Not available
Potassium sulfate	680 mg/L (Pimephales promelas (fathead minnow); 96-hour)	Not available	Not available
Calcium carbonate	> 56000 mg/L (96-hour;	Not available	Not available

	static)		
Aluminum Powder	0.12 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour; static)	Not available	Not available
2,4-Dinitrotoluene	24.3 mg/L (Pimephales promelas (fathead minnow); 96-hour)	<= 38 mg/L (Daphnia magna (water flea); fresh water; recirculation)	14.3 mg/L (Pseudokirchneriella subcapitata (algae); 96-hour; fresh water; static)
N'-methyl-N,N-diphenyl-urea	Not available	Not available	Not available
Ethyl acetate	230 mg/L (Pimephales promelas (fathead minnow); 96-hour; fresh water; flow-through)	2306 mg/L (Daphnia magna (water flea); 48-hour; fresh water; recirculation)	5600 mg/L (Desmodesmus subspicatus (algae); 48-hour; fresh water; static)
Tin dioxide	Not available	Not available	Not available
Pentaerythritol tetranitrate	27000 mg/L (Pimephales promelas (fathead minnow); 96-hour; fresh water; static)	8500 mg/L (Daphnia magna (water flea); 48-hour; fresh water; static)	Not available
Nickel	5.1 mg/L (Lepomis macrochirus (bluegill); 96-hour; static)	7.6 mg/L (Daphnia magna (water flea); 48-hour; static)	Not available
Bismuth oxide	Not available	Not available	Not available

Persistence and Degradability

No ingredient of this product or its degradation products is known to be highly persistent.

Bioaccumulative Potential

This product and its degradation products are not known to bioaccumulate.

Mobility in Soil

Not expected.

Other Adverse Effects

No other adverse environmental effects known.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

The recommended means for disposing of scrap material usually involves demilitarization of detonator assembly (i.e.: separating all explosive elements for individual destruction) it can also be done by open detonation but it is not the preferred way.
Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.
Dispose of contents and container in accordance with local, regional, national and international regulations. Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	UN0012	Cartridges for weapons, small arms	1.4S	II

Environmental Hazards Potential Marine Pollutant (Copper)

Special Precautions Please note: Avoid shock and friction. Appropriate advice on safety must accompany the package.

Transport in Bulk according to International Maritime Organization Instruments

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL or are not required to be listed.

CEPA - National Pollutant Release Inventory (NPRI)

Part 1A. Copper (and its compounds) Zinc (and its compounds). (Potassium nitrate) Nitrate ion in solution at a pH of 6.0 or more Aluminum (fume and dust only). (Dibutyl phthalate). (Diphenylamine). (Glycerol trinitrate). (N-Nitrosodiphenylamine). (2,4-Dinitrotoluene) Nickel (and its compounds)
Part 5. (Ethyl acetate)

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

SDS Prepared By	General Dynamics - Ordnance and Tactical Systems - Canada Inc
Phone No.	(450) 581-3080
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Key to Abbreviations	ACGIH® = American Conference of Governmental Industrial Hygienists HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer NIOSH = National Institute for Occupational Safety and Health NTP = National Toxicology Program OSHA = US Occupational Safety and Health Administration RTECS® = Registry of Toxic Effects of Chemical Substances Inh = Inhalation LC = Lethal Concentration LD = Lethal Dose EPA = Environmental Protection Agency PEL = Permissible exposure limit SDS = Safety Data Sheet / Material Safety Data Sheet STEL = Short Term Exposure Limit TDG = Canadian Transportation of Dangerous Goods Act & Regulations TLV = Threshold Limit Values TWA = Time Weighted Average WHMIS = Workplace Hazardous Materials Identification System N/Ap = Not Applicable
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS).

NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS).
Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA (“BIOVIA”). Available from Canadian Centre for Occupational Health and Safety (CCOHS).
ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices.
Chempendium, HSDB and RTECS database. Available from Canadian Centre for Occupational Health and Safety (CCOHS).

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