

Cartridge 9 mm FX® Marking, Toxfree® primer

SECTION 1. IDENTIFICATION

Product Identifier	Cartridge 9 mm FX® Marking, Toxfree® primer
Other Means of Identification	Révision 5
Product Family	Cartridge, 9 MM
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.	0167
Date of Preparation	juillet 19, 2017

SECTION 2. HAZARD IDENTIFICATION

Classification

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

Label Elements



Hazard Statement(s):

Fire or projection hazard.

Suspected of damaging fertility or the unborn child.

Toxic to aquatic life.

Prevention:

Do not handle until all safety precautions have been read and understood.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Use explosion-proof electrical, ventilating, and lighting equipment.

Do not subject to grinding, shock, or friction.

Response:

IF exposed or concerned: Get medical advice/attention.

Explosion risk in case of fire.

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.

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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.	%	Component
Copper	7440-50-8	53.91	Cartridge case, primer
Zinc metal	7440-66-6	23.10	Cartridge case, primer
Sodium lauryl sulfate	151-21-3	1-3	Marking composition
Barium sulfate	7727-43-7	1-3	Marking composition
Poly(oxymethylene)	9002-81-7	11.88	Sabot
Polypropylene	9003-07-0	4.07	Projectile
1,2-Propylene glycol	57-55-6	0.32	Marking composition
Various Dye		0.31	Marking composition
Nitrocellulose	9004-70-0	0.3	Propellant, primer
Diazodinitrophenol, wetted with not < 40% water or mixture of alcohol and water, by mass	87-31-0	trace	Primer
Nitroglycerin	55-63-0	0.13	Propellant
Tetrazene	54410-57-0	trace	Primer
Pentaerythritol tetrahydrate	78-11-5	trace	Primer
Potassium nitrate	7757-79-1	trace	Propellant, primer
Ethyl centralite	85-98-3	trace	Propellant
Diphenylamine	122-39-4	trace	Propellant
Graphite (natural)	7782-42-5	trace	Propellant
Dibutyl phthalate	84-74-2	trace	Propellant
Polyester adipate		trace	Propellant
Rosin	8050-09-7	trace	Propellant
N-Nitrosodiphenylamine	86-30-6	trace	Propellant
Potassium sulfate	7778-80-5	trace	Propellant
Calcium carbonate	471-34-1	trace	Propellant
Aluminum silicate	12141-46-7	trace	primer
Zirconium	7440-67-7	trace	Primer

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

None required under normal conditions.

If cartridges 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.

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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: nitrogen oxides; corrosive sulfur oxides; very toxic carbon monoxide, carbon dioxide.

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.

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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.
Use the personal protective equipment recommended in Section 8 of this safety data sheet.
Eliminate all ignition sources. Use grounded, explosion-proof equipment.

Environmental Precautions

If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.
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.

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. No smoking in the area.

Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel.

Store in the original, labelled, shipping container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH® TLV®		OSHA PEL	
	TWA	STEL [C]	TWA	STEL
Copper	1 mg/m ³		0.1 mg/m ³	
Zinc metal	Not established		Not established	
Diazodinitrophenol, wetted with not < 40% water or mixture of alcohol and water, by mass	Not established		Not established	
Tetrazene	Not established		Not established	
Pentaerythritol tetrahydrate	Not established		Not established	
Polypropylene	Not established		Not established	
Sodium lauryl sulfate	Not established		Not established	
1,2-Propylene glycol	Not established		Not established	

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Barium sulfate	5 mg/m3		10 mg/m3	
Poly(oxymethylene)			5 mg/m3	
Nitrocellulose	Not established		Not established	
Potassium nitrate	Not established		Not established	
Nitroglycerin	0.05 ppm Skin		0.1 mg/m3 Skin	
Ethyl centralite	Not established		Not established	
Diphenylamine	10 mg/m3		10 mg/m3	
Graphite (natural)	2 mg/m3		2.5 mg/m3	
Dibutyl phthalate	5 mg/m3		5 mg/m3	
Rosin	Not established		Not established	
N-Nitrosodiphenylamine	Not established		Not established	
Potassium sulfate	Not established		Not established	
Calcium carbonate	Not established		15 mg/m3	
Aluminum silicate	Not established	Not established		
Zirconium	5 mg/m3 A4		5 mg/m3	

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

Odour	Odourless
Odour Threshold	Not applicable
pH	Not applicable
Melting Point/Freezing Point	Not applicable (melting); Not applicable (freezing)
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; Insoluble in
Auto-ignition Temperature	>= 120 °C (248 °F) (Tetrazene)
Decomposition Temperature	Not applicable
Viscosity	Not applicable (kinematic)

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Physical State	Solid
Molecular Formula	Not applicable
Molecular Weight	Not applicable
Bulk Density	Not applicable
Critical Temperature	≥ 120 °C (248 °F) (Tetrazene)
Saturated Vapour Concentration	Not applicable

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.

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 °C (248.0 °F)

Incompatible Materials

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

Hazardous Decomposition Products

Corrosive sulfur oxides; corrosive, oxidizing nitrogen oxides; very toxic carbon monoxide, carbon dioxide.

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; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Copper		413 mg/kg (mouse)	375 mg/kg (rabbit)
Zinc metal	Not available	630 mg/kg	Not available
Diazodinitrophenol, wetted with not < 40% water or mixture of alcohol and water, by mass	Not available	Not available	Not available
Tetrazene	Not available	~ 1000-3000 mg/kg	Not available
Pentaerythritol tetrahydrate	Not available	1660 mg/kg (rat)	Not available
Polypropylene	Not available	> 8000 mg/kg (rat)	Not available
Sodium lauryl sulfate	> 3900 mg/m ³ (rat)	1000 mg/kg (rat)	580 mg/kg (rabbit)
1,2-Propylene glycol	44900 mg/m ³ (rat) (4-hour exposure)	21800 mg/kg (rat)	20800 mg/kg (rabbit)
Barium sulfate	Not available	> 3000 mg/kg (mouse)	Not available
Poly(oxyethylene)	> 22000 mg/m ³ (rat)	> 11000 mg/kg (rat)	
Nitrocellulose	Not available	5000 mg/kg (rat)	Not available

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Potassium nitrate	Not available	3015 mg/kg (rat)	Not available
Nitroglycerin	Not available	105 mg/kg (rat)	> 280 mg/kg (rabbit)
Ethyl centralite	Not available	2750 mg/kg (rat)	Not available
Diphenylamine	Not available	1120 mg/kg (rat)	> 5000 mg/kg (rabbit)
Graphite (natural)	> 64 mg/L (rat)	> 10000 mg/kg (rat)	Not available
Dibutyl phthalate	12500 mg/m3 (mouse) (4-hour exposure)	8000 mg/kg (rat)	Not available
Rosin	110 mg/m3 (rat)	7600 mg/kg (rat)	
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 silicate	Not available	Not available	Not available
Zirconium	Not available	> 5000 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.

Skin Absorption

No information was located.

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.

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	OSHA
Copper	Not evaluated	Not designated	Not Listed	
Zinc metal	Not Listed	Not designated	Not Listed	
Diazodinitrophenol, wetted with not < 40% water or mixture of alcohol and water, by mass	Not Listed	Not designated	Not Listed	
Tetrazene	Not Listed		Not Listed	
Pentaerythritol tetrahydrate	Not Listed	Not designated	Not Listed	
Polypropylene	Group 3	Not designated	Not Listed	
Sodium lauryl sulfate	Not Listed	Not designated	Not Listed	
1,2-Propylene glycol	Not Listed	Not designated	Not Listed	
Barium sulfate	Not Listed	Not designated	Not Listed	
Poly(oxyethylene)	Not Listed	Not designated	Not Listed	

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Nitrocellulose	Not Listed	Not designated	Not Listed	
Potassium nitrate	Not evaluated	Not Listed	Not Listed	
Nitroglycerin	Not Listed	Not designated	Not Listed	
Ethyl centralite	Not Listed	Not Listed	Not Listed	
Diphenylamine	Not Listed	A4	Not Listed	
Graphite (natural)	Not Listed	Not Listed	Not Listed	
Dibutyl phthalate	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 Listed	Not Listed	
Aluminum silicate	Not Listed	Not designated	Not Listed	
Zirconium	Not Listed	A4	Not Listed	

Group 3 – Not classifiable as to its carcinogenicity to humans. A4 – Not classifiable 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)

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life, based on acute toxicity tests. (Zinc metal). (Copper). (Sodium lauryl sulfate). (Ethyl centralite). (Nitroglycerin). (Diphenylamine). (Dibutyl phthalate)

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Copper	0.0224 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour)	0.2 mg/L (Daphnia magna (water flea); 48-hour)		
Zinc metal	0.450 mg/L (96-hour)	0.068 mg/L (Daphnia magna (water flea); 48-hour)		
Diazodinitrophenol, wetted with not < 40% water or mixture of alcohol and water, by mass	Not available	Not available		
Tetrazene	Not available			
Pentaerythritol tetrahydrate	27000 mg/L (Pimephales promelas (fathead minnow); 96-hour; fresh water; static)	8500 mg/L (Daphnia magna (water flea); 48-hour; fresh water; static)		

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Polypropylene	Not available			
Sodium lauryl sulfate	24.9 mg/L (Oncorhynchus mykiss (rainbow trout); fresh water; static)	16.5 mg/L (Mysidopsis bahia (opossum shrimp); 96-hour; salt water; static)		
1,2-Propylene glycol	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)		
Poly(oxymethylene)	Not available	Not available		
Nitrocellulose	Not available			730 mg/L (Selenastrum capricornutum (algae); 96-hour)
Potassium nitrate	39 mg/L (Daphnia magna (water flea); 96-hour; fresh water; static)			
Nitroglycerin	1.28 mg/L (Lepomis macrochirus (bluegill); 96-hour; static)			
Ethyl centralite	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 (natural)	> 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)
Rosin	60.3 mg/L (96-hour; static)			
N-Nitrosodiphenylamine	5.8 mg/L (Lepomis macrochirus (bluegill); 96-hour)	7.8 mg/L (Daphnia magna (water flea); 48-hour)		
Potassium sulfate	680 mg/L (Pimephales promelas (fathead			

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	minnow); 96-hour)			
Calcium carbonate	> 56000 mg/L (96-hour; static)			
Aluminum silicate	Not available			
Zirconium	Not available			

Bioaccumulative Potential

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

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

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

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

WHMIS 1988 Classification



Class D2A

D2A - Very Toxic (Teratogenicity/embryotoxicity; Reproductive toxicity)

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

All ingredients are listed on the DSL/NDSL.

CEPA - National Pollutant Release Inventory (NPRI)

Part 1A. (Zinc metal). (Copper). (Potassium nitrate). (Dibutyl phthalate). (Diphenylamine). (Nitroglycerin). (N-Nitrosodiphenylamine)

USA

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

All ingredients are listed on the TSCA Inventory.

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SECTION 16. OTHER INFORMATION

SDS Prepared By General Dynamics
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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).

Disclaimer

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