

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

1 Identification

- **Product identifier**
- **Trade name:** Muzzle Blast Cartridge, CS Powder
- **Product code:** 12-MB-CS
- **Recommended use and restriction on use**
- **Recommended use:** Explosive product.
- **Restrictions on use:** Contact manufacturer
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
NonLethal Technologies, Inc.
9419 Rt 286 Hwy W
Homer City, PA 15748
USA
+1 724-479-5100
nlt@nonlethaltechnologies.com
- **Emergency telephone number:** 1-800-255-3924 (Intl.: +1 813-248-0585) (CHEMTEL # MIS9685256)

2 Hazard(s) identification

- **Classification of the substance or mixture**
- Expl. 1.4 H204 Fire or projection hazard.
- Acute Tox. 3 H301 Toxic if swallowed.
- Acute Tox. 3 H311 Toxic in contact with skin.
- Acute Tox. 2 H330 Fatal if inhaled.
- Skin Irrit. 2 H315 Causes skin irritation.
- Eye Irrit. 2A H319 Causes serious eye irritation.
- Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin Sens. 1 H317 May cause an allergic skin reaction.
- STOT SE 3 H335 May cause respiratory irritation.

· Label elements

· GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms:



GHS01 GHS06 GHS07 GHS08

· Signal word: Danger

· Hazard statements:

- H204 Fire or projection hazard.
- H301+H311 Toxic if swallowed or in contact with skin.
- H330 Fatal if inhaled.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

(Cont'd. on page 2)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 1)

H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

Precautionary statements:

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P250 Do not subject to grinding/shock/friction.

P260 Do not breathe dust.

P284 In case of inadequate ventilation wear respiratory protection.

P264 Wash thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing must not be allowed out of the workplace.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P373 DO NOT fight fire when fire reaches explosives.

P370+P380 In case of fire: Evacuate area.

P302+P352 IF ON SKIN: Wash with plenty of water.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

P372 Explosion risk in case of fire.

P312 Call a POISON CENTER/doctor if you feel unwell.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P330 Rinse mouth.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P401 Store in accordance with local/regional/national/international regulations.

P405 Store locked up.

P403 Store in a well-ventilated place.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards There are no other hazards not otherwise classified that have been identified.

Explosive Product Notice

PREVENTION OF ACCIDENTS IN THE USE OF EXPLOSIVES - The prevention of accidents in the use of explosives is a result of careful planning and observance of the best known practices. The explosives user must remember that he is dealing with a powerful force and that various devices and methods have been developed to assist him in directing this force. He should realize that this force, if misdirected, may either kill or injure both him and his fellow workers.

WARNING - All explosives are dangerous and must be carefully handled and used following approved safety procedures either by or under the direction of competent, experienced persons in accordance with all applicable federal, state, and local laws, regulations, or ordinances. If you have any questions or doubts as to how to use any explosive product, DO NOT USE IT before consulting with your supervisor, or the manufacturer, if you do not have a supervisor. If your supervisor has any questions or doubts, he should consult the manufacturer before use.

(Cont'd. on page 3)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 2)

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Components:**

2698-41-1	[(2-chlorophenyl)methylene]malononitrile Acute Tox. 3, H301; Acute Tox. 2, H330 Resp. Sens. 1, H334 Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335	60-80%
9004-70-0	Nitrocellulose, colloided, granular Expl. 1.1, H201	<10%
55-63-0	glycerol trinitrate / nitroglycerin Unst. Expl., H200 Flam. Liq. 2, H225 Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 STOT RE 2, H373	<10%
1309-48-4	magnesium oxide	<5%
546-93-0	Magnesium carbonate	<5%
122-39-4	diphenylamine Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331 STOT RE 2, H373	<2%
8050-09-7	Rosin Skin Sens. 1, H317	<1%
15245-44-0	lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate Unst. Expl., H200 Repr. 1A, H360; STOT RE 2, H373 Acute Tox. 4, H302; Acute Tox. 4, H332	0.1-1%

· **Additional information:**

For the wording of the listed Hazard Statements refer to section 16.

For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.

4 First-aid measures

· **Description of first aid measures**

· **General information:**

Information is only applicable to product contents, and not to product as normally supplied. This information is applicable to damaged, leaking, or spilled product as contact with contents is possible under these conditions.

· **After inhalation:**

Remove victim to fresh air.

Seek immediate medical advice.

Provide oxygen treatment if affected person has difficulty breathing.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After skin contact:**

Immediately remove any clothing soiled by the product.

Brush off loose particles from skin.

(Cont'd. on page 4)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 3)

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

- **After eye contact:**

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

- **Most important symptoms and effects, both acute and delayed:**

Asthma attacks

Blast injury if mishandled.

Allergic reactions

May cause respiratory irritation.

Breathing difficulty

Coughing

Irritant to eyes.

Irritant to skin and mucous membranes.

- **Danger:**

Danger of blast or crush-type injuries.

Harmful in contact with skin.

Danger of impaired breathing.

- **Indication of any immediate medical attention and special treatment needed:**

Product may produce physical injury if mishandled. Treatment of these injuries should be based on the blast and compression effects.

Contains [(2-chlorophenyl)methylene]malononitrile. May produce an allergic reaction.

Severe allergic skin reaction, bronchial spasms and anaphylactic shock are possible.

In cases of irritation to the lungs, initial treatment with corticosteroid inhalants.

Monitor circulation, possible shock treatment.

Treat skin and mucous membrane with antihistamine and corticosteroid preparations.

If necessary oxygen respiration treatment.

Medical supervision for at least 48 hours.

5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:**

DO NOT fight fire when fire reaches explosives.

Flood area with water. If no water is available, carbon dioxide, dry chemical or earth may be used. If the fire reaches the cargo, withdraw and let fire burn.

- **For safety reasons unsuitable extinguishing agents:** None.

- **Special hazards arising from the substance or mixture**

Fire or projection hazard.

During heating or in case of fire poisonous gases are produced.

Product may explode if burned in confined space. Individual cartridges may explode. Mass explosion of many cartridges at once is unlikely.

- **Advice for firefighters**

- **Protective equipment:**

Wear self-contained respiratory protective device.

(Cont'd. on page 5)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 4)

Wear fully protective suit.

· **Additional information:**

Eliminate all ignition sources if safe to do so.

Cool endangered receptacles with water spray.

Evacuate area and fight fire from the upwind side.

Flammability Classification: (defined by 29 CFR 1910.1200) Explosive. Can explode under fire conditions.

Individual devices will randomly explode. Will not mass explode if multiple devices are involved. Burning material may produce toxic and irritating vapors. In unusual cases, shrapnel may be thrown from exploding devices under containment. See 2008 Emergency response Guidebook for further information.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures:**

Use respiratory protective device against the effects of fumes/dust/aerosol.

Wear protective equipment. Keep unprotected persons away.

Remove persons from danger area.

Ensure adequate ventilation.

Protect from heat.

Isolate area and prevent access.

· **Environmental precautions:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· **Methods and material for containment and cleaning up:**

Pick up mechanically.

Send for recovery or disposal in suitable receptacles.

Clean the affected area carefully; suitable cleaners are:

Warm water and cleansing agent

· **Reference to other sections:**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

· **Handling**

· **Precautions for safe handling:**

Use only outdoors or in a well-ventilated area.

Handle with care. Avoid jolting, friction and impact.

Avoid breathing dust.

· **Information about protection against explosions and fires:**

Protect from heat.

Keep respiratory protective device available.

Emergency cooling must be available in case of nearby fire.

(Cont'd. on page 6)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 5)

- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from flammable substances.
- **Further information about storage conditions:** Store in dry conditions.
- **Specific end use(s):** No relevant information available.

8 Exposure controls/personal protection

· Control parameters

· Components with limit values that require monitoring at the workplace:

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

PEL (USA)	Long-term value: 0.4 mg/m ³ , 0.05 ppm
REL (USA)	Ceiling limit value: 0.4 mg/m ³ , 0.05 ppm Skin
TLV (USA)	Ceiling limit value: 0.39 mg/m ³ , 0.05 ppm Skin
EL (Canada)	Ceiling limit value: 0.05 ppm Skin
EV (Canada)	Ceiling limit value: 0.4 mg/m ³ , 0.05 ppm Skin
LMPE (Mexico)	Ceiling limit value: 0.05 ppm A4, PIEL

55-63-0 glycerol trinitrate / nitroglycerin

PEL (USA)	Ceiling limit value: 2 mg/m ³ , 0.2 ppm Skin
REL (USA)	Short-term value: 0.1 mg/m ³ Skin
TLV (USA)	Long-term value: 0.46 mg/m ³ , 0.05 ppm Skin
EL (Canada)	Long-term value: 0.05 ppm Skin
EV (Canada)	Long-term value: 0.5 mg/m ³ , 0.05 ppm Skin
LMPE (Mexico)	Long-term value: 0.05 ppm PIEL

1309-48-4 magnesium oxide

PEL (USA)	Long-term value: 15* mg/m ³ fume; *total particulate
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(Cont'd. on page 7)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 6)

TLV (USA)	Long-term value: 10* mg/m ³ *as inhalable fraction
EL (Canada)	Short-term value: 10** mg/m ³ Long-term value: 10* 3** mg/m ³ *inhalable fume,**respirable dust and fume
EV (Canada)	Long-term value: 10 mg/m ³ inhalable
LMPE (Mexico)	Long-term value: 10* mg/m ³ A4, *fracción respirable

546-93-0 Magnesium carbonate

PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust, **respirable fraction
EV (Canada)	Long-term value: 10 mg/m ³ total dust
LMPE (Mexico)	Short-term value: 20 mg/m ³ Long-term value: 10 mg/m ³ (e)

122-39-4 diphenylamine

REL (USA)	Long-term value: 10 mg/m ³
TLV (USA)	Long-term value: 10 mg/m ³
EL (Canada)	Long-term value: 10 mg/m ³
EV (Canada)	Long-term value: 10 mg/m ³
LMPE (Mexico)	Long-term value: 10 mg/m ³ A4

8050-09-7 Rosin

TLV (USA)	DSEN, RSEN, L
EL (Canada)	S
LMPE (Mexico)	SEN, (L)

15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

EV (Canada)	Long-term value: 0.05 mg/m ³ as Pb, Skin (organic compounds)
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· Exposure controls
· Engineering measures Provide adequate ventilation.

· Personal protective equipment:
· General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.

Immediately remove all soiled and contaminated clothing.

Do not inhale dust / smoke / mist.

Avoid contact with the eyes and skin.

(Cont'd. on page 8)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 7)

- Keep away from foodstuffs, beverages and feed.
- Wash hands before breaks and at the end of work.
- **Engineering controls:** Provide adequate ventilation.
- **Breathing equipment:**



Respiratory protection required.

Wear positive pressure NIOSH or European EN149 vapor respirators when deploying product in large quantities.

- **Protection of hands:**



Protective gloves

Wear gloves when handling deployed rounds.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

- **Eye protection:**



Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

- **Body protection:** Protective work clothing
- **Limitation and supervision of exposure into the environment**
- No relevant information available.
- **Risk management measures**

Organizational measures should be in place for all activities involving this product.

9 Physical and chemical properties

· Information on basic physical and chemical properties

· Appearance:

Form:

Sealed metal cylinder

Color:

According to product specification

· Odor:

Odorless

· Odor threshold:

Not determined.

· pH-value:

Not applicable.

· Melting point/Melting range:

Not determined.

· Boiling point/Boiling range:

Not determined.

· Flash point:

Not applicable.

· Flammability (solid, gaseous):

Fire or projection hazard.

· Auto-ignition temperature:

Not determined.

· Decomposition temperature:

Not determined.

(Cont'd. on page 9)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 8)

- | | |
|---|------------------------------------|
| · Danger of explosion: | Heating may cause an explosion. |
| · Explosion limits | |
| Lower: | Not determined. |
| Upper: | Not determined. |
| · Vapor pressure: | Not applicable. |
| · Density: | Not determined. |
| · Relative density: | Not determined. |
| · Vapor density: | Not applicable. |
| · Evaporation rate: | Not applicable. |
| · Solubility in / Miscibility with Water: | Insoluble. |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity | |
| Dynamic: | Not applicable. |
| Kinematic: | Not applicable. |
| · Other information | No relevant information available. |

10 Stability and reactivity

- **Reactivity:** No relevant information available.
- **Chemical stability:**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions:**
Fire or projection hazard.
Toxic fumes may be released if heated above the decomposition point.
Contact with acids releases toxic gases.
Acts as an oxidizing agent on organic materials such as wood, paper and fats.
Reacts with strong alkali.
- **Conditions to avoid:**
Excessive heat.
Sources of ignition, open flame, incompatible materials.
- **Incompatible materials:** Oxidizers, strong bases, strong acids
- **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Nitrogen oxides
Sulfur oxides (SO_x)
Chlorine compounds

(Cont'd. on page 10)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 9)

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:

- LD/LC50 values that are relevant for classification:

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

Oral	LD50	178 mg/kg (rat)
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55-63-0 glycerol trinitrate / nitroglycerin

Oral	LD50	115 mg/kg (mouse)
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		105 mg/kg (rat)
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Dermal	LD50	29 mg/kg (rat)
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		280 mg/kg (rabbit)
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122-39-4 diphenylamine

Oral	LD50	1120 mg/kg (rat)
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15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

Oral	LD50	650 mg/kg (rat)
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- **Primary irritant effect:**
Effects based on exposure to dusts/mists/spray/vapours released during deployment. Unused product does not possess these effects.
- **On the skin:** Irritant to skin and mucous membranes.
- **On the eye:** Irritating effect.
- **Sensitization:** May cause sensitisation by inhalation and skin contact.
- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer):**

15245-44-0	lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate	2B
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- **NTP (National Toxicology Program):**

15245-44-0	lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate	R
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- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

- **Probable route(s) of exposure:**

Inhalation.

Skin contact.

Eye contact.

- **Acute effects (acute toxicity, irritation and corrosivity):**

Irritating to eyes, respiratory system and skin.

Toxic if swallowed or in contact with skin.

Fatal if inhaled.

- **Repeated dose toxicity:** Repeated exposures may result in skin and/or respiratory sensitivity.

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.

- **Carcinogenicity:** Based on available data, the classification criteria are not met.

- **Reproductive toxicity:** Based on available data, the classification criteria are not met.

- **STOT-single exposure:** May cause respiratory irritation.

(Cont'd. on page 11)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 10)

- **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity**

The product contains materials that are harmful to the environment.

2698-41-1 [(2-chlorophenyl)methylene]malononitrile

EC50	0.2-0.3 mg/kg (Oncorhynchus mykiss)
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- **Persistence and degradability** No relevant information available.
- **Bioaccumulative potential:** May be accumulated in organism
- **Mobility in soil:** No relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information**
- **General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Very toxic for aquatic organisms

Due to available data on eliminability/decomposition and bioaccumulation potential prolonged term damage of the environment can not be excluded.
- **Other adverse effects:** No relevant information available.

13 Disposal considerations

- **Waste treatment methods**

- **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system. After prior treatment product has to be disposed of in an incinerator for hazardous waste adhering to the regulations pertaining to the disposal of particularly hazardous waste.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

- **Uncleaned packagings**

- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**

- **DOT, ADR, IMDG, IATA**

UN0301

(Cont'd. on page 12)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 11)

· **UN proper shipping name**

· **DOT, ADR, IMDG, IATA**

AMMUNITION, TEAR-PRODUCING

· **Transport hazard class(es)**

· **DOT**

· **Class**

1.4G

· **Label**

1.4G, 6.1, 8

· **ADR**

· **Class**

1.4G

· **Label**

1.4G+6.1+8

· **IMDG**

· **Class**

1.4G/6.1/8

· **Label**

1.4G/6.1/8

· **IATA**

· **Class**

1.4G (6.1, 8)

· **Label**

1.4G (6.1, 8)

· **Packing group**

· **DOT**

II

· **Environmental hazards**

Product contains environmentally hazardous substances: [(2-chlorophenyl)methylene]malononitrile, diphenylamine

· **Marine pollutant:**

Yes

· **Special precautions for user**

Not applicable.

· **EMS Number:**

F-B,S-Z

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

(Cont'd. on page 13)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 12)

· Transport/Additional information:
· IATA


Cargo Aircraft Only.

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture
· United States (USA)
· SARA
· Section 302 (extremely hazardous substances):

None of the ingredients are listed.

· Section 304 (emergency release notification):

None of the ingredients are listed.

· Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

55-63-0 glycerol trinitrate / nitroglycerin

122-39-4 diphenylamine

· TSCA (Toxic Substances Control Act)

All ingredients are listed.

· Proposition 65 (California)
· Chemicals known to cause cancer:

15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

· Chemicals known to cause developmental toxicity:

Present in trace quantities.

15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

· Carcinogenic categories
· EPA (Environmental Protection Agency):

None of the ingredients are listed.

· IARC (International Agency for Research on Cancer):

15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate

2B

(Cont'd. on page 14)

Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date: 07/20/2016

Revision: 07/20/2016

Trade name: Muzzle Blast Cartridge, CS Powder

(Cont'd. of page 13)

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Date of preparation / last revision** 07/20/2016 / -

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

LDLo: Lowest Lethal Dose Observed

Expl. 1.1: Explosives – Division 1.1

Expl. 1.4: Explosives – Division 1.4

Unst. Expl.: Explosives – Unstable explosive

Flam. Liq. 2: Flammable liquids – Category 2

Acute Tox. 3: Acute toxicity – Category 3

Acute Tox. 1: Acute toxicity – Category 1

Acute Tox. 4: Acute toxicity – Category 4

Acute Tox. 2: Acute toxicity – Category 2

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Repr. 1A: Reproductive toxicity – Category 1A

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

· **Sources**

Website, European Chemicals Agency (echa.europa.eu)

Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)

Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)

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