Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

1 Identification

- Product identifier
  - Trade name: Muzzle Blast Cartridge, CS Powder
  - Product code: MP-4MB-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
    nli@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.

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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)
3 Composition/information on ingredients

- Chemical characterization: Mixtures

<table>
<thead>
<tr>
<th>Components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2698-41-1 [2-chlorophenyl)methylene]malononitrile</td>
<td>60-80%</td>
</tr>
<tr>
<td>- Acute Tox. 3, H301; Acute Tox. 2, H330</td>
<td></td>
</tr>
<tr>
<td>- Resp. Sens. 1, H334</td>
<td></td>
</tr>
<tr>
<td>- Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335</td>
<td></td>
</tr>
<tr>
<td>7757-79-1 potassium nitrate</td>
<td>10-20%</td>
</tr>
<tr>
<td>- Òx. Sol. 2', H272</td>
<td></td>
</tr>
<tr>
<td>1309-48-4 magnesium oxide</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>546-93-0 Magnesium carbonate</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>16291-98-6 charcoal</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>- Flàm. Sol. 1', H228</td>
<td></td>
</tr>
<tr>
<td>7704-34-9 sulfur</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>- Skin Irrit. 2', H315</td>
<td></td>
</tr>
</tbody>
</table>

- 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.

- Notable Trace Components (< 0.1% w/w)

<table>
<thead>
<tr>
<th>Components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15245-44-0 lead 2,4,6-trinitro-m-phenylene dioxide/ lead styphnate</td>
<td></td>
</tr>
<tr>
<td>- Unst. Expl., H200</td>
<td></td>
</tr>
<tr>
<td>- Repr. 1A, H360; STOT RE 2, H373</td>
<td></td>
</tr>
<tr>
<td>- Acute Tox. 4, H302; Acute Tox. 4, H332</td>
<td></td>
</tr>
</tbody>
</table>

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.
    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.
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- 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 cortical steroid inhalants.
  Treat skin and mucous membrane with antihistamine and corticoid 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.
  Wear fully protective suit.
- Additional information:
  Eliminate all ignition sources if safe to do so.
  Cool endangered receptacles with water spray.

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### 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.

- **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.

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- **Further information about storage conditions:** Store in dry conditions.
- **Specific end use(s):** No relevant information available.

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### 8 Exposure controls/personal protection

#### Control parameters

<table>
<thead>
<tr>
<th>Components with limit values that require monitoring at the workplace:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2698-41-1 [(2-chlorophenyl)methylene]malononitrile</strong></td>
</tr>
<tr>
<td>PEL (USA)</td>
</tr>
<tr>
<td>REL (USA)</td>
</tr>
<tr>
<td>TLV (USA)</td>
</tr>
<tr>
<td>EL (Canada)</td>
</tr>
<tr>
<td>EV (Canada)</td>
</tr>
<tr>
<td>LMPE (Mexico)</td>
</tr>
</tbody>
</table>

| **1309-48-4 magnesium oxide** |
| PEL (USA) | Long-term value: 15* mg/m³ |
| REL (USA) | Ceiling limit value: 10* mg/m³ |
| TLV (USA) | Long-term value: 10** mg/m³ |
| EL (Canada) | Short-term value: 10** mg/m³ |
| EV (Canada) | Long-term value: 10 mg/m³ |
| LMPE (Mexico) | Long-term value: 10* mg/m³ |

| **546-93-0 Magnesium carbonate** |
| PEL (USA) | Long-term value: 15* 5** mg/m³ |
| REL (USA) | Long-term value: 10* 5** mg/m³ |
| TLV (USA) | TLV withdrawn |
| EL (Canada) | Long-term value: 10* 3** mg/m³ |
| EV (Canada) | Long-term value: 10 mg/m³ |

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<table>
<thead>
<tr>
<th>LMPE (Mexico)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term value: 20 mg/m³</td>
</tr>
<tr>
<td>Long-term value: 10 mg/m³</td>
</tr>
<tr>
<td>(e)</td>
</tr>
</tbody>
</table>

- 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. 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

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## 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.
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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 (SOx)
Chlorine compounds

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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) |

  - 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

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

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

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- 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.

<table>
<thead>
<tr>
<th>2698-41-1 [(2-chlorophenyl)methylene]malononitrile</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC50</td>
</tr>
</tbody>
</table>

- **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
- **UN proper shipping name**
  - DOT, ADR, IMDG, IATA: AMMUNITION, TEAR-PRODUCING
Trade name: Muzzle Blast Cartridge, CS Powder

- Transport hazard class(es)
  - DOT
    - Class: 1.4
    - Label: 1.4G
  - ADR
    - Class: 1.4
    - Label: 1.4G
  - IMDG
    - Class: 1.4
    - Label: 1.4G
  - IATA
    - Class: 1.4
    - Label: 1.4G

- Packing group
  - DOT II

- Environmental hazards
  - Product contains environmentally hazardous substances: [(2-chlorophenyl)methylene]malononitrile

- Marine pollutant:
  - Yes

- Special precautions for user
  - EMS Number: Not applicable.

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.
**Trade name:** Muzzle Blast Cartridge, CS Powder

### 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):**
    - 7757-79-1 \( \text{potassium nitrate} \)
  
  - **TSCA (Toxic Substances Control Act)**
    - All ingredients are listed.
  
  - **Proposition 65 (California)**
    - **Chemicals known to cause cancer:**
      - 15245-44-0 \( \text{lead, 2,4,6-trinitro-m-phenylene dioxide/ lead stypnate} \)
    - **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 \( \text{lead, 2,4,6-trinitro-m-phenylene dioxide/ lead stypnate} \)

- **Carcinogenic categories**
  - None of the ingredients are listed.

- **EPA (Environmental Protection Agency):**
  - None of the ingredients are listed.

- **IARC (International Agency for Research on Cancer):**
  - **Chemicals known to cause cancer:**
    - 15245-44-0 \( \text{lead, 2,4,6-trinitro-m-phenylene dioxide/ lead stypnate} \) **2B**

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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. 1.4: Explosives – Division 1.4
  - Flam. Sol. 1: Flammable solids – Category 1
  - Ox. Sol. 2: Oxidizing solids – Category 2
  - Acute Tox. 3: Acute toxicity – Category 3
  - 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
  - STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

- **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)
  - Safety Data Sheets, Individual Manufacturers

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