1 Identification

- **Product identifier**
- **Trade name:** DX Cartridge Clean-Tec
- **Relevant identified uses of the substance or mixture and uses advised against**
  No further relevant information available.
- **Application of the substance / the mixture**
  Cartridges for technical purpose
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  Hilti, Inc.
  5400 South 122nd East Ave.
  US-Tulsa, OK 74146
  Phone: (800) 879-8000
  Fax: (800) 879-7000
  Español: (800) 879-5000
- **Information department:**
  df-hse@hilti.com
  see section 16
- **Emergency telephone number:**
  Chem-Trec
  Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada)
  Tel.: 703 527 3887 (Other countries)

2 Hazard(s) identification

- **Classification of the substance or mixture**
  The dismantling of the article is prohibited.
  This article contains hazardous substances or preparations not intended to be released under normal or reasonably foreseeable conditions of use.
  Expl. 1.4 H204 Fire or projection hazard.
- **Additional information:**
  Category of the pyrotechnic article: other pyrotechnic articles Cat. P1
  (BAM EC-Type-Examination Certificate No. 0589.PYR.3802/12 or 0589.PYR.3798/12 respectively)
- **Label elements**
  **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  ![GHS01](image)
- **Signal word** Warning
- **Hazard statements**
  H204 Fire or projection hazard.
- **Precautionary statements**
  P210 Keep away from heat. - No smoking.
  P250 Do not subject to grinding/shock/friction.
  P280 Wear eye protection / face protection.
- **Classification system**
- **NFPA ratings (scale 0-4)**
  ![NFPA Ratings](image)
  Health = 0
  Fire = 2
  Reactivity = 0
- **Other hazards**
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

(Contd. on page 2)
3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description:

  Mixture of the substances listed below with nonhazardous additions.
  max. net explosives weight each cartridge in mg:
  Caliber 6.8/11 (cal .27 short)  white: 130; brown: 140; green: 160; yellow: 180; red: 230; black: 260
  Caliber 6.8/18 (cal .27 long) green: 190; yellow: 220; blue: 300; red: 330; black: 410

- Dangerous components:
  Within the cartridges the explosive ingredients (gun powder and priming composition) are hermetically separated from the 
  environment. They will be only opened with effort and under destruction of the article.
  Propellant powder: Single base powder, containing glyceroltrinitrate
  Mass per cartridge: essentially dependent on the required power (100-400 mg)
  Priming composition: SINTOX (initiating explosive) Mass per cartridge: 20,9 mg in the mean.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Mass per cartridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>glycerol trinitrate</td>
<td>55-63-0 3-&lt;10%</td>
</tr>
<tr>
<td>diphenylamine</td>
<td>122-39-4 0-1%</td>
</tr>
</tbody>
</table>

- Additional information
  Exposed propellant powder outside a cartridge is harmful if swallowed and highly flammable; without tamping no 
  explosion risk.
  Packed safety cartridges don't represent a significant risk.
  In case of reaction no dangerous fragments or projectiles will be formed.
  Mechanical or thermal attempts to expose the primer composition lead to an immediate reaction of the dangerous 
  ingredients.
  For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

- Description of first aid measures
- General information First aid measures only required by release of ingredients or generation of decomposition products.
- After inhalation Take affected persons into fresh air and keep quiet.
- After skin contact Immediately wash with water and soap and rinse thoroughly.
- After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing Rinse out mouth and then drink plenty of water.
  Do not induce vomiting; immediately call for medical help.
- Information for doctor
- Most important symptoms and effects, both acute and delayed No further relevant information available.
- Indication of any immediate medical attention and special treatment needed
  If necessary oxygen respiration treatment
  If blue colouring appears (lips, ear-lobes, finger-nails), give oxygen treatment as quickly as possible.
  In cases of irritation to the lungs, initial treatment with Dexamethason metered aerosol.

5 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents
  CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- For safety reasons unsuitable extinguishing agents Not applicable
- Special hazards arising from the substance or mixture No further relevant information available.
- Advice for firefighters
- Protective equipment:
  Wear self-contained respirator protective device.
  EN 12941 / EN 12942

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Keep away from ignition sources
  Remove persons from danger area.
  Ensure adequate ventilation
Trade name: DX Cartridge Clean-Tec

· *Environmental precautions:* Do not allow to enter sewers/surface or ground water.

· *Methods and material for containment and cleaning up:*
  Pick up scattered propellant cartridges only by hand.
  Exposed ingredients must be swept up carefully and stabilised in a water container which has been labelled according the regulations. Wipe down the contaminated area with water.

· *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**
    No special precautions are necessary if used correctly.
    Ensure good ventilation/exhaustion at the workplace.

  · **Information about protection against explosions and fires:**
    Protect against electrostatic charges.
    Keep ignition sources away - Do not smoke.
    Prevent impact and friction.

· **Conditions for safe storage, including any incompatibilities**

  · **Storage**
    · **Requirements to be met by storerooms and receptacles:**
      Keep in a cool, dry and dark place; 41 °F / 5 °C to 77 °F / 25 °C.
    · **Information about storage in one common storage facility:**
      Store away from flammable substances.
      Store away from foodstuffs.

  · **Further information about storage conditions:**
    Store under lock and key and with access restricted to technical experts or their assistants only.
    Protect from humidity and water.

· **Storage class**
  No further relevant information available.

### 8 Exposure controls/personal protection

· **Control parameters**

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

    | CAS No. Designation of material | % | Type | Value Unit |
    |---------------------------------|---|------|------------|
    | 55-63-0 glycerol trinitrate      |   |      |            |
    | PEL Short-term value: C 2 mg/m³, C 0.2 ppm |
    | REL Short-term value: 0.1 mg/m³ |
    | TLV Long-term value: 0.46 mg/m³, 0.05 ppm |
    | 122-39-4 diphenylamine          |   |      |            |
    | REL Long-term value: 10 mg/m³   |
    | TLV Long-term value: 10 mg/m³   |

· **Additional Occupational Exposure Limit Values for possible hazards during processing:**

  · **630-08-0 carbon monoxide**
    | CAS No. Designation of material | % | Type | Value Unit |
    |---------------------------------|---|------|------------|
    | PEL Long-term value: 55 mg/m³, 50 ppm |
    | REL Short-term value: C 229 mg/m³, C 200 ppm |
    | Long-term value: 40 mg/m³, 35 ppm |
    | TLV Long-term value: 29 mg/m³, 25 ppm |
    | BEI                             |
  · **124-38-9 carbon dioxide**
    | CAS No. Designation of material | % | Type | Value Unit |
    |---------------------------------|---|------|------------|
    | PEL Long-term value: 9000 mg/m³, 5000 ppm |
0.1.3

REL Short-term value: 54.000 mg/m³, 30.000 ppm
Long-term value: 9000 mg/m³, 5000 ppm

TLV Short-term value: 54.000 mg/m³, 30.000 ppm
Long-term value: 9000 mg/m³, 5000 ppm

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment
- General protective and hygienic measures
  The usual precautionary measures for handling chemicals should be followed.
  Do not eat, drink, smoke or sniff while working.
  Wash hands before breaks and at the end of work.
- Breathing equipment: Not required.
- Protection of hands: Not required.
- Material of gloves Not applicable
- Penetration time of glove material Not required.
- Eye protection:

Safety goggles
EN 166 / EN 170

- Body protection:

When using setting tools, sufficient ear protection must be worn.

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Solid.
  - Color: According to product specification
- Odor: Not determined
- Odour threshold: Not applicable
- pH-value: Not applicable.
- Change in condition
  - Melting point/Melting range: Not determined.
  - Boiling point/Boiling range: Undetermined
- Flash point: Not applicable
- Flammability (solid, gaseous): Not determined.
- Ignition temperature: Not determined
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Not determined.
- Explosion limits:
  - Lower: Not determined.
  - Upper: Not determined.
- Vapor pressure: Not applicable.
- Density: Not determined
- Relative density: Not determined.
- Vapour density: Not applicable.
- Evaporation rate: Not applicable.
4.1.3 · Solubility in / Miscibility with
   Water: Not applicable
   · Partition coefficient (n-octanol/water): Not applicable

   · Viscosity:
     dynamic: Not applicable.
     kinematic: Not applicable.
   · Other information
     No further relevant information available.

10 Stability and reactivity

   · Reactivity
   · Chemical stability
   · Thermal decomposition / conditions to be avoided:
     Temperatures > 40 °C
     No decomposition if used and stored according to specifications.
   · Possibility of hazardous reactions
     No dangerous reactions known
   · Conditions to avoid
     No further relevant information available.
   · Incompatible materials:
     acids
     alkalis (caustic solutions).
   · Hazardous decomposition products:
     Carbon monoxide and carbon dioxide
     Nitrogen oxides (NOx)

11 Toxicological information

   · Information on toxicological effects
     No harmful effects are to be expected if used properly.
     The contained ingredients can be harmful, but they are hermetically enclosed in the article and can not be released.
     The dismantling of the article is prohibited.
     · Acute toxicity:
     · Primary irritant effect:
       · on the skin: No irritant effect.
       · on the eye: No irritating effect.
     · Sensitization: No sensitizing effects known.
   · Additional toxicological information:
   · Carcinogenic categories
     · NTP (National Toxicology Program)
       None of the ingredients is listed.

12 Ecological information

   · Toxicity
     No harmful effects are to be expected if used properly.
     The contained ingredients can be harmful, but they are hermetically enclosed in the article and can not be released.
     The dismantling of the article is prohibited.
     · Aquatic toxicity: No further relevant information available.
     · Persistence and degradability: No further relevant information available.
     · Behavior in environmental systems:
     · Bioaccumulative potential: No further relevant information available.
     · Mobility in soil: No further relevant information available.
     · Additional ecological information:
       · General notes:
         Generally not hazardous for water.
         Do not allow product to reach ground water, water course or sewage system.
       · Results of PBT and vPvB assessment
         · PBT: Not applicable.
         · vPvB: Not applicable.

(Contd. on page 6)
13 Disposal Considerations

- **Waste Treatment Methods**
  - **Recommendation**
  
  For disposal, local regulations issued by the authorities must be observed.

- **European Waste Catalogue**:
  - 16 04 01 waste ammunition

- **Uncleaned Packagings**
  - **Recommendation**: Non-contaminated packagings can be used for recycling.

14 Transport Information

- **UN Number**
  - UN, ADR, IMDG, IATA: UN0323

- **UN Proper Shipping Name**
  - DOT, IMDG, IATA: Cartridge, power device
  - ADR: UN0323 cartridge, power device

- **Transport Hazard Class(es)**
  - **ADR, IATA**
    - **Class**: 1 Explosive substances and articles
    - **Label**: 1.4

- **IMDG**
  - **Class**: 1 Explosive substances and articles

- **Packing Group**
  - **ADR, IMDG, IATA**: Void

- **Environmental Hazards**
  - Marine pollutant: No

- **Special Precautions for User**
  - **Warning**: Explosive substances and articles
  - **EMS Number**: F-B,S-X

- **Transport in Bulk According to Annex II of MARPOL73/78 and the IBC Code**
  - Not applicable.

- **UN "Model Regulation"**
  - UN0323, cartridge, power device, 1.4S

15 Regulatory Information

- **Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture**
  - **Section 355 (Extremely Hazardous Substances)**:
    - None of the ingredients is listed.
  
  - **Section 313 (Specific Toxic Chemical Listings)**:
    - 55-63-0 glycerol trinitrate
    - 122-39-4 diphenylamine

  - **TSCA (Toxic Substances Control Act)**:
    - All ingredients are listed.
### 4.1.3

#### Proposition 65:

- **Chemicals known to cause cancer**: None of the ingredients are listed.

#### Cancerogenity categories

- **EPA (Environmental Protection Agency)**: None of the ingredients is listed.
- **TLV (Threshold Limit Value established by ACGIH)**:
  - 122-39-4 diphenylamine
  - A4
- **MAK (German Maximum Workplace Concentration)**:
  - 55-63-0 glycerol trinitrate
  - 3B

#### National regulations

- **Information about limitation of use**: Employment restrictions concerning young persons must be observed.
- **Chemical safety assessment**: not required.

## 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.

- **Department issuing SDS**: Hilti Entwicklungsgesellschaft mbH
  - Hiltistrasse 6
  - D-86916 Kaufering
  - Tel.: +49 8191 906310
  - Fax: +49 8191 90176310
  - df-hse@hilti.com
- **Contact**: Mechthild Krauter
- **Date of preparation / last revision**: 05/18/2015 / 2
- **Abbreviations and acronyms**:
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (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
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - Expl. 1.4: Explosives, Division 1.4