MSDS Document

Product Cartridge, .50 Cal MK263 MOD O

1. Chemical Product and Company Identification

Product Cartridge, .50 Cal MK263 MOD O

Synonyms: Ammunition, Cartridge, .50 caliber

MSDS ID: MSDS02735

Manufacturer
Alliant Techsystems (ATK) Operations LLC.
Lake City Army Ammunition Plant
Intersection of 7 Hwy. & 78 Hwy.
Independence, MO 64051-1000

Phone Number
(816) 796-7488

Emergency Phone
CHEMTREC (800) 424-9300
CHEMTREC International (703) 527-3887

Revision Date 11/8/2012

Health: 3
Fire: 2
Reactivity: 3
Specific: Explosive

2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Weight %</th>
<th>ACGIH TLV</th>
<th>PEL</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brass - Copper-Zinc Alloys</td>
<td></td>
<td>46-49%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel Core</td>
<td></td>
<td>27-28%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>14-15%</td>
<td>1 mg/m3</td>
<td>D/M</td>
<td>1 mg/m3 D/M</td>
</tr>
<tr>
<td>Propellant Powder - mixture (see below)</td>
<td></td>
<td>10-15%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,3-Propanetriol, trinitrate, Nitroglycerin</td>
<td>55-63-0</td>
<td>0-42%</td>
<td>0.05 ppm</td>
<td>0.2 ppm</td>
<td></td>
</tr>
<tr>
<td>Polyester adipate</td>
<td>Trade Secret</td>
<td>0-10%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Urea, N,N'-diethyl-N,N'-diphenyl-, diethylidiphenylurea  85-98-3  0-10%
Dibutyl phthalate  84-74-21  0-10%
Primer (Mixture)  0.1%

3. Hazard Identification

Completed ammunition (cartridges) do not present an exposure hazard in their current form. Firing or initiation of ammunition may create additional exposure. This product is not intended for consumption.

4. First Aid Information

Eye
Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.

Skin
Wash with soap and water. Get medical attention if irritation develops or persists.

Inhalation
No specific treatment is necessary since this material is not likely to be hazardous by inhalation. Firing of ammunition may cause excessive dusts or fumes. If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.

Ingestion
Ammunition is not designed for consumption. Get medical attention immediately if ingested.

5. Fire Fighting Measures

Explosives Material
Extinguishing Media: Water

Special Fire Fighting Procedures: Use NIOSH/MSHA approved SCBA and full personal protective equipment. Use wide fog pattern nozzle to reduce any low velocity fragments. Use Water to cool ordinary combustibles.

Unusual Fire and Explosive Hazards: May ignite if heated to 205 F independent of air. Unconfined ignited cartridges can produce low velocity metallic fragments, which may cause injury.

Use Emergency Response Guidebook (ERG) - Guide 112-114

6. Accidental Release Measures

Spills
Clean up spills in accordance with local, state, & federal regulations. Spills that expose raw
explosives should only be cleaned up by personal trained in safe handling methods wearing proper PPE.

7. Handling and Storage

Storage
Keep away from heat, sparks, and flame.

Handling
Wash thoroughly after handling and before eating, drinking, smoking, or using the lavatory.

Handle ammunition with care.
Impact to the primer will cause an initiation.
Extreme heat or excessive friction may cause an initiation.
Some projectiles may be initiated by impact.

8. Exposure Controls and Personal Protection

Eye Protection
ANSI approved safety glasses are recommended when handling or firing ammunition

Skin Protection
When handling large amounts of ammunition cut resistant gloves are recommended.

Hearing Protection
Hearing protection is recommended when firing ammunition. For sound levels over OSHA's Permissible Exposure Limit (PEL) hearing protection is required.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.7</td>
</tr>
<tr>
<td>Color/ Appearance</td>
<td>Brass case with a copper projectile</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>pH</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling/Cond. Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>N/A</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>N/A</td>
</tr>
<tr>
<td>Percent Volatile</td>
<td>N/A</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>N/A</td>
</tr>
<tr>
<td>Viscosity</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>N/A</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

Stability & Reactivity
This product in its current form is stable.
Individual cartridges may ignite if primer is struck or if completed ammunition is exposed to extreme heat.
11. Toxicological Information

Toxicological
There is no Toxicological data available on completed ammunition.

12. Ecological Information

13. Disposal Considerations

Unused cartridges containing energetics must be disposed of in accordance with local, state, and federal regulations.

14. Transportation Information

Always follow all local, state and federal Department of Transportation regulations (49 CFR), for shipping, packaging or storage.

DOT Shipping Information
PROPER SHIPPING NAME: UN0339, Cartridges, Small Arms
Hazard Classification/Division: 1.4C
Packing Group II
Emergency Response Guide Book (ERG): Guide Number 114

PROPER SHIPPING NAME: UN0012, Cartridges, Small Arms
Hazard Classification/Division: 1.4S
Packing Group II
Emergency Response Guide Book (ERG): Guide Number 114

15. Regulatory Information

16. Other Information

The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of this product are beyond our control and maybe beyond our knowledge. For these and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.

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