CHAPTER 12

9MM CARTRIDGES
CARTRIDGE, 9MM, BALL

Type Classification:

Commercial.

Use:

Modified M3 Submachine Gun or commercial weapons. (The use in M9 Pistol is not authorized.) The cartridge is intended for use against personnel.

Description:

BALL Cartridge.

Tabulated Data:

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DODAC</td>
<td>1305-A360</td>
</tr>
<tr>
<td>UNO serial number</td>
<td>0012</td>
</tr>
<tr>
<td>UNO proper shipping name</td>
<td>Cartridges for weapons, inert projectile</td>
</tr>
<tr>
<td>Weight</td>
<td>182 gr</td>
</tr>
<tr>
<td>Length</td>
<td>1.169 in. (29.69 mm)</td>
</tr>
<tr>
<td>Tracer</td>
<td>NA</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
<tr>
<td>Explosive</td>
<td>NA</td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
<tr>
<td>Incendiary</td>
<td>NA</td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
</tbody>
</table>

Performance:

NOTE

Mid case pressures normally run 8000 to 10,000 psi higher than case mouth pressure.

Mid case pressure 38,500 psi (avg), 43,000 psi (max)

Velocity 1125 ± 90 fps, 15 ft from muzzle

Shipping and Storage Data:

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity-distance class/SCG</td>
<td>1.4S</td>
</tr>
<tr>
<td>Storage code</td>
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<tr>
<td>DOT shipping class</td>
<td>C</td>
</tr>
<tr>
<td>DOT designation</td>
<td>SMALL ARMS AMMUNITION</td>
</tr>
<tr>
<td>Drawing number</td>
<td>10542448</td>
</tr>
</tbody>
</table>

References:

SB 700-20
TM 9-1300-206
CARTRIDGE, 9MM, BALL, NATO, M882

**Type Classification:**
HQDA (DAMA-CSM), dated 15 April 85.

**Use:**
Pistol, 9mm, M9. The cartridge is intended for use against personnel.

**NOTE**
M882 ammunition can be used in the following nonstandard weapons:

<table>
<thead>
<tr>
<th>Pistol</th>
<th>Submachine Guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK P7 series (GE)</td>
<td>HK MP5 (GE)</td>
</tr>
<tr>
<td>Walther P38 (GE)</td>
<td>HK MP5SD (GE)</td>
</tr>
<tr>
<td>FN P35 (BE)</td>
<td>IMI Uzi (IS)</td>
</tr>
<tr>
<td></td>
<td>Baretta M12 (IT)</td>
</tr>
<tr>
<td></td>
<td>FFV M45/45B (SW)</td>
</tr>
<tr>
<td></td>
<td>Madsen M50 (DE)</td>
</tr>
<tr>
<td></td>
<td>CZ M23 (CZ)</td>
</tr>
<tr>
<td></td>
<td>Sten MK II (UK)</td>
</tr>
<tr>
<td></td>
<td>Sterling 12A3 (UK)</td>
</tr>
</tbody>
</table>

**Description:**
BALL Cartridge. The cartridge is identified by the plain bullet tip.

**Tabulated Data:**

<table>
<thead>
<tr>
<th>DODAC</th>
<th>1305-A363</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNO serial number</td>
<td>0012</td>
</tr>
<tr>
<td>UNO proper shipping</td>
<td>Cartridges for weapons, inert projectile</td>
</tr>
<tr>
<td>Weight</td>
<td>179 gr</td>
</tr>
<tr>
<td>Length</td>
<td>1.165 in.</td>
</tr>
<tr>
<td>(29.591 mm)</td>
<td></td>
</tr>
<tr>
<td>Tracer</td>
<td>NA</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
<tr>
<td>Explosive:</td>
<td>NA</td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
<tr>
<td>Incendiary:</td>
<td>NA</td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
<tr>
<td>Propellant:</td>
<td>NA</td>
</tr>
<tr>
<td>Type</td>
<td>HPC 26</td>
</tr>
<tr>
<td>Weight</td>
<td>6 gr</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>112 gr</td>
</tr>
</tbody>
</table>
Performance:

Case mouth pressure-------- 31,175 psi (avg), 36,250 psi (max)
Velocity ------------------- 1263 ± 5 fps, 15 ft from muzzle

Shipping and Storage Data:

Quantity-distance class/
SCG ---------------------- 1.4S

Storage code --------------- Class V
DOT shipping class --------- C
DOT designation ------------- SMALL ARMS AMMUNITION
Drawing number ------------ 9345211

References:

SB 700-20
TM 9-1300-206
CARTRIDGE, 9MM, HIGH PRESSURE TEST, M905

Type Classification:

HQDA (DAMA-CSM), dated 15 April 85.

Use:

Proof testing of M9 pistols. The cartridge is intended for use in proofing new pistols and test barrels to demonstrate safety prior to releasing weapons to the field.

Description:

HIGH PRESSURE TEST Cartridge. The cartridge is identified by a tinned cartridge case and high pressure test head stamp.

Tabulated Data:

DODAC----------------------- 1305-A364
UNO serial number---------- 0012
UNO proper shipping name------------------- Cartridges for weapons, inert projectile
Weight ---------------------- 179 gr
Length --------------------- 1.165 in. (29.591 mm)
Tracer ---------------------- NA
Primer ---------------------- Percussion

Fuze ---------------------- NA
Explosive:
  Type --------------------- NA
  Weight ------------------- NA
Incendiary:
  Type --------------------- NA
  Weight ------------------- NA
Propellant:
  Type --------------------- WC 370
  Weight ------------------- 7.5 gr

Performance:

Chamber pressure -------- 50,000 psi
Velocity ---------------- NA

Shipping and Storage Data:

Quantity-distance class/
  SCG ---------------------- 1.4C
Storage code ---------------- Class V
DOT shipping class -------- C
DOT designation ---------- SMALL ARMS AMMUNITION
Drawing number ---------- 9378265

References:

SB 700-20
TM 9-1300-206
CHAPTER 13

14.5MM CARTRIDGES
**Type Classification:**

STD - AMCTC 138.

**Use:**

Artillery Trainer, M31.

**Description:**

TRAINER-SPOTTER Cartridge. The cartridge has a chemical-filled (smoke composition) projectile. It is identified by the markings on the cartridge case and a yellow projectile tip. The cartridge has no fuze and it uses a time delay element to provide an air burst.

**Function:**

When the cartridge is fired, the heat of the propellant gases ignites the delay element. The delay element burns 3 seconds and, in turn, ignites the smoke composition. The heat and pressure produced by the burning filler rupture the plastic closing disc at the projectile base and a visible puff of smoke is emitted.

**Tabulated Data:**

<table>
<thead>
<tr>
<th>DODAC</th>
<th>1305-A365</th>
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</thead>
<tbody>
<tr>
<td>UNO serial number</td>
<td>0012</td>
</tr>
<tr>
<td>UNO proper shipping name</td>
<td>Cartridges for weapons, inert projectile</td>
</tr>
</tbody>
</table>

**Weight**

1065 gr

**Length**

2.55 in. (64.9 mm)

**Tracer**

NA

**Primer**

Percussion

**Fuze**

Powder train delay

**Explosive:**

- **Type**: NA
- **Weight**: NA

**Incendiary:**

- **Type**: NA
- **Weight**: NA

**Propellant:**

- **Type**: Hi Skor 700X
- **Weight**: 3.5 gr

**Performance:**

- **Chamber pressure**: NA
- **Velocity**: 100 mps, 4 m from muzzle; 328 fps, 15 ft from muzzle

**Shipping and Storage Data:**

- **Quantity-distance class**: 1.4S
- **Storage code**: Class V
- **DOT shipping class**: C
- **DOT designation**: SMALL ARMS AMMUNITION
- **Drawing number**: 9098295

**References:**

- SB 700-20
- TM 9-1300-206
**Type Classification:**

STD - AMCTC 138.

**Use:**

Artillery Trainer, M31.

**Description:**

TRAINER-SPOTTER Cartridge. The cartridge has a chemical-filled (smoke composition) projectile. It is identified by the markings on the cartridge case and a yellow projectile tip. The cartridge has no fuze and it uses a time delay element to provide an air burst.

**Function:**

When the cartridge is fired, the heat of the propellant gases ignites the delay element. The delay element burns 6 seconds and, in turn, ignites the smoke composition. The heat and pressure produced by the burning filler rupture the plastic closing disc at the projectile base and a visible puff of smoke is emitted.

**Tabulated Data:**

- **DODAC:** 1305-A366
- **UNO serial number:** 0012
- **UNO proper shipping name:** Cartridges for weapons, inert projectile

**Weight:** 1065 gr
**Length:** 2.55 in. (64.9 mm)
**Tracer:** NA
**Primer:** Percussion
**Fuze:** Powder train delay
**Explosive:**
  - **Type:** NA
  - **Weight:** NA
**Incendiary:**
  - **Type:** NA
  - **Weight:** NA
**Propellant:**
  - **Type:** Hi Skor 700X
  - **Weight:** 3.5 gr

**Performance:**

- **Chamber pressure:** NA
- **Velocity:** 100 mps, 4 m from muzzle; 328 fps, 15 ft from muzzle

**Shipping and Storage Data:**

- **Quantity-distance class/SCG:** 1.4S
- **Storage code:** Class V
- **DOT shipping class:** C
- **DOT designation:** SMALL ARMS AMMUNITION
- **Drawing number:** 9098297

**References:**

- SB 700-20
- TM 9-1300-206
CARTRIDGE, 14.5MM, TRAINER-SPOTTER, M183Al

**Type Classification:**

STD - AMCTC 138.

**Use:**

Artillery Trainer, M31.

**Description:**

TRAINER-SPOTTER Cartridge. The cartridge consists of a cartridge case, a chemical-filled (smoke composition) projectile, and a fuze with a small explosive charge to provide a visible and audible verification at point of impact. The cartridge is identified by the markings on the cartridge case and a yellow projectile tip.

**Function:**

The projectile impacts with the target. The point detonating fuze functions and an explosion charge within the fuze ignites the smoke composition and ejects it out the base of the projectile.

**Tabulated Data:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DODAC</td>
<td>1305-A367</td>
</tr>
<tr>
<td>UNO serial number</td>
<td>0012</td>
</tr>
<tr>
<td>UNO proper shipping name</td>
<td>Cartridges for weapons, inert projectile</td>
</tr>
<tr>
<td>Weight</td>
<td>1065 gr</td>
</tr>
</tbody>
</table>

**Performance:**

Length: 2.55 in. (64.9 mm)
Tracer: NA
Primer: Percussion
Fuze: PD
Explosive:
  - Type: NA
  - Weight: NA
Incendiary:
  - Type: NA
  - Weight: NA
Propellant:
  - Type: Hi Skor 700X
  - Weight: 3.5 gr

**Shipping and Storage Data:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Chamber pressure</td>
<td>NA</td>
</tr>
<tr>
<td>Velocity:</td>
<td></td>
</tr>
<tr>
<td>100 mps, 4 m from muzzle</td>
<td>328 fps,</td>
</tr>
<tr>
<td>15 ft from muzzle</td>
<td></td>
</tr>
</tbody>
</table>

| Quantity-distance class/SCG | 1.4S |
| Storage code                | Class V |
| DOT shipping class          | C |
| DOT designation             | SMALL ARMS AMMUNITION |
| Drawing number              | 9098293 |

**References:**

SB 700-20
TM 9-1300-206
CHAPTER 14

20MM CARTRIDGES
CARTRIDGE, DUMMY, 20MM, M51A2

Type Classification:
STD - AMCTC 6900.

Use:
Guns, 20mm, M39, M61, M139, M168, M195 and M197. The cartridge is a completely inert assembly used for filling the conveyor system during shipment or storage and for nonfiring system checkout.

Description:
DUMMY Cartridge.

Tabulated Data:

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<th>DODAC</th>
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</thead>
<tbody>
<tr>
<td>Weight</td>
<td>3850 gr</td>
</tr>
<tr>
<td>Length</td>
<td>6.615 in. (168 mm)</td>
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<tr>
<td>Tracer</td>
<td>NA</td>
</tr>
<tr>
<td>Primer</td>
<td>NA</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
<tr>
<td>Explosive:</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
</tbody>
</table>

Incendiary:
Type: NA
Weight: NA

Propellant:
Type: NA
Weight: NA

Performance:
Chamber pressure: NA
Velocity: NA

Shipping and Storage Data:
Quantity-distance class/SCG: NA
Storage code: NA
DOT shipping class: NA
DOT designation: NONEXPLOSIVE AMMUNITION
Drawing number: 11075766

References:
SB 700-20
TM 9-1005-286-10
TM 9-1300-206
CARTRIDGE, 20MM, ARMOR PIERCING INCENDIARY-TRACER, M52E1

Type Classification:

STD - OTCM 37404.

Use:

Guns, 20mm, M39, M61 and M195. The cartridge is used against moderately armed targets and when incendiary effect is needed.

Description:

ARMOR PIERCING INCENDIARY-TRACER Cartridge. The armor piercing shot is the main part of the projectile. The ballistic cap (ogive) contains an incendiary composition. The cartridge is identified by a projectile painted black with red markings.

Function:

The nose/ogive of the projectile impacts with the target and ruptures, and the incendiary composition ignites upon exposure to the air.

Tabulated Data:

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<tbody>
<tr>
<td>Weight</td>
<td>3900 gr</td>
</tr>
<tr>
<td>Length</td>
<td>6.575 in. (167 mm)</td>
</tr>
<tr>
<td>Tracer</td>
<td>R284</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric, M52A3B1</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
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</table>

Explosive:

<table>
<thead>
<tr>
<th>Type</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>65 gr</td>
</tr>
</tbody>
</table>

Incendiary:

<table>
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<tr>
<th>Type</th>
<th>1280</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>65 gr</td>
</tr>
</tbody>
</table>

Propellant:

<table>
<thead>
<tr>
<th>Type</th>
<th>WC 870 or WC 872</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>MBR (585-805)</td>
</tr>
</tbody>
</table>

Performance:

<table>
<thead>
<tr>
<th>Chamber pressure</th>
<th>60,500 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity</td>
<td>3380 fps, 78 ft from muzzle</td>
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Shipping and Storage Data:

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<th>Quantity-distance class/SCG</th>
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<tr>
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<td>Class V</td>
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<tr>
<td>DOT shipping class</td>
<td>A</td>
</tr>
<tr>
<td>DOT designation</td>
<td>AMMUNITION FOR SMALL ARMS WITH INCENDIARY PROJECTILES</td>
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</table>

Drawing number

| 7259218 |

References:

<table>
<thead>
<tr>
<th>SB 700-20</th>
</tr>
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<tbody>
<tr>
<td>TM 9-1300-206</td>
</tr>
</tbody>
</table>
CARTRIDGE, 20MM, ARMOR PIERCING INCENDIARY, M53

Type Classification:

STD - OTCM 36841.

Use:

Guns, 20mm, M39, M61 and M168. The cartridge is used against armored targets, and functions with a combined incendiary and penetrating effect.

Description:

ARMOR PIERCING INCENDIARY Cartridge. The body of the projectile is a solid shot made from bar alloy steel. The nose of the projectile is made from aluminum alloy and is charged with three increments of incendiary composition. The projectile is painted black with red band and red markings.

Tabulated Data:

<table>
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<tr>
<th>DODAC</th>
<th>1305-A798</th>
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<tbody>
<tr>
<td>Weight</td>
<td>3980 gr</td>
</tr>
<tr>
<td>Length</td>
<td>6.575 in. (167 mm)</td>
</tr>
<tr>
<td>Tracer</td>
<td>NA</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric, M52A3B</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
<tr>
<td>Explosive:</td>
<td>NA</td>
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Incendiary:

<table>
<thead>
<tr>
<th>Type</th>
<th>No. 23 or No. 136 and No. 68</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>65 gr</td>
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</table>

Propellant:

<table>
<thead>
<tr>
<th>Type</th>
<th>WC 870 or WC 872</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>MBR (585-605 gr)</td>
</tr>
</tbody>
</table>

Performance:

<table>
<thead>
<tr>
<th>Chamber pressure</th>
<th>60,500 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity</td>
<td>3380 fps, 50 ft from muzzle</td>
</tr>
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Shipping and Storage Data:

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<tr>
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<td>DOT shipping class</td>
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<tr>
<td>DOT designation</td>
<td>AMMUNITION FOR SMALL ARMS WITH INCENDIARY PROJECTILES</td>
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| Drawing number             | 7258802               |

References:

<table>
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<tr>
<th>SB 700-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM 9-1300-206</td>
</tr>
</tbody>
</table>
CARTRIDGE, 20MM, BALL, HIGH PRESSURE TEST, M54A1

Type Classification:

STD - AMCTC 6899.

Use:

Guns, Automatic, 20mm, M39 and M61 chambered for the M103 case configuration. The cartridge is used for proof testing of 20mm weapons and barrels during manufacture and repair.

Description:

BALL Cartridge. The cartridge is a solid steel projectile, under cut behind the ogive to control projectile weight, for developing high chamber pressure. The cartridge is identified by a stannic-stained (silvered) cartridge case.

Tabulated Data:

<table>
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<th>Description</th>
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<td>0339</td>
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<td>UNO proper shipping name</td>
<td>Cartridges for weapons, inert projectiles</td>
</tr>
<tr>
<td>Weight</td>
<td>4392 gr</td>
</tr>
<tr>
<td>Length</td>
<td>6.615 in. (168 mm)</td>
</tr>
<tr>
<td>Tracer</td>
<td>NA</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric, M52A3B1</td>
</tr>
<tr>
<td>Fuze</td>
<td>NA</td>
</tr>
<tr>
<td>Explosive:</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
<tr>
<td>Incendiary:</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>NA</td>
</tr>
<tr>
<td>Weight</td>
<td>NA</td>
</tr>
<tr>
<td>Propellant:</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>WC 870 or WC 872</td>
</tr>
<tr>
<td>Weight</td>
<td>MBR</td>
</tr>
<tr>
<td>Chamber pressure</td>
<td>62,500 to 72,500 psi (copper)</td>
</tr>
<tr>
<td>Velocity</td>
<td>NA</td>
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<tr>
<td>Explosive hazard class</td>
<td>1</td>
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<td>Quantity-distance class/SCG</td>
<td>1.4C</td>
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<td>Storage code</td>
<td>Class V</td>
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<td>DOT designation</td>
<td>SMALL ARMS AMMUNITION</td>
</tr>
<tr>
<td>Drawing number</td>
<td>7258858</td>
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</table>

References:

SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, TARGET PRACTICE, M55A2

Type Classification:

STD - AMCTC 7741.

Use:

Guns, 20mm, M39, M61 and M68. The cartridge is a training round intended as a substitute for a service round to be used in target practice.

Description:

TARGET PRACTICE Cartridge. The one piece projectile cavity is hollow. The nose (ogive) made of aluminum or steel is swaged to the projectile body. The projectile is painted blue with markings in black. It consists of a solid projectile without a fuze.

Function:

The projectile is inert, therefore no specific function takes place upon impact except penetration of the target.

Tabulated Data:

<table>
<thead>
<tr>
<th>DODAC</th>
<th>1305-A897</th>
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<tbody>
<tr>
<td>UNO serial number</td>
<td>0339</td>
</tr>
<tr>
<td>UNO proper shipping</td>
<td>Cartridges for weapons, inert projectiles</td>
</tr>
<tr>
<td>Weight</td>
<td>3935 gr</td>
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</table>

Length -------------- 6.615 in. (168 mm)
Tracer -------------- NA
Primer -------------- Electric, M52A3B1
Fuze -------------- NA
Explosive:
  Type -------------- NA
  Weight -------------- NA
Incendiary:
  Type -------------- NA
  Weight -------------- NA
Propellant:
  Type -------------- WC 870 or WC 872
  Weight -------------- MBR (585 or 605 gr)

Performance:

Chamber pressure ----------- 60,500 psi
Velocity -------------- 3380 fps, 78 ft from muzzle

Shipping and Storage Data:

Quantity-distance class:
  SCG -------------- 1.4C
Storage code -------------- Class V
DOT shipping class ------- C
DOT designation ------------ SMALL ARMS AMMUNITION
Drawing number ------------ 7258817

References:

SB 700-20
TM 9-1005-286-10
TM 9-1300-206
CARTRIDGE, 20MM, HIGH EXPLOSIVE INCENDIARY, M56A3/M56A4

Type Classification:


Use:

Guns, 20mm, M39, M61, M168 and M195. The cartridge is for use against ground targets, including lightly armored vehicles, functioning with both explosive and incendiary effect. The projectile consists of a high explosive incendiary (HEI) charge and is assembled with the M505A3 fuze.

Description:

HIGH EXPLOSIVE INCENDIARY Cartridge. The projectile is thin-walled steel. A base plate is attached to the projectile to prevent ignition of the incendiary mixture by the propellant gases. A point-detonating (PD) fuze is screwed into the nose of the projectile.

Function:

The M505A3 fuze is a point-detonating, single-action fuze intended to function upon impact with the target.

Difference Between Models:

The models differ in the method of loading the projectiles. The M56A3 has the HE mix and the incendiary mix combined in one pellet. The M56A4 has the incendiary pellet inserted into the projectile, then the HE mix pellet is added. This improves fire start capability.

Tabulated Data:

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<td>Propellant: Weight</td>
<td>MBR (585 or 605 gr)</td>
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Performance:
Chamber pressure ------------ 60,500 psi
Velocity --------------------------- ~~~Of~, 78 ft from muzzle

Shipping and Storage Data:
Quantity-distance class/
   SCG --------------------------- 1.2E (04)
Storage code --------------------------- Class V
DOT shipping class --------------------------- A

DOT designation -------------------------- AMMUNITION
FOR SMALL ARMS WITH EXPLOSIVE PROJECTILES

Drawing number -------------------------- 7259023 (M56A3);
                                        11075861 (M56A4)

References:
DARCOM 700-3-2
SB 700-20
TM 9-1005-286-10
TM 9-1300-206
CARTRIDGE, 20MM, ARMOR PIERCING-TRACER, M95

Type Classification:
CON - OTCM 36841.

Use:
Guns, 20mm, M3 and M24A1.

Description:
ARMOR PIERCING-TRACER Cartridge. The projectile is a solid shot type, made from bar or forged steel. A steel windshield is crimped to the forward part of the projectile body. The base of the projectile contains a red tracer composition.

Function:
When the primer is initiated, the propellant ignites. Ignition of the propellant ignites the tracer composition in the base of the projectile. The tracer burns the first 2.25 seconds of projectile flight, or an approximate range of 1,400 yards.

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<tr>
<td>Velocity</td>
<td>2680 fps, 78 ft from muzzle</td>
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Shipping and Storage Data:

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<td>DOT designation</td>
<td>75-1-177</td>
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<td>75-1-177</td>
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References:
SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, INCENDIARY, M96

Type Classification:
CON - OTCM 36841.

Use:
Guns, 20mm, M3 and M24A1.

Description:
INCENDIARY Cartridge. The body of the projectile is made from cold dracon steel. The projectile nose and body are filled with incendiary composition.

Function:
Impact with the target by the projectile produces compression of the heat and friction sensitive elements in the incendiary mixture causing ignition of the mixture.

Tabulated Data:
DODAC.................. 1305-A776
UNO serial number ........ 0009

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<th>Primer</th>
<th>Fuze</th>
<th>Explosive: Type</th>
<th>Explosive: Weight</th>
<th>Incendiary: Type</th>
<th>Incendiary: Weight</th>
<th>Propellant: Type</th>
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<td>1 136</td>
<td>3.92 oz</td>
<td>75-1-178A</td>
<td>470 gr</td>
<td></td>
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Performance:
Chamber pressure .......... 51,000 psi
Velocity ................ 2680 fps, 78 ft from muzzle

Shipping and Storage Data:
Quantity-distance class/ SCG ............... 1.2G
Storage code ............. Class V
DOT shipping class ........ A
DOT designation ---------------- AMMUNITION FOR SMALL ARMS WITH INCENDIARY PROJECTILES

Drawing number ---------------- 75-1-178

References:
SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, HIGH EXPLOSIVE INCENDIARY, M97A2

Use:
Gun, 20mm, M24A1.

Description:

HIGH EXPLOSIVE INCENDIARY Cartridge. The projectile has a hollow body filled with an incendiary composition and a high explosive (called RDX). The base of the projectile has a base cover and the forward end has a point-detonating (PD) fuze.

Function:

When the primer is initiated, the propellant ignites. Ignition of the propellant provides hot gases to propel the projectile from the weapon. Upon impact, the point detonating fuze functions, initiating the high explosive filler and dispersing the incendiary composition.

Tabulated Data:

- **DODAC**: 1305-A845
- **Weight**: 4000 gr
- **Length**: 7.227 in. (183.6 mm)
- **Tracer**: NA
- **Primer**: Electric, M52A3B1
- **Fuze**: PD, M505A3
- **Explosive**: H761
- **Incendiary**: NA
- **Propellant**: WC 875 or IMR 7013
- **Chamber pressure**: 51,000 psi
- **Velocity**: 2680 fps, 78 ft from muzzle
- **Quantity-distance class/SCG**: 1.2E
- **Storage code**: Class V
- **DOT shipping class**: A
- **DOT designation**: AMMUNITION FOR SMALL ARMS WITH EXPLOSIVE PROJECTILE
- **Drawing number**: 7259063

References:

- SB 700-20
- TM 9-1300-206
CARTRIDGE, 20MM, TARGET PRACTICE, M99A1

Type Classification:

STD - OTCM 37403.

Use:

Gun, 20mm, M24A1. The cartridge is used for training, gun testing, and gun system function tests.

Description:

TARGET PRACTICE Cartridge. The cartridge contains a hollow, inert projectile which has a cavity to control the weight. The aluminum nose is swaged to the body.

Function:

The projectile is inert, therefore no specific function takes place except target penetration.

Tabulated Data:

DODAC: 1305-A847
Weight: 4000 gr
Length: 7.23 in. (183.6 mm)
Tracer: NA
Primer: Electric, M52A3B1
Fuze: NA

Explosive:
Type: NA
Weight: NA

Incendiary:
Type: NA
Weight: NA

Propellant:
Type: IMR 7013 or WC 875
Weight: 500 gr

Performance:

Chamber pressure: 51,000 psi
Velocity: 2680 fps, 78 ft from muzzle

Shipping and Storage Data:

Quantity-distance class/
SCG: 1.4C
Storage code: Class V
DOT shipping class: C
DOT designation: SMALL ARMS AMMUNITION
Drawing number: 7258849

References:

SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, TARGET PRACTICE, M204

Type Classification:

STD - AMCTC 4762.

Use:

Guns, 20mm, M3 and M24A1. The cartridge with inert projectile is used in training, gun testing, and gun system function testing.

Description:

TARGET PRACTICE Cartridge. The cartridge has a blue painted projectile. The body has a cavity to control the weight and the aluminum nose is swaged to the body.

Function:

No specific function takes place upon impact except target penetration.

Tabulated Data:

DODAC------------------ 1305-A777
UNO serial number ------ 0339

UNO proper shipping name------------------------------------------- Cartridges for weapons, inert projectiles
Weight --------------------------------- 4000 gr
Length (max) --------------------------------- 7.23 in. (183.6 mm)
Tracer --------------------------------- NA
Primer --------------------------------- Percussion, M36A2
Fuze --------------------------------- NA
Explosive:
Type --------------------------------- NA
Weight --------------------------------- NA
Incendiary:
Type --------------------------------- NA
Weight --------------------------------- NA
Propellant:
Type --------------------------------- WC 875 or IMR 7013
Weight --------------------------------- MBR

Performance:

Chamber pressure (max) --- 51,000 (copper)
Velocity --------------------------------- 2680 fps, 78 ft from muzzle

Shipping and Storage Data:

Quantity-distance class/
SCG ---------------------- 1.4C
Storage code ---------------- Class V

14-23
DOT shipping class --------- C
DOT designation ---------------- SMALL ARMS
AMMUNITION
Drawing number ---------------- 7259106

References:
SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, TARGET PRACTICE-TRACER, M206A1

Type Classification:

STD - AMCTC 4762.

Use:

Gun, 20mm, Automatic, M139. The cartridge is used in training and operation of gun systems with tracer characteristics for visual sighting to target.

Description:

TARGET PRACTICE-TRACER Cartridge. The cartridge has a blue painted projectile body with a row of orange "T's" at the front of the projectile body.

Tabulated Data:

DODAC................. 1305-A790
UNO serial number ...... 0339
UNO proper shipping name............. Cartridges for weapons, inert projectiles
Weight.................... 4886 gr
Length..................... 8.384 in. (212.95 mm)

Performance:

Chamber pressure (max) .... 54,000 (copper)
Velocity.................... 3430 fps, 78 ft from muzzle

Shipping and Storage Data:

Quantity-distance class
SCG...................... 1.4C
Storage code............... Class V
DOT shipping class........ C
DOT designation........... SMALL ARMS AMMUNITION
Drawing number............ 10542655

References:

SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, HIGH EXPLOSIVE INCENDIARY, M210

**Type Classification:**

STD - AMCTC 5433.

**Use:**

Guns, 20mm, M3 and M24A1. The projectile is effective against aircraft and other targets that are not heavily armored.

**Description:**

HIGH EXPLOSIVE INCENDIARY Cartridge. The cartridge has a yellow painted projectile body with a red band, approximately 1/4 inch wide, at forward end. The projectile has a steel body with a cavity filled with RDX and aluminum and a point-detonating (PD) bore-safe fuze.

**Function:**

The projectile fuze arms in flight. Upon impact, the fuze detonates the projectile causing fragmentation of the body with an incendiary effect.

**Tabulated Data:**

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<td>Length (max)</td>
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<td>Primer</td>
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<td>Fuze</td>
<td>PD, M506A3</td>
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</tr>
<tr>
<td>Type</td>
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<td>Weight</td>
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<td>Propellant:</td>
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<tr>
<td>Type</td>
<td>WC 875 or IMR 7013</td>
</tr>
<tr>
<td>Weight</td>
<td>MBR</td>
</tr>
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**Performance:**

Chamber pressure (max) --- 51,000 psi (copper)
Velocity ---------------- 2680 ± 50 fps, 78 ft from muzzle

**Shipping and Storage Data:**

| Quantity-distance class/SCG | 1.2E (0.4) |
| Storage code                | Class V    |
| DOT shipping class          | A          |
DOT designation -------------- AMMUNITION FOR SMALL ARMS WITH EXPLOSIVE PROJECTILES
Drawing number ----------- 7259105

References:
SB 700-20
TM 9-1300-206
CARTRIDGE, 20MM, TARGET PRACTICE-TRACER, M220

**Type Classification:**

STD - AMCTC 7404.

**Use:**

Guns, 20mm, M39, M61 and M168. The cartridge is for practice and training.

**Description:**

TARGET PRACTICE-TRACER Cartridge. The cartridge is ballistically and physically identical to the M55A2 cartridge except that a tracer element has been added to the base of the projectile. The projectile is painted blue with orange colored markings.

**Function:**

The projectile is similar to the M56A3 projectile, but has no high explosive incendiary charge and is assembled with a dummy fuze. The projectile does contain a tracer composition which burns visibly for a minimum of 1.9 seconds.

**Tabulated Data:**

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<td>Cartridges for weapons, inert projectiles</td>
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<tr>
<td>Weight</td>
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**Length** 6.615 in. (168 mm)

**Tracer** R505 or R403

**Primer** Electric

**Fuze** NA

**Explosive:**

* Type NA
* Weight NA

**Incendiary:**

* Type NA
* Weight NA

**Propellant:**

* Type WC 870 or WC 872
* Weight MBR (585-605 gr)

**Chamber pressure** 61,500 psi

**Velocity** 3380 fps, 78 ft from muzzle

**Shipping and Storage Data:**

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**References:**

SB 700-20
TM 9-1005-286-10
TM 9-1300-206
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<tr>
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<td>7259268 (M242); 9341740 (M242A1)</td>
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**References:**
- SB 700-20
- TM 9-1300-206
CARTRIDGE, 20MM, HIGH EXPLOSIVE INCENDIARY-TRACER, SELF-DESTROYING, M246/M246A1

Type Classification:

M246: STD - LCC-B MSR 03816015.

Use:

Gun, 20mm, M168. The cartridge is for use against aerial targets.

Description:

HIGH EXPLOSIVE INCENDIARY-TRACER, SELF-DESTROYING Cartridge.

Function:

The cartridge is assembled with an M505A3 point-detonating (PD) fuze. The projectile, in addition to the M505A3 fuze, consists of a high explosive incendiary (HEI) charge, self-destroying (SD) relay charge, and a tracer charge. These charges form the SD chain. The tracer burns for about 3 to 7 seconds, whereupon the relay charge is ignited which detonates the HEI charge low order. If impact with target occurs prior to self-destruction, the M505A3 fuze causes the HEI charge to detonate high order.

Difference Between Models:

The basic difference between the models is in the loading of the projectiles. In the M246 projectile, the incendiary mix and the HE mix are combined in one pellet. In the M246A1 projectile, the incendiary is loaded as a separate pellet. The HE mix is also loaded as a separate pellet along with the SD relay charge pellet and the tracer charge pellet. This improves fire start capability.

Tabulated Data:

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Weight: 4070 gr
Length: 6.615 in. (168 mm)
Tracer: R505
Primer: Electric, M52A3B1
Fuze: PD, M505A3
Explosive:
Type: H761
Weight: 115 gr

Incendiary:
Type: NA
Weight: NA

Propellant:
Type: WC 870
Weight: MBR (585-605 gr)
**Performance:**

Chamber pressure ............ 60,500 psi  
Velocity ................. 3380 fps, 50 ft from muzzle

**Shipping and Storage Data:**

Quantity-distance class/SCG ............... 1.2E (0.4)  
Storage code ............... Class V  
DOT shipping class ........ A

DOT designation .......... AMMUNITION FOR SMALL EXPLOSIVE PROJECTILES

Drawing number:
M246 .................................. 10542384  
M246A1 ............................... 9333764

**References:**

SB 700-20  
TM 9-1005-286-10  
TM 9-1300-206
**Type Classification:**

Not applicable.

**Use:**

Guns, 20mm, M39, M61, M139, M168, M195 and XM197. The cartridge is for training of crews. The plastic material, instead of steel, reduces wear on gun components and fire mechanisms.

**Description:**

DUMMY Cartridge. The cartridge is of plastic construction.

**Tabulated Data:**

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<td>Primer</td>
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<tr>
<td>Type</td>
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**Performance:**

Weight: NA
Incendiary: NA
Propellant: NA

**Shipping and Storage Data:**

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**References:**

SB 700-20
TM 9-1005-246-24
TM 9-1005-286-10
TM 9-1300-200
CARTRIDGE, 20MM, HIGH EXPLOSIVE INCENDIARY-TRACER, M599 FUZE POINT-DETONATING SELF-DESTROYING M594

Type Classification:
STD - AMCTC 6391.

Use:
Gun, M139.

Description:
HIGH EXPLOSIVE INCENDIARY-TRACER Cartridge. The cartridge has a point-detonating (PD) self-destroying (SD) fuze M594. The projectile is a hollow body filled with 120 grams of high explosive incendiary (HEI) mixture with a tracer tablet at the base and the PD SD fuze screwed onto the nose.

Function:
When fired, the weapon firing pin initiates the primer which ignites the propelling charge. Gases produced by the burning propellant propel the projectile. The projectile shall function with high order detonation upon impact or, if the projectile does not impact on intended target within 4 to 7 seconds, a SD mechanism will cause high order detonation of the projectile.

Tabulated Data:

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<tr>
<td>Tracer</td>
<td>Tablet, 1.17 g</td>
</tr>
<tr>
<td>Explosive (HEI mix)</td>
<td>120 g</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD SD, M594, aluminum</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow with red &quot;T&quot; band, black markings</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel, M187</td>
</tr>
<tr>
<td>Propellant</td>
<td>VTL-1375-502-52 g</td>
</tr>
<tr>
<td>Primer percussion</td>
<td>M103</td>
</tr>
</tbody>
</table>
Performance:
Chamber pressure ------------ 49,500 psi
Velocity ------------------- 3460 fps, 78 ft from muzzle

Shipping and Storage Data:
Quantity-distance class/
SCG -------------------------------- 1.2E
Storage code ---------------------- Class IV
DOT shipping class ----------- A
DOT designation .......................... SMALL ARMS AMMUNITION WITH EXPLOSIVE PROJECTILE

M528 shipping and storage container:
Material --------------------------- Steel
Dimensions -------------------------- 14-9/16 x 9-39/64 x 4-5/16 in.
Cube -------------------------------- 0.35 cu ft
Drawing number C/R ------ 10535815

Packing:
25 cartridges, 20mm linked with M601 armor piercing incendiary-tracer; cartridges in ratio with 3 M599 to 2 M601 in shipping and storage containers M528. Two shipping and storage containers (50 cartridges) in a wire-bound box.

References:
DARCOM 700-3-2
TM 9-1300-206
CARTRIDGE, 20MM, ARMOR PIERCING INCENDIARY-TRACER, M601

Type Classification:
STD - AMCTC 4762.

Use:
Gun, M139.

Description:
ARMOR PIERCING INCENDIARY-TRACER Cartridge The tungsten-carbide core is the main part of the projectile, and is the penetrator. The ballistic cap (ogive) contains an incendiary pellet. A tracer tablet is at the base of the projectile. The projectile body is painted black with white markings and with red painted "T"’s encircle the ogive (signifying tracer).

Function:
When fired, the weapon firing pin initiates the primer which ignites the propelling charge. Gases produced by the burning propellant propel the projectile. Upon impact with the target, the nose (ogive) ruptures and the incendiary composition ignites on exposure to the air.

Tabulated Data:
Complete round:
UNO serial number ------ 0009
UNO proper shipping name ----------------- Ammunition, incendiary DODAC ------------------ 1305-A786
Type ----------------- API-T
Weight ----------------- 310 g
Length ----------------- 8.39 in. (213.112 mm)
Cannon used with ------ M139

Projectile (111 g):
Penetrator (core) ------- Tungsten-carbide
Body ----------------- Aluminum alloy, 22.5 g
Windshield -------------- Aluminum, 9.4 g
Incendiary -------------- XM71 pellet, 0.45 g
Tracer ----------------- Tablet, 1.17 g
Fuze ----------------- NA
Color ----------------- Black with white marking with “T” red bound
Cartridge case ------------ Steel, M187
Propellant (VTL 1375-502):
Weight (approx) -------- 53 g
Primer (percussion) ---- M103

14-39
Performance:

Chamber pressure ------------ 49,500 psi
Velocity --------------------- 3610 fps, 78 ft from muzzle

Shipping and Storage Data:

Quantity-distance class/
SCG -------------------------- 1.4G
Storage code ----------------- Class IV
DOT shipping class --------- A
DOT designation ------------ SMALL ARMS
AMMUNITION
WITH INCENDIARY PROJECTILE

M528 shipping and storage container:
Material----------------------- Steel
Dimensions ------------------- 14-9/16 x 9-39/64 x 4-5/16 in.
Cube ------------------------ 0.35 cu ft
Drawing number C/R---------- 10535805

Packing:

25 cartridges, 20mm linked with M599 high explosive incendiary-tracer cartridges in a ratio of 3 M599 to 2 M601 in shipping and storage container M528. Two containers in a wrap-around crate.

References:

DARCOM 700-3-2
TM 9-1300-206
CARTRIDGE, 20MM, MULTIPURPOSE TRACE SELF-DESTROYING, M940

![Image: Cartridge illustration]

**Type Classification:**


**Use:**

The existing Vulcan Air Defense System (VADS) and Product Improved Vulcan Air Defense System (PIVADS) M246 ammunition is incapable of providing defense against the modern enemy threat at combat ranges greater than 1,600 meters because of inherent performance limitations including poor flight characteristics, self-destroying ranges, and terminal effectiveness. Therefore, the Army decided to pursue acquiring a new round of ammunition for VADS/PIVADS which would exhibit better exterior ballistics and greater lethality than the existing M246 High Explosive Incendiary-Tracer Self-Destroying (HEI-T-SD) ammunition.

**Description:**

MULTIPURPOSE TRACE SELF-DESTROYING Cartridge. The cartridge is an improved fuzeless pyrotechnic initiated 20mm HE cartridge. The projectile consists of a heavy-walled steel body charged with explosive mix and an incendiary mix, and an aluminum nose charged with another incendiary mix. The projectile also has safe and arming (S&A), tracer, and self-destroying which is initiated by heat from combustion of the tracer composition. The lack of fuze permits an enhanced aerodynamic ogive shape which results in a reduction in drag factor and reduced time of flight, thereby extending the effectiveness of the VADS from 1,200 meters to 2,000 meters against aircraft targets. The M940 will replace the 20mm M246 HEI-T-SD as the primary air defense cartridge for the VADS and any of its improved versions.

**Function:**

The projectile consists of a steel body charged with a HE mix, Composition A-4 (MIL-C-440), and an incendiary mix, Type I (equivalent I-68). The projectile has an aluminum nose charged with Type II incendiary (equivalent I-136). The hardened forebody of the projectile provides for defeat of lightweight armor (3/8 RHA at well over 500 m). The incendiaries provide a built-in delay when initiated on the thin skin of an aircraft, and the projectile explodes approximately 1 foot behind the skin. The M940 cartridge, therefore, is primarily intended for air defense but has a secondary roll against light armored vehicles. The M940 contains a chemical S&A intended to reduce the probability of functioning on a 0.04 aluminum plate at 1 meter from the muzzle. When initiated, all projectile fragments go forward.

**Tabulated Data:**

Complete round:

- UNO serial number: 0321
- UNO proper shipping name: Cartridges for weapons, with bursting charge
- DODAC: 1305-A710
- Type: MPT-SD
- Weight: 264 g
- Length (max): 6.165 in. (156.6 mm)
- Cannon used with: M168

14-41
Projectile:
  Tracer-modified ------------- R505
  Primer-electric -------------- M52A3B1
  Fuze ----------------------- NA

Explosive:
  Type ----------------------- Comp A-4
  Weight --------------------- 4g

Incendiary:
  Type ----------------------- I
  Weight --------------------- 1.2 g

Incendiary:
  Type ----------------------- II
  Weight --------------------- 3 g

Incendiary:
  Type ----------------------- Potassium Perchlorate
  Weight --------------------- 0.2 g

Propellant:
  Type ----------------------- WC 866
  Weight --------------------- 37 g

Performance:
Chamber pressure (max) --- 60,500 psi
Velocity ---------------------- 3350 ± 45 fps, 78 ft from muzzle

Shipping and Storage Data:
DOD hazard class/division/
  SCG ----------------------- 08 (1.2E)
DOT shipping class ------- Class A explosive
DOT designation --------- CARTRIDGE FOR WEAPONS
Drawing number ------------- 12551767
NSN ------------------------ 1305-01-283-2134

References:
TM 9-1300-206