AMMUNITION

NEXTER CATALOGUE
2018

Creating new references in defense
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105mm TK HE
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105mm TK HESH-T
105mm TK HEAT-TP-T
105mm TK TPFSDS-T
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105mm TK HEAT-MP-T
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105mm L51 HEAT-T
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90mm MK3 SMK(WP)-T
90mm MK3 TPSDS-T
90mm MK3 HESH-TP-T
90mm MK3 TPSDS-T
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90mm F3/F4 HEAT-T
90mm F4 TPSDS-T
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90mm F1 HE-T
90mm F1 HE-TP-T
90mm F1 SMK (WP)-T
90mm F1 HEAT-TP-T
90mm F1 TPSDS-T
76mm HESH-T
76mm HE-T
76mm TPSDS-T
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BONUS MkII is a fire and forget ammunition designed to defeat various types of stationary or mobile armored vehicles. The aim is to neutralize or destroy armored vehicles by combining several firings rounds in many to many or many to one scenarios. Its two top-attack smart warheads destroy all main battle tanks and moving targets of the modern battlefield.

As a fully interoperable shell, BONUS MkII can be fired by all current and future artillery systems compliant with the JB MoU standard, including 52 caliber, as well as by other systems with their respective propellant charges.

The BONUS MkII shell’s distinctive feature is its unrivalled hit probability, which has been demonstrated during numerous production acceptance firings, together with French and Swedish Army’s firings.

**MISSION**

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>SHELL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight without fuze</td>
<td>44.6kg</td>
</tr>
<tr>
<td>Length with fuze</td>
<td>898mm</td>
</tr>
<tr>
<td>Maximum range</td>
<td>NATO 38 caliber artillery: 27km</td>
</tr>
<tr>
<td></td>
<td>NATO 52 caliber artillery: 38km</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARHEAD (TWO PER SHELL)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>6.5kg</td>
</tr>
<tr>
<td>Descent rate</td>
<td>45m/s</td>
</tr>
<tr>
<td>Spin rate</td>
<td>15 revolutions/s</td>
</tr>
<tr>
<td>Search area</td>
<td>32,000m² per warhead</td>
</tr>
<tr>
<td></td>
<td>(64,000m² per shell)</td>
</tr>
</tbody>
</table>

**STATUS**

In service
155-105mm SPACIDO
COURSE CORRECTION SYSTEM

+ MISSION
SPACIDO (System with Accuracy Improved by Doppler Cinemometer) is a course correction system in range that operates by comparing the actual trajectory with the theoretical trajectory. This course correction system, consisting of a Muzzle Velocity Radar (MVR) integrated into the gun and a NATO-standard fuze with 2-inches thread, can be used with all in-service or under development 150mm and 155mm ammunition. SPACIDO generates an improvement of accuracy of a factor going up to 4 at long ranges. Greater accuracy provides better engagement of high pay-off targets, minimizes collateral damage effects and the safety distance with respect to friendly troops, while reducing the ammunition consumption.

+ TECHNICAL DATA
- Compliant with STANAG 2916 or MIL STD 333
- Inductively settable fuze according STANAG 4369 and AOP 22
- Two versions available for conventional shell (proximity, PD, Delay modes), and carrier shell (time fuze from 2 to 199.9s)
- Compatible with long intrusion shell with supplementary charge

+ STATUS
Qualified

155mm LU 211
INSENSITIVE OR CONVENTIONAL VERSION

+ MISSION
The 155mm LU 211 HE shell provides a long-range fire capability. It can be equipped with a hollow base or a Base Bleed. It can engage targets at a range of 30km with NATO standard 155mm/38 caliber guns (M109, M198...) and of 40km with 155mm/52 caliber guns (CAESAR®, PZH2000...) meeting the requirements of JB MoU and NABK standards when equipped with a Base-Bleed unit. The terminal efficiency of the 155mm LU 211 is more than twice that conventional M107 155mm shells, irrespective of angle of impact or burst height. In addition, its piercing/penetration capability gives an excellent performance when used as an anti-structure ammunition. The 155mm LU 211 shell can be filled with High Explosive like TNT, compo B and EIDS® XF 1333 explosive composition for the insensitive version called LU 211 IM. This version is fully IM compliant with the STANAG 4439. To be able to meet specific requirements, different versions for training are offered.

+ DESCRIPTION
The projectile consists of a shell body filled with explosive and a hollow base or a Base Bleed Unit to increase the maximum range. The driving band and the plastic obturator are protected by a grommet. The shell is delivered with a lifting plug designed to protect the projectile fuze area against accidental damage.
### TECHNOICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>LU 211 IM-HB</th>
<th>LU 211 IM-BB</th>
<th>LU 211 B-HB</th>
<th>LU 211 B-BB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Insensitive High Explosive Hollow Base</td>
<td>Insensitive High Explosive Base Bleed</td>
<td>Conventional High Explosive Hollow Base</td>
<td>Conventional High Explosive Base Bleed</td>
</tr>
<tr>
<td><strong>Caliber</strong></td>
<td>155mm</td>
<td>155mm</td>
<td>155mm</td>
<td>155mm</td>
</tr>
<tr>
<td><strong>Projectile mass</strong></td>
<td>42.5kg without fuze</td>
<td>43.5kg without fuze</td>
<td>43.5kg without fuze</td>
<td>43.5kg without fuze</td>
</tr>
<tr>
<td><strong>Projcetile length</strong></td>
<td>865mm with fuze</td>
<td>867mm with fuze</td>
<td>865mm with fuze</td>
<td>867mm with fuze</td>
</tr>
<tr>
<td><strong>Projectile filling</strong></td>
<td>~8.8kg XF*13333</td>
<td>~8.8kg XF*13333</td>
<td>~8.8kg Composition B</td>
<td>~8.8kg Composition B</td>
</tr>
<tr>
<td><strong>Fuze</strong></td>
<td>NATO Interoperability standard 2&quot; thread fuze</td>
<td>NATO Interoperability standard 2&quot; thread fuze</td>
<td>NATO Interoperability standard 2&quot; thread fuze</td>
<td>NATO Interoperability standard 2&quot; thread fuze</td>
</tr>
</tbody>
</table>

### PERFORMANCES WITH CAESAR® 52 CAL/TCM

<table>
<thead>
<tr>
<th></th>
<th>LU 211 IM-HB</th>
<th>LU 211 IM-BB</th>
<th>LU 211 B-HB</th>
<th>LU 211 B-BB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Muzzle velocity</strong></td>
<td>939m/s</td>
<td>946m/s</td>
<td>939m/s</td>
<td>946m/s</td>
</tr>
<tr>
<td><strong>Maximum range</strong></td>
<td>10km</td>
<td>40km</td>
<td>10km</td>
<td>40km</td>
</tr>
</tbody>
</table>

### PACKAGING

- 12 projectiles per pallet

### STATUS

- In service

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### 155mm LU 214 SMK-WP

**MISSION**

The LU 214 is a smoke shell belonging to the 52 caliber shell family. It offers the same ballistic of the LU 211 shell.

The functioning of the fuze triggers the detonation of the burst charge which causes the opening of the shell and the dispersion of the phosphorus over a radius of 25 to 30m.

**DESCRIPTION**

This projectile consists of a shell body filled with approximately 8.7kg of white phosphorus and can be equipped with a hollow base or a Base Bleed Unit.

The shell is delivered with a lifting plug designed to protect the projectile fuze area against accidental damage.

**STATUS**

- In service

### TECHNOICAL DATA

<table>
<thead>
<tr>
<th></th>
<th>LU 214 WP HB</th>
<th>LU 214 WP BB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>White phosphorus smoke</td>
<td>White phosphorus smoke</td>
</tr>
<tr>
<td><strong>Caliber</strong></td>
<td>155mm</td>
<td>155mm</td>
</tr>
<tr>
<td><strong>Projectile mass</strong></td>
<td>43.25kg without fuze</td>
<td>44.65kg without fuze</td>
</tr>
<tr>
<td><strong>Projcetile length</strong></td>
<td>865mm with fuze</td>
<td>867mm with fuze</td>
</tr>
<tr>
<td><strong>Projectile filling</strong></td>
<td>~8.4kg White Phosphorus</td>
<td>~8.4kg White Phosphorus</td>
</tr>
</tbody>
</table>

### PERFORMANCES

<table>
<thead>
<tr>
<th></th>
<th>LU 214 WP HB</th>
<th>LU 214 WP BB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Muzzle velocity</strong></td>
<td>939m/s</td>
<td>946m/s</td>
</tr>
<tr>
<td><strong>Maximum range</strong></td>
<td>10km</td>
<td>40km</td>
</tr>
<tr>
<td><strong>Dispersion in range</strong></td>
<td>&lt;0.4% mean range</td>
<td>&lt;0.4% mean range</td>
</tr>
<tr>
<td><strong>Smoke duration (s)</strong></td>
<td>More than one minute</td>
<td>More than one minute</td>
</tr>
</tbody>
</table>

### PACKAGING

- 12 projectiles per pallet
**155mm LU 215 ILLUM**

**MISSION**
The LU 215 ILLUM is an illuminating 155mm shell belonging to the 52 caliber shell family. The payload operates in the visible spectrum. This projectile is fired by 155mm howitzers and is used to illuminate the battlefield at night or during other conditions of reduced visibility.

**DESCRIPTION**
The projectile consists of a carrier shell including a base bleed. It integrates an illuminatory candle which is ejected from the carrier shell through a two stage ejection process. A programmable time fuze is used to trigger the ejection. The burning candle, suspended below the main parachute then illuminates the target area whilst descending slowly. With the main parachute opened, the illuminant candle descends at around 5 m/s and producing approximately 1,200,000 candelas. A more than 600m diameter is effectively illuminated (≥ 3.4 Lux) during 80 seconds.

**TECHNICAL DATA**
- **Type**: Illuminating with Base Bleed (US M864 profile)
- **Caliber**: 155mm
- **Weight without fuze**: 43.7kg
- **Projectile length**: 888mm with fuze
- **Filler and weight**: ~2.4kg illum compound
- **Body material**: Steel
- **Fuze**: NATO Interoperability standard 2” - thread time fuze

**PERFORMANCES**
- **Maximum range capability**: compatible with modular charge system up to Z6
- **Payload delivery range**: ~90% of the maximum ballistic range
- **Luminosity**: ≥1,200,000 candelas
- **Illuminating target area**: radius ≥300m with direct illumination ≥3.4 Lux during 80 seconds

**STATUS**
Qualified

**PACKAGING**
12 projectiles per pallet

---

**155mm LU 216 ILLUM IR**

**MISSION**
The LU 216 ILLUM IR is an illuminating 155mm shell belonging to the 52 caliber shell family. The payload operates in the infrared spectrum. This projectile is fired by 155mm howitzers and used to illuminate discretely the battlefield at night thanks to a payload which operates in the infrared spectrum.

**DESCRIPTION**
The projectile consists of a carrier shell including a base bleed. It integrates an illuminatory candle which is ejected from the carrier shell through a two stage ejection process. A programmable time fuze is used to trigger the ejection. The burning candle, suspended below the main parachute then illuminates discretely the target area whilst descending slowly. With the main parachute opened, the infrared candle descends at around 5m/s and burns during 80 seconds producing less than 2,500 candelas. With the use of night vision devices, a 2,400m diameter illumination can be achieved.

**TECHNICAL DATA**
- **Type**: IR Illuminating with Base Bleed (US M864 profile)
- **Caliber**: 155mm
- **Projectile mass**: 43.7kg without fuze
- **Projectile length**: 888mm with fuze
- **Body material**: Steel
- **Fuze**: NATO Interoperability standard 2” - thread time fuze
- **Filler and weight**: ~2.4kg IR illum compound

**PERFORMANCES**
- **Maximum range capability**: compatible with modular charge system up to Z6
- **Payload delivery range**: ~90% of the maximum ballistic range
- **Spectrum Bandwidth**: 0.7µm to 0.9µm
- **Radiometric Intensity**: ≥250W/sr (0.7 – 0.9µm)
- **Luminosity**: ≥2,400 candelas
- **IR illuminating target area**: during 80 seconds

**STATUS**
Under qualification

**PACKAGING**
12 projectiles per pallet
155mm LU 217 MS SMK

**MISSION**
The LU 217 is a multi-spectral smoke 155mm shell belonging to the 52 caliber shell family. The base ejected payload operates in the infrared and visible spectrum. The projectile is fired by 155mm howitzers and is used for screening and obscuring in the infrared and visible spectrum.

**DESCRIPTION**
The projectile consists of a carrier shell including a base bleed. It integrates an illuminatory candle which is ejected from the carrier shell through a two stage ejection process. A programmable time fuze is used to trigger the ejection. The driving band and the plastic obturator are protected by a grommet. The shell is delivered with a lifting plug designed to protect the projectile fuze area against accidental damage. An effective smoke cloud is produced within a few seconds and smoke emission occurs for 2 to 3 minutes.

**STATUS**
Under qualification

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155mm LU 107

**MISSION**
The 155mm LU 107 artillery shell while especially fitted for 39 caliber guns takes advantages of the technical progress derived from 52 caliber technologies in terms of accuracy, capability and safety. Compared to the well-known M107 artillery shell, this product based on a similar ballistics features offers an extended range thanks to its design compatible with M203 charge firing (+20% on range). To be able to meet specific requirements, different LU 107 versions are offered:
- Conventional explosive version,
-Insensitive ammunition version (IM),
-Reduced range version for training.

**DESCRIPTION**
This shell can also be fired in 45 and 52 caliber gun with a modular charge system. This projectile consists of a shell body filled with 7kg of explosive. The shell is delivered with a lifting plug designed to protect the projectile fuze area against accidental damage. Thanks to a specific sealing ring screwed on the top of projectile, the LU 107 projectile is free of exudation.

**STATUS**
In service
The LU 110 artillery shell while especially fitted for 39 caliber guns takes advantages of the technical progress derived from the 52 caliber technologies in terms of accuracy, capability and safety. Compared to the well-known M110 smoke shell pertaining to the 155mm M107 family, this new product features an extended range capability in 39 caliber gun while having similar ballistics (+20% on range). This shell can also be fired in 45 and 52 caliber gun with a modular charge system. The detonation of the burst charge, located below the booster of the fuze, causes the opening of the shell and the dispersion of the phosphorus over a radius of 25 to 30m. The combustion of the White Phosphorus produces an instantaneous and effective smoke screen.

**DESCRIPTION**
The projectile consists of a shell body filled with 7kg of white phosphorus. The duration of the smoke screen is approximately 1 to 1.5 minutes. The maximum effectiveness is between 1 and 2 minutes. The shell is delivered with a lifting plug designed to protect the projectile fuze area against accidental damage.

**STATUS**
Qualified

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**MISSION**
This projectile is fired from 155mm howitzers and has own blast effect and fragmentation. Simmel Difesa’s 155mm HE L15A1 is a projectile that can be fired by 155mm/39 and 155mm/52 guns. A TP version with the same ballistic characteristics is available.

**DESCRIPTION**
The projectile is filled with TNT or Composition B. Projectiles may be equipped with Proximity, PD or MTSQ fuze or with a lifting plug.

**STATUS**
In service
155mm HE M107

**MISSION**
This projectile is fired from 155mm howitzers and is used for blast effect and fragmentation. Simmel Difesa’s 155mm HE is a projectile that can be fired by 155mm/39 and 155mm/52 guns. A TP version with the same ballistic characteristics is available.

**DESCRIPTION**
The projectile is filled with TNT or Composition B. Projectiles may be equipped with Proximity, PD or MTSQ fuze or with a lifting plug.

**TECHNICAL DATA**
- **Type**: High Explosive (HE)
- **Caliber**: 155mm
- **Complete projectile mass (nominal)**: 43kg
- **Projectile length (without fuze)**: 605mm
- **Projectile filling (nominal)**: 6.98kg TNT or Comp. B
- **Fuze**: Proximity, PD or MTSQ

**PERFORMANCES**
- **Maximum range in 39 caliber gun**: 18,100m
- **Operational temperature**: -54°C to +63°C

**PACKAGING**
- **8 projectiles per pallet**
- **UN Classification: 1.1 D UN 0166**

**STATUS**
In service

155mm MODULAR CHARGE SYSTEM

**MISSION**
The Modular propelling Charge System (MCS), replaces conventional propellant charges. Developed to comply with the Joint Ballistic Memorandum of Understanding (JBMoU) Annex D requirements, Modular Charge System is suitable for use on all the 155mm L39, L45 and L52 NATO standard guns (including CAESAR® and PzH2000), to replace bagged charges system currently in use (M4A2, M3A1, M119, L10A1, L8A1 and similar).

The modular propellant charge system offers the following advantages:
- Easier and quicker handling,
- Increased rate of fire,
- Simplified logistics (only 2 types of modules).

**DESCRIPTION**
The system is based on two different modules (Bottom and Top) which can be used in different number to cover all firing range requirements of the 155mm gun systems.

The BMCS is fully compliant with IM NATO requirements.

**TECHNICAL DATA**
- **Type**: Bottom, Top
  - **Caliber**: 155mm

**PERFORMANCES**
- **Operational temperature**: -40°C to +63°C
- **Storage temperature**: -46°C to +71°C

**PACKAGING**
- **Bottom**: 4 to 6 per container, 12 containers per pallet
- **Top**: 6 per container, 12 to 16 containers per pallet
- **UN Classification: 1.3 C UN 0242**

**STATUS**
In service
155mm MODULAR CHARGE SYSTEMS

+ MISSION
Developed to comply with the Joint Ballistic Memorandum of Understanding (JBMoU) Annex D requirements, Simmel Difesa’s Modular Charge System is suitable for use on all the 155mm L39, L45 and L52 NATO standard guns (including PzH2000), to replace bagged charges system currently in use (M4A2, M3A1, M119, L10A1, L8A1 and similar) Simmel Difesa’s Modular Charge System is qualified on the 155mm/52 cal. PzH2000 artillery system.

+ TECHNICAL DATA
Type: Bottom - Top
Caliber: 155mm - 155mm

+ DESCRIPTION
The system is based on two different modules (Bottom and Top) which can be used in different number to cover all firing range requirements of the 155mm gun systems. The BMCS is fully compliant with IM NATO requirements.

+ STATUS
In service

155mm IPC35
PROPELLING CHARGE FOR 39 CALIBER ARTILLERY SYSTEMS

+ MISSION
The 155mm IPC35 propelling charge is dedicated to the 155mm/39 cal. artillery systems. It consists of a combustible case containing three bags of propellant covering the zones 3 to 5. This propelling charge is an all-in-one solution as an alternative to the set of US charges such as M4A2, M119, M203. It is a cheaper alternative of the modular charge systems (Top Charge Module) when the key features of the modular charge concept are not requested.

+ TECHNICAL DATA
Type: Monolithic combustible case with 3 increments
Caliber: 155mm
Total length: <780mm
Total mass: 14kg
Propellant types: Multibase propellant
Igniter: Black powder

+ DESCRIPTION
The 155mm IPC35 propelling charge meets the ballistic requirements of the Joint Ballistic Memorandum of Understanding (JBMoU) (similar to the ones of the Modular Charge Systems). This charge can be also used in 45 & 52 calibers without any restrictions.

+ STATUS
Under development
### 155mm IPC36

**Propelling Charge for 52 Caliber Artillery Systems**

**Mission**
The 155mm IPC36 propelling charge is dedicated to the 155mm/52 cal artillery systems. It consists of a combustible case containing five bags of propellant covering the zones 3 to 6. This propelling charge offers a longer range firing capability while featuring similar ballistic characteristics with the existing modular charge systems for zones 3 to 6. It is a cheaper alternative to the modular charge systems (Top Charge Module) when the key features of the modular charge concept are not requested.

**Status**
Under development

**Technical Data**
- **Type**: Monolithic combustible case with 4 increments
- **Caliber**: 155mm
- **Total length**: <780mm
- **Total mass**: 17kg
- **Propellant types**: Multibase propellant
- **Igniter**: Black powder

**Performance**
- **Maximum range**: >40km
- **Operational temperature range**: -33°/ to +63°C (firing)
- **Storage temperature range**: -33°/ to +71°C

**Packaging**
- 1 charge per container, 16 containers per pallet

### 105mm HE HB ER G3

**105mm NATO Artillery Ammunition**

**Mission**
The HE HB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the Nexter 105LG1 guns, British L119 LG guns and upgraded US M101 guns.

The HE HB ER G3 is available in two versions, one with the M67 standard propelling charge to achieve a range up to 11km and one with 2 zones propelling charge to achieve a range up to 15km.

**Description**
This semi-fixed cartridge 105mm HE HB ER G3 consists of:
- A high explosive projectile fitted with an Hollow Base,
- A super-quick and delay point detonating fuze, type PD M557 or M739 (the fuze can be delivered separately),
- A cartridge case made of brass,
- A percussion type primer assembly,
- A propelling charge: 2 zones of propelling charge in order to fire at different muzzle velocities.

**Technical Data**
- **Type**: HE HB
- **Caliber**: 105mm
- **Round weight**: 18kg with fuze
- **Round length**: 850mm with fuze
- **Projectile weight**: 13.1kg
- **Explosive payload**: 2.5kg of Composition B
- **Projectile length with fuze**: 568mm
- **Base**: Hollow Base
- **Fuze**: Any 2-inch thread standard fuze
- **Propelling charge Priming**: Approx 2.25kg of propellant and percussion primer

**Performance**
- **Muzzle velocity**: 675m/s (in LG1 gun)
- **Maximum range**: 15km (zone 2)

**Packaging**
Several types of packaging are available depending on standards used in the various armies: individual cylindrical cardboard container, 2-round wooden crate, 12-crate.
105mm HE BB ER G3
NATO ARTILLERY AMMUNITION

**MISSION**
The HE BB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the Nexter 105LG1 guns, the British L119 LG guns and the upgraded US M101 guns. Fitted with a Base Bleed unit, this shell can achieve a range up to 17km.

**DESCRIPTION**
This semi-fixed cartridge 105mm HE BB ER G3 consists of:
- A high explosive projectile fitted with a Base Bleed unit,
- A super-quick and delay point detonating fuze, type PD M557 or M739 (the fuze can be delivered separately),
- A cartridge case made of brass,
- A percussion type primer assembly,
- A propelling charge: 2 increments of propelling charge in order to fire at different muzzle velocities.

**TECHNICAL DATA**
- **Type**: HE BB
- **Caliber**: 105mm
- **Round mass (nominal)**: 18kg with fuze
- **Round length**: 850mm with fuze
- **Projectile weight**: 13.1kg
- **Explosive payload**: 2.5kg of Composition B
- **Base**: Hollow Base
- **Fuze**: Any 2-inch thread standard fuze
- **Propelling charge**: Approx 2.25kg of propellant and percussion primer

**PERFORMANCES**
- **Muzzle velocity**: 685m/s (in LG1 gun)
- **Maximum range**: 17km (zone 2)

**STATUS**
In service

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105mm L14 HE M1
NATO ARTILLERY AMMUNITION

**MISSION**
The 105mm L14mm HE M1 projectile is used to guarantee the support to soldiers in every situation thanks to the fragmentation of the projectile body (made of high quality forged steel) and the striking blast of the explosive charge. This projectile can be fired by howitzers 105mm M56 and M2A1.

**DESCRIPTION**
The explosive filled in the projectile shell may be TNT or Composition B. Projectiles may be fitted with Proximity, PD or MTSQ fuze or with a closing plug. The cartridge case contains seven numbered increment bags, tied together, in numerical order. These bags are assembled into the cartridge case, around the primer tube.

**TECHNICAL DATA**
- **Type**: HE
- **Caliber**: 105mm
- **Round mass (nominal)**: 18kg
- **Round length**: 790mm
- **Projectile mass (nominal)**: 14kg
- **Projectile length**: 552mm
- **Projectile filling (nominal)**: 2.10kg TNT or Comp. B
- **Cartridge case**: Brass
- **Propellant S5 (nominal)**: 1.4kg (total increments 1-7)
- **Fuze**: PD
- **Primer**: Percussion

**PERFORMANCES**
- **Muzzle velocity (at 21°C)**: 420m/s
- **Maximum range**: 10,200m
- **Operational temperature**: -40°C to +52°C

**PACKAGING**
- 1 round per fiber container, 2 containers per wooden box
- **UN Classification**: 1.2 E UN 0321
105mm SMK BB ER G3
105mm NATO ARTILLERY AMMUNITION

**MISSION**
The SMK BB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the Nexter 105LG1 guns, the British L119 LG guns and the upgraded US M101 guns. This smoke shell has a ballistic similar to its HE BB ER G3 shell counterpart. Then fitted with a Base Bleed unit, this shell can also achieve a range up to 17km. The smoke shell generates a smoke screen during 50s to 1mn 30s according to the aerological conditions.

**DESCRIPTION**
The semi-fixed cartridge 105 SMK BB ER G3 consists of the following items:
- A smoke projectile fitted with a Base Bleed Unit,
- A super quick and delay point detonating fuze (1),
- A cartridge case made of brass,
- A percussion type primer assembly,
- 2 zones of propelling charge in order to fire at different muzzle velocities.

(1) The semi-fixed cartridge can be delivered without fuze.

**TECHNICAL DATA**
- **Type**: SMK BB
- **Caliber**: 105mm
- **Cartridge mass**: 18kg with fuze
- **Cartridge length**: 850mm with fuze
- **Projectile weight**: 13,1kg
- **Payload**: White Phosphorous Payload (approx 2.3kg)
- **Base**: Gas generator
- **Fuze**: All NATO standard (2 inches)
- **Propelling charge**: Approx 2.25kg of propellant and percussion primer

**PERFORMANCES**
- **Muzzle velocity**: 685m/s (in LG1 gun)
- **Maximum range**: 17km
- **Duration of smoke screen**: 50 - 90s

**PACKAGING**
One semi-fixed cartridge packaged in a Cardboard cylindrical container. 2 containers by wooden box. 12 wooden boxes by pallet

**STATUS**
Qualified

---

105mm SMK HB ER G3
105mm NATO ARTILLERY AMMUNITION

**MISSION**
The SMK HB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the Nexter 105LG1 guns, the British L119 LG guns and upgraded US M101 guns. This smoke shell has a ballistic similar to its HE HB G3 shell counterpart.

The SMK HB ER G3 is available in two versions, one with the M67 standard propelling charge to achieve a range up to 11km and one with 2 zones propelling charge to achieve a range up to 15km.

**DESCRIPTION**
The semi-fixed cartridge 105 SMK HB ER G3 consists of the following items:
- A smoke projectile fitted with an Hollow Base,
- A super quick and delay point detonating fuze (1),
- A cartridge case made of brass,
- A percussion type primer assembly,
- 2 zones of propelling charge in order to fire at different muzzle velocities.

(1) The semi-fixed cartridge can be delivered without fuze.

**TECHNICAL DATA**
- **Type**: SMK BB
- **Caliber**: 105mm
- **Cartridge mass**: 18kg with fuze
- **Cartridge length**: 850mm with fuze
- **Projectile weight**: 13,1kg
- **Payload**: White Phosphorous Payload (approx 2.3kg)
- **Base**: Hollow Base
- **Fuze**: All NATO standard (2 inches)
- **Propelling charge**: Approx 2.25kg of propellant and percussion primer

**PERFORMANCES**
- **Muzzle velocity**: 675m/s (in LG1 gun)
- **Maximum range**: 15km
- **Duration of smoke screen**: 50 - 90s

**PACKAGING**
One semi-fixed cartridge packaged in a Cardboard cylindrical container. 2 containers by wooden box. 12 wooden boxes by pallet

**STATUS**
Qualified
### Mission

Nexter Ammunitions has developed several very low vulnerability melt-cast explosive compositions known as XF. These compositions:
- Limit serious effects following an attack
- Provide enhanced safety for both personnel and equipment,
- Facilitate ammunition disposal and recycling at end of life cycle,
- Provide enhanced environmental protection,
- Offer a low ownership cost: less storage area, less logistics requirements (Unitary Risk).

### Status

XF 13333: Qualified and in service
XF 11585: Qualified

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### Technical Data

**XF 13333 Explosive Composition**
- Detonation velocity: 6,976 m/s
- Detonation pressure: >210 kbar (theoretical value)
- Critical diameter: <60 mm
- Impact sensitivity - ISI NFT 70-500: 30% Go at 50 joules
- Friction sensitivity - ISF NFT 70-503: 0% Go at 353 N

**XF 11585 Explosive Composition**
- Detonation velocity: 7,468 m/s
- Detonation pressure: 242 kbar (theoretical value)
- Unconfined critical diameter: ~10 mm
- Impact sensitivity - ISI NFT 70-500: 30% Go at 50 joules
- Friction sensitivity - ISF NFT 70-503: 0% Go at 353 N

---

### Description

The PDM 728 fuze is a point detonating Mechanical fuze intended to all kind of HE and WP NATO ammunition (including IM shells) for 105, 120-rifled mortar and 155mm barrels. 2 terminal functioning modes are available, super-quick mode which corresponds to immediate functioning at impact, or delay mode if selected before firing. The set up before firing is possible with any usual screw driver or equivalent device.

This fuze is also available for conventional artillery 52 caliber rounds in two versions PDM 727 (Super Quick & delay modes), PDM 729 (Super Quick mode).

### Status

French MoD qualification for 155L52 and rifled 120 Mortar. PDM 728 selected by French MOD after evaluation tests.
### TECHNICAL DATA

**Type**
Electronic fuze

**Compatible with 155mm L52 ammunition**

**Fuze mass (nominal)**
~885g

**Fuze length (nominal)**
I.a.w MIL-STD-333

**Booster charge mass (nominal)**
~9.3g of A5

**Power supply**
Lithium Battery

### PERFORMANCES

**Functions**
Proximity, height of burst, PD

**Mechanical safety distance**
400 calibers

**Height of burst**
10m independent from reflection coefficient

**Operating temperature**
-31°C to +55°C

### PACKAGING

8 fuzes per metallic container
2 metallic box per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

Italian MOD qualification

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**MISSION**
Proximity fuze with Height of burst function with impact back-up, impact only selectable.

**DESCRIPTION**
The FB375 fuze was designed in accordance with STANAG 4187. It is a RF proximity fuze equipped with Height-of-burst sensor as well as Point Detonation and Self-destruction modes. The desired functional mode can be selected by means of a setting sleeve.

An electronic safety inhibits the proximity function before 5s of flight. The fuze is waterproof.

**STATUS**
In service

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### TECHNICAL DATA

**Type**
Mechanical fuze

**Compatible with 76mm up to 155mm ammunition**

**Fuze mass (nominal)**
962g

**Fuze length (nominal)**
96mm (overall 152mm)

**Booster charge mass (nominal)**
24g of A5

**Power supply**
Firing force

### PERFORMANCES

**Functions**
PD and PD delay

**Mechanical safety distance**
Variable i.a.w. charge and caliber used

**Minimum operating distance**
Variable i.a.w. charge and caliber used

**Operating temperature**
-54°C to +71°C

### PACKAGING

20 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

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**MISSION**
The fuze FB557 is derived from the PD M557 fuze. It is a multipurpose fuze suitable for 76mm up to 155mm ammunition. It is a mechanical fuze with two operating mode, Super quick PD function and PD Delay function settable by means of the switch on the side of the fuze.

**DESCRIPTION**
The Super Quick function mode can be selected to have detonation on the target.

The Delayed point detonation mode can be selected to assure a detonation after the target. The delay time is 0.05s but it can be changed during assembling if requested from the customer.

**STATUS**
In service
**MISSION**
The fuze FB739A1 is derived from the PD M739 fuze. It is a multipurpose fuze suitable for 76mm up to 155mm ammunition.

**DESCRIPTION**
It is a mechanical fuze with two operating mode, Super Quick PD function and PD Delay function settable by means of the switch on the side of the fuze. The difference with PD M739 is that the fuze has a very short delay of few msec using a different post impact delay assembly. The fuze has an anti storm and anti foliage system to reduce the sensibility of impact sensor against rain and foliage.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanical fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible with</td>
<td>76mm up to 155mm ammunition</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>643g</td>
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<tr>
<td>Fuze length (nominal)</td>
<td>98mm (overall 152mm)</td>
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<tr>
<td>Booster charge mass</td>
<td>22g of A5</td>
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<td>Power supply</td>
<td>Firing force</td>
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**PERFORMANCES**

<table>
<thead>
<tr>
<th>Functions</th>
<th>PD and PD Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety</td>
<td>Variable i.a.w. charge and caliber used</td>
</tr>
<tr>
<td>distance</td>
<td>Variable i.a.w. charge and caliber used</td>
</tr>
<tr>
<td>Minimum operating</td>
<td>Variable i.a.w. charge and caliber used</td>
</tr>
<tr>
<td>distance</td>
<td></td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>30,000g max (284,300m/s²)</td>
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<tr>
<td>Rotating spin</td>
<td>30,000rpm max (3.143rad/s)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-40°C to +52°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 20 fuzes per wooden container
- 24 wooden containers per pallet
- UN Classification: 1.2D UN 0409
120mm MORTAR HE

**M530A1**

**MISSION**
The 120mm HE bomb is designed for use in 120mm smooth bore towed mortars. The round is used against structures, material and personnel targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron and is loaded with 2.5kg of Composition B. The fuze is a point detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge and 6 equal charge increments. The round has a range in excess of 7km. The 120mm M530A1 has been safety certified by the US Army in 1999.

**STATUS**
In service

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**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>15.2kg</td>
</tr>
<tr>
<td>Round length</td>
<td>Max 780mm</td>
</tr>
<tr>
<td>Projectile filling (Comp. B)</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD (Delay or Superquick)</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M547</td>
</tr>
<tr>
<td>Increment charge 1 to 6</td>
<td>M546</td>
</tr>
<tr>
<td>Supplementary charge 7s</td>
<td>M553</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum chamber pressure (at 21°C): 95MPa
- Muzzle velocity: 311m/s
- Range: >7km
- Operational temperature: -46°C to +62°C

**PACKAGING**

- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.1 E UN 0006

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**M530A2**

**MISSION**
The 120mm HE bomb is designed for use in 120mm smooth bore NEMO and other high pressure mortars. The round is used against structures, material and personnel targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron and is loaded with 2.5kg of Composition B. The fuze is a point detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km. The 120mm M530A2 is obtained by adding a stub case on the 120mm M530A1 which has been safety certified by the US Army for use in the 120mm AMS turreted mortar in 1999.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>15.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>800mm</td>
</tr>
<tr>
<td>Projectile filling (Comp. B)</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD (Delay or Superquick)</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M547</td>
</tr>
<tr>
<td>Increment charge 1 to 6</td>
<td>M546</td>
</tr>
<tr>
<td>Supplementary charge 7s</td>
<td>M553</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum chamber pressure (at 21°C): 165MPa
- Muzzle velocity: 440m/s
- Range: >9km
- Operational temperature: -46°C to +62°C

**PACKAGING**

- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.1 E UN 0006
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE-IM</th>
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<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>15.2kg</td>
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<tr>
<td>Round length</td>
<td>Max 780mm</td>
</tr>
<tr>
<td>Projectile filling (Comp. B)</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD (Delay or Superquick)</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M547</td>
</tr>
<tr>
<td>Increment charge 1 to 6</td>
<td>M546</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Maximum chamber pressure (at 21°C) | 95MPa          |
| Muzzle velocity                   | 311m/s         |
| Range                            | >7km           |
| Operational temperature           | -46°C to +62°C |

**PACKAGING**

- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request

- Gross weight (container) 40kg
- Dimension ext (container) 870x400x185mm
- Gross weight (complete pallet) 650kg
- Dimension ext (complete pallet) 1,200x1,000x1,070mm

UN Classification: under qualification

**MISSION**
The 120mm HE bomb is designed for use in 120mm smooth bore towed mortars. The round is used against structures, material and personnel targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron loaded with 2.5kg of insensitive melt cast explosive (XF®11585) and is compliant with STANAG 4439. The fuze is a Point Detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge and 6 equal charge increments. The round has a range in excess of 7km. The 120mm M530B1 is an upgrade of the 120mm HE M530A1 - safety certified by the US Army in 1999 - which provides improved safety for personnel and equipments, limits the reaction created by different threats (fire, impact, ...) and has less safety constraints for logistics during the complete lifecycle of the product (storage, transport, operation).

**STATUS**
Qualified

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**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE-IM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>15.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>800mm</td>
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<tr>
<td>Projectile filling (Comp. B)</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD (Delay or Superquick)</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M547</td>
</tr>
<tr>
<td>Increment charge 1 to 6</td>
<td>M546</td>
</tr>
</tbody>
</table>

- Supplementary charge 7s (For NEMO) M553

**PERFORMANCES**

| Maximum chamber pressure (at 21°C) | 165MPa         |
| Muzzle velocity                   | 440m/s         |
| Range                            | >9km           |
| Operational temperature           | -46°C to +62°C |

**PACKAGING**

- 1 round per waterproof fiber container
- 24 containers per pallet

| Gross weight (container) | 23kg          |
| Dimension ext (container) | 860x180x180mm |
| Gross weight (complete pallet) | 589kg |
| Dimension ext (complete pallet) | 1,200x1,000x1,070mm |

UN Classification: under qualification

**MISSION**
The 120mm HE bomb is designed for use in 120mm smooth bore NEMO and other high pressure mortars. The round is used against structures, material and personnel targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron loaded with 2.5kg of insensitive melt cast explosive (XF®11585) and is compliant with STANAG 4439. The fuze is a point detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km. The 120mm M590B2 is an upgrade of the 120mm M590A2 design which provides improved safety for personnel and equipments, limits the reaction created by different threats (fire, impact, ...) and has less safety constraints for logistics during the complete lifecycle of the product (storage, transport, operation).

**STATUS**
In service
**120mm MORTAR HE PRAC M528A1**

+ **MISSION**
The 120mm HE PRAC bomb is a fin stabilized round complete with propellant increment charges and a dummy fuze. It is designed to be used for training mortar crews and forward observers.

+ **DESCRIPTION**
The bomb is ballistically similar to the MECAR Family of 120mm Mortar Bombs and hence fires with the exact same firing tables or computerized fire control system. It uses exactly the same propelling charge system as the live rounds: a primary charge, and 6 equal increments (1-6).

+ **STATUS**
In service

**TECHNICAL DATA**
- Type: HE PRAC
- Caliber: 120mm
- Round mass (nominal): 15.2kg
- Round length: 780mm
- Projectile filling: XF 11965
- Primary ignition cartridge: M547
- Increment charge 1 to 6: M546

**PERFORMANCES**
- Maximum chamber pressure (at 21°C): 95MPa
- Muzzle velocity: 311m/s
- Range: >7km
- Operational temperature: -46°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.2 C UN 0328

**120mm MORTAR HE PRAC M528A2**

+ **MISSION**
The 120mm HE PRAC bomb is a fin stabilized round complete with propellant increment charges and a dummy fuze. It is designed to be used for training mortar crews and forward observers.

+ **DESCRIPTION**
The bomb is ballistically similar to the MECAR Family of 120mm Mortar Bombs and hence fires with the exact same firing tables or computerized fire control system. It uses exactly the same propelling charge system as the live rounds: a primary charge, 6 equal increments (1-6) and a 7th supplementary charge. The round has a range in excess of 9km. The 120mm M528A2 is obtained by adding a stub case on the 120mm M528A1.

+ **STATUS**
In service

**TECHNICAL DATA**
- Type: HE PRAC
- Caliber: 120mm
- Round mass (nominal): 15.5kg
- Round length: 800mm
- Projectile filling: Inert
- Primary ignition cartridge: M547
- Increment charge 1 to 6: M546
- Supplementary charge 7S: M553

**PERFORMANCES**
- Maximum chamber pressure (at 21°C): 165MPa
- Muzzle velocity: 440m/s
- Range: >9km
- Operational temperature: -46°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.2 C UN 0328
**120mm MORTAR SMK(WP) M532A1**

**MISSION**
The 120mm SMK (WP) bomb is designed for use in 120mm smooth bore towed mortars. This round is used to produce instantaneous smoke for spotting, signalling or screening purposes, and to create an incendiary effect against material targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron and is loaded with 2.1kg of White Phosphorus and is fitted with a Composition B burster. The fuze is a point detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge and 6 equal charge increments. The round has a range in excess of 7km. The 120mm M532A1 has been safety certified by the US Army in 1999.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: SMK(WP)
- **Caliber**: 120mm
- **Round mass (nominal)**: 15.2kg
- **Round length**: 780mm
- **Projectile filling (White Phosphorus)**: 2.1kg
- **Fuze**: PD (Delay or Superquick)
- **Primary ignition cartridge**: M547
- **Increment charge 1 to 6**: M546

**PERFORMANCES**
- **Maximum chamber pressure (at 21°C)**: 95MPa
- **Muzzle velocity**: 331m/s
- **Range**: >7km
- **Operational temperature**: -46°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.2 H UN 0245

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**120mm MORTAR SMK(WP) M532A2**

**MISSION**
The 120mm SMK (WP) bomb is designed for use in 120mm smooth bore NEMO and other high pressure mortars. This round is used to produce instantaneous smoke for spotting, signalling or screening purposes, and to create an incendiary effect against material targets.

**DESCRIPTION**
The body is made of high fragmentation cast iron and is loaded with 2.1kg of White Phosphorus and is fitted with a Composition B burster. The fuze is a point detonating type that can be set in either delay or superquick mode. The standard propelling charge set consists of a primary cartridge, 6 equal charge increments (for use in standard towed mortars), and a 7th supplementary charge (for use in new generation of high pressure turreted mortar systems). The round has a range in excess of 9km when fired from turreted mortar systems. The 120mm M532A1 has been safety certified by the US Army for use in the 120mm AMS turreted mortar in 1999.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: SMK(WP)
- **Caliber**: 120mm
- **Round mass (nominal)**: 15.7kg
- **Round length**: 800mm
- **Projectile filling (White Phosphorus)**: 2.1kg
- **Fuze**: PD (Delay or Superquick)
- **Primary ignition cartridge**: M547
- **Increment charge 1 to 6**: M546
- **Supplementary charge 7S (for AMS)**: M553

**PERFORMANCES**
- **Maximum chamber pressure (at 21°C)**: 165MPa
- **Muzzle velocity**: 440m/s
- **Range**: >9km
- **Operational temperature**: -46°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 15 containers per pallet
- Alternative packaging available on request
- UN Classification: 1.2 H UN 0245
**MISSION**
The 120mm illuminating bomb is designed for use in 120mm smooth bore towed mortars. The round is used to produce illumination of a specific point or area of operations.

**DESCRIPTION**
The bomb consists of a two-piece projectile. The forward part houses the illuminating payload, while the parachute is lodged in the rear section. The bomb is fitted with a mechanical time fuze. The standard propelling charge set consists of a primary cartridge and 6 equal charge increments. The round has a range in excess of 7km. The 120mm M533A1 has been safety certified by the US Army in 1999.

**STATUS**
In service

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**MISSION**
The 120mm illuminating bomb is designed for use in 120mm smooth bore towed mortars. The round is used to produce illumination of a specific point or area of operations.

**DESCRIPTION**
The bomb consists of a two-piece projectile. The forward part houses the illuminating payload, while the parachute is lodged in the rear section. The bomb is fitted with a mechanical time fuze. The standard propelling charge set consists of a primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km. The 120mm M533A2 is obtained by adding a stub case on the 120mm M533A1 which has been safety certified by the US Army for use in the 120mm AMS turreted mortar in 1999.

**STATUS**
In service
**120mm MORTAR IR-ILL M535A1**

**MISSION**
The 120mm illuminating bomb is designed for use in 120mm smooth bore towed mortars. The round is used to produce illumination of a specific point or area of operations in the near infrared for use of night vision goggles.

**DESCRIPTION**
The bomb consists of a two-piece projectile. The forward part houses the illuminating payload, while the parachute is lodged in the rear section. The bomb is fitted with a time fuze. The standard propelling charge set consists of a primary cartridge and 6 equal charge increments. The round has a range in excess of 7km. The infrared illuminating composition is visible in the IR spectrum from 0.7 to 1.2 microns with a minimal signature in the visible spectrum. The pyrotechnic composition is REACH compliant.

**PERFORMANCES**
- Maximum chamber pressure (at 21°C): 95MPa
- Muzzle velocity: 331m/s
- Range: >7km
- Descent rate: +/−4m/s
- Infrared band: 0.7-1.2µm
- Illuminated temperature: approx. 50s
- Operational temperature: -46°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 15 containers per pallet
- Gross weight (container): 40kg
- Dimension ext (container): 870x1400x185mm
- Gross weight (complete pallet): 635kg
- Dimension ext (complete pallet): 1,200x1,000x1,070mm

**UN Classification:** 1.2 G UN 0171

**STATUS**
Qualified

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**120mm MORTAR IR-ILL M595A2**

**MISSION**
The 120mm infrared-illuminating bomb is designed for use in 120mm smooth bore NEMO and other high pressure mortars. The round is used to produce illumination of a specific point or area of operations in the near infrared for use of night vision goggles.

**DESCRIPTION**
The bomb consists of a two-piece projectile. The forward part houses the IR-illuminating payload, while the parachute is lodged in the rear section. The bomb is fitted with a time fuze. The standard propelling charge set consists of a primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km. The infrared illuminating composition is visible in the IR spectrum from 0.7 to 1.2 microns with a minimal signature in the visible spectrum. The pyrotechnic composition is REACH compliant.

**PERFORMANCES**
- Maximum chamber pressure (at 21°C): 165MPa
- Muzzle velocity: 440m/s
- Range: >9km
- Descent rate: +/−4m/s
- Infrared band: 0.7-1.2µm
- Illuminated temperature: approx. 50s
- Operational temperature: -46°C to +62°C

**PACKAGING**
- 1 round per waterproof fiber container
- 24 containers per pallet
- Gross weight (container): 23kg
- Dimension ext (container): 880x380x180mm
- Gross weight (complete pallet): 589kg
- Dimension ext (complete pallet): 1,200x1,000x1,020mm

**UN Classification:** 1.2 G UN 0171

**STATUS**
Qualified
**120mm MORTAR BOMB HE-PD**

**MISSION**
This mortar bomb is a high explosive indirect fire ammunition, effective against light structures, non-armored assets and infantry troops, due to its natural fragmentation and blast.

**DESCRIPTION**
The HE-PD mortar bomb consists of a steel body filled with high explosive and a nose point detonating fuze. The body is loaded with TNT explosive. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type propellant increments. The charge system consists of one primary cartridge fitted in the tail and up to seven horseshoe increments fitted around the tail. The maximum number of propellant increments depends on the mortar model.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Bomb mass (nominal)</td>
<td>13kg</td>
</tr>
<tr>
<td>Bomb length (nominal)</td>
<td>658mm</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>0.208kg</td>
</tr>
<tr>
<td>Bomb length without fuze (nominal)</td>
<td>598mm</td>
</tr>
<tr>
<td>Bomb filling (nominal)</td>
<td>2.5kg TNT</td>
</tr>
<tr>
<td>Fuze</td>
<td>Point detonating</td>
</tr>
<tr>
<td>Propellant</td>
<td>Max 7 propellant increments</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum range: 6,840m
- Operational temperature: -40°C to +63°C

**PACKAGING**

- 1 round per fiber container, 2 containers per wooden box
- UN Classification: 1.1E UN 0006

**STATUS**
In service

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**120mm MORTAR BOMB TP**

**MISSION**
This mortar bomb is designed to be used for training. It has the same ballistic, weight and dimension characteristics of the HE version.

**DESCRIPTION**
The TP mortar bomb consists of a steel body fitted with dummy fuze. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type propellant increments. The charge system consists of one primary cartridge fitted in the tail and up to seven horseshoe increments fitted around the tail. The maximum number of propellant increments depends on the mortar model.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>120mm</td>
</tr>
<tr>
<td>Bomb mass (nominal)</td>
<td>13kg</td>
</tr>
<tr>
<td>Bomb length (nominal)</td>
<td>658mm</td>
</tr>
<tr>
<td>Bomb length without fuze (nominal)</td>
<td>598mm</td>
</tr>
<tr>
<td>Fuze</td>
<td>Dummy fuze</td>
</tr>
<tr>
<td>Propellant</td>
<td>Max 7 propellant increments</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum range: 6,840m
- Operational temperature: -40°C to +63°C

**PACKAGING**

- 1 round per fiber container, 2 containers per wooden box
- UN Classification: 2C UN 0328

**STATUS**
In service
81mm MORTAR HE LR
M512A1

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), to produce blast and fragmentation effects when used against structures, material targets and personnel.

**DESCRIPTION**
The round consists of a high fragmentation nodular cast iron bomb body with a plastic obturator, a nose fuze and an aluminium tail assembly. The body is loaded with Composition B explosive. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars).

**STATUS**
In service

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81mm MORTAR HE-IM LR
M512B1

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), to produce blast and fragmentation effects when used against structures, material targets and personnel.

**DESCRIPTION**
The round consists of a high fragmentation nodular cast iron bomb body with a plastic obturator, a nose fuze and an aluminium tail assembly. The body is loaded with 800g of insensitive melt cast explosive (XF®11585) and is compliant with STANAG 4439. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars). The 81mm M512B1 is an upgrade of the 81mm M512A1 design which provides improved safety for personnel and equipments, limits the reaction created by different threats (fire, impact, ...) and has less safety constraints for logistics during the complete lifecycle of the product (storage, transport, operation).

**STATUS**
In development
81mm MORTAR SMK(WP) 
M513A1

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), to produce instant white smoke for spotting, signalling or screening purposes and to produce an incendiary effect against material targets.

**DESCRIPTION**
The round consists of a nodular cast iron bomb body with a plastic obturator, a nose fuze and an aluminium tail assembly. The bomb is loaded with a white phosphorus smoke composition and has a centrally mounted explosive burster. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars).

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>SMK(WP)</td>
</tr>
<tr>
<td>Caliber</td>
<td>81mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>4.3kg</td>
</tr>
<tr>
<td>Round length</td>
<td>510mm</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>(White Phosphorus) 650g</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M563</td>
</tr>
<tr>
<td>Charge increments *</td>
<td>2 or 4 increments type – M665</td>
</tr>
<tr>
<td>Supercharge **</td>
<td>1 increment type – M655</td>
</tr>
</tbody>
</table>

*Charge configuration in accordance to Client’s requirements  
**Supercharge can be provided separately

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (low pressure mortar)</td>
<td>100 to 2,500m</td>
</tr>
<tr>
<td>Range (medium pressure mortar)</td>
<td>100 to 4,500m</td>
</tr>
<tr>
<td>Range (high pressure mortar)</td>
<td>100 to 5,500m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +62°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 3 rounds per container, 36 containers per pallet
- UN Classification: 1.2 H UN 0243

**STATUS**
In service

81mm MORTAR ILL LR 
M515A1

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), for the illumination of a specific point or area of operations.

**DESCRIPTION**
The round consists of a tubular steel bomb body and tail cone with a plastic obturating band, a time fuze and an aluminium tail assembly. It contains a black powder expelling charge, the illuminating flare and parachute. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars).

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Illuminating</td>
</tr>
<tr>
<td>Caliber</td>
<td>81mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>4.4kg</td>
</tr>
<tr>
<td>Round length</td>
<td>630mm</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>(Illuminating Comp) 700g</td>
</tr>
<tr>
<td>Fuze</td>
<td>TSQ</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M564</td>
</tr>
<tr>
<td>Charge increments *</td>
<td>2 or 4 increments type – M666</td>
</tr>
<tr>
<td>Supercharge **</td>
<td>1 increment type – M666</td>
</tr>
</tbody>
</table>

*Charge configuration in accordance to Client’s requirements  
**Supercharge can be provided separately

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (low pressure mortar)</td>
<td>250 to 2,050m</td>
</tr>
<tr>
<td>Range (medium pressure mortar)</td>
<td>250 to 3,450m</td>
</tr>
<tr>
<td>Range (high pressure mortar)</td>
<td>250 to 4,050m</td>
</tr>
<tr>
<td>Brust height</td>
<td>600m</td>
</tr>
<tr>
<td>Descent rate</td>
<td>4m/s</td>
</tr>
<tr>
<td>Illuminated rate</td>
<td>Period: approx. 55s Intensity: 600000cd</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +62°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 3 rounds per container, 36 containers per pallet
- UN Classification: 1.3 G UN 0254

**STATUS**
In service
81mm MORTAR IR-ILL LR
M466

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), for the illumination of a specific point or area of operations in the near infrared for use of night vision goggles.

**DESCRIPTION**
The round consists of a tubular steel bomb body and tail cone with a plastic obturating band, a time fuze and an aluminium tail assembly. It contains a black powder expelling charge, the illuminating flare and parachute. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars). The infrared illuminating composition is visible in the IR spectrum from 0.7 to 1.2 microns with a minimal signature in the visible spectrum. The pyrotechnic composition is REACH compliant.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>IR-ILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>81mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>4.4kg</td>
</tr>
<tr>
<td>Round length</td>
<td>630mm</td>
</tr>
<tr>
<td>Projectile filling (Illuminating Comp)</td>
<td>700g</td>
</tr>
<tr>
<td>Fuze</td>
<td>TSQ</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M564</td>
</tr>
<tr>
<td>Charge increments *</td>
<td>2 or 4 increments type – M566</td>
</tr>
<tr>
<td>Supercharge **</td>
<td>1 increment type – M566</td>
</tr>
</tbody>
</table>

*Charge configuration in accordance to Client's requirements
**Supercharge can be provided separately

**PERFORMANCES**

| Range (low pressure mortar) | 250 to 2,050m |
| Range (medium pressure mortar) | 250 to 3,450m |
| Range (high pressure mortar) | 250 to 4,850m |
| Descent rate | 4m/s |
| Infrared band | 0.7-1.2µm |
| Illuminated rate period | approx. 55s |
| Operational temperature | -46°C to +62°C |

**PACKAGING**

3 rounds per container, 36 containers per pallet

**STATUS**
In development

---

81mm MORTAR HE-TP LR
M572A1

**MISSION**
For use with low, medium and high pressure 81mm mortars (M1, M29/M29A1, M252/L16A1 and equivalents), to train mortar crews and forward observers.

**DESCRIPTION**
The HE-TP round is ballistically similar to the HE round and hence fires with the same firing tables. It uses the same propelling charge system as the live rounds. The tail assembly is fitted with the ignition cartridge and the "horseshoe" type charge increments (2 for low pressure, 4 for medium pressure and 5 for high pressure mortars). On impact the point detonating fuze functions causing a pyrotechnic charge to ignite which yields a spotting flash and a bang similar to live HE bomb while greatly reducing risks from fragmentation and blast effects.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE-TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>81mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>4.2kg</td>
</tr>
<tr>
<td>Round length</td>
<td>513mm</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Inert</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD</td>
</tr>
<tr>
<td>Primary ignition cartridge</td>
<td>M564</td>
</tr>
<tr>
<td>Charge increments *</td>
<td>2 or 4 increments type – M566</td>
</tr>
<tr>
<td>Supercharge **</td>
<td>1 increment type – M566</td>
</tr>
</tbody>
</table>

*Charge configuration in accordance to Client’s requirements
**Supercharge can be provided separately

**PERFORMANCES**

| Range (low pressure mortar) | 100 to 2,500m |
| Range (medium pressure mortar) | 100 to 4,500m |
| Range (high pressure mortar) | 100 to 5,500m |
| Operational temperature | -32°C to +62°C |

**PACKAGING**

3 rounds per container, 36 containers per pallet

UN Classification: 1.2 C UN 0328

**STATUS**
In service
**81mm MORTAR BOMB HE**

**MISSION**
This mortar bomb is a high explosive indirect fire ammunition, effective against light structures, vehicles, non-armored assets and infantry troops, due to its natural fragmentation and blast. 81mm HE Mortar Bomb is a High Explosive round developed to be used with M1, M29, M252, L16, 81-MX2-KM Mortar Systems, or equivalent.

**DESCRIPTION**
The mortar bomb consists of a high fragmentation nodular cast iron body with a plastic obturator, a nose point-detonating fuze and an aluminium tail assembly. The bomb is loaded with Composition B, the tail is fitted with an ignition primer and the augmenting charges. The charge system consists of one primary cartridge fitted in the tail and up to six horseshoe increments fitted around the tail. The maximum number of propellant increments depends on the mortar model.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: Mortar Bomb HE
- **Caliber**: 81mm
- **Bomb mass (nominal)**: 4.5kg
- **Bomb length**: 515mm
- **Fuze mass (nominal)**: 0.230kg
- **Bomb filling (nominal)**: 0.830kg Comp B
- **Fuze**: Point detonating
- **Propellant**: Max 6 propellant increments
  *Charge configuration in accordance to Client’s requirements*

**PERFORMANCES**
- **Maximum range**: 6,900m
- **Operational temperature**: -46°C to +63°C
- **Lethal radius**: >22m

**PACKAGING**
3 rounds per container, 36 containers per pallet or in accordance with Client’s requirements

**UN Classification**: 1.1 E UN 0006

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**81mm MORTAR BOMB ILL**

**MISSION**
This Mortar Bomb is an illuminating round developed to be used in the L16 Mortar Systems, or equivalent and is used for illuminating a desired area. The 81mm illuminating Mortar Bomb is in service in the Armed Forces of different countries e.g. UK Army, and remains at the forefront of operational requirements. The burn time gives troops ample opportunity to illuminate and spot hostile forces.

**DESCRIPTION**
The round consists of a tubular steel body and tail cone with a plastic obturating band, a mechanical time fuze and an aluminium tail assembly. It contains an expelling charge (black powder), the illuminating canister and parachute. The tail assembly is fitted with the ignition primer and the propellant increments.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: ILL
- **Caliber**: 81mm
- **Round mass (nominal)**: 4.5kg
- **Round length**: 650mm
- **Bomb filling (Illuminating Comp.)**: Illuminating
- **Fuze**: Mechanical time
- **Propellant**: Max 6 propellant increments
  *Charge configuration in accordance to Client’s requirements*

**PERFORMANCES**
- **Maximum range (High Pressure mortar)**: 4,800m
- **Burst height**: 500m
- **Descent rate**: ≤7m/s
- **Illuminating rate – period**: >30s
- **Illuminating rate - intensity**: 900kcd
- **Operational temperature**: -46°C to +63°C

**PACKAGING**
Two (2) rounds for container, 2 containers per metal box, 32 metal box per pallet or in accordance to Client’s requirements

**UN Classification**: 1.2 G UN 0171

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SIMMEL
DIFESA

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SIMMEL
DIFESA
81mm MORTAR BOMB ILL SIL447

**MISSION**
This Mortar Bomb is used for illuminating a desired area, developed to be used with M1, M29, M252, L16, 81-MX2-KM Mortar Systems, or equivalent.

**DESCRIPTION**
The round consists of a tubular steel body and tail cone with a plastic obturating band, a mechanical time fuze and an aluminium tail assembly. It contains an expelling charge (black powder), the illuminating canister and a parachute. The charge system consists of one primary cartridge fitted in the tail and up to six horseshoe increments fitted around the tail. The maximum number of propellant increments depends on the mortar model. ILL IR version is also available.

**STATUS**
In production

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**TECHNICAL DATA**
- **Type**: Mortar Bomb ILL
- **Caliber**: 81mm
- **Bomb mass (nominal)**: 4.5kg
- **Bomb length (nominal)**: 650mm
- **Bomb filling**: Illuminating composition
- **Fuze**: Mechanical time
- **Propellant**: Max 6 propellant increments

*Charge configuration in accordance to Client’s requirements.

**PERFORMANCES**
- **Range (High Pressure Mortar)**: 6,900m
- **Burst height**: 500m
- **Descent rate**: ≤7m/s
- **Illuminating rate - period**: >30s
- **Illuminated rate - intensity**: 900kcd
- **Operational temperature**: -46°C to +63°C

**PACKAGING**
- 3 rounds per container, 36 containers per pallet or in accordance with Client’s requirements
- UN Classification: 1.2 UN 0171

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81mm MORTAR BOMB IR-ILL

**MISSION**
This Mortar Bomb is an Infrared Illuminating bomb developed to be used in the L16 Mortar Systems, or equivalent. The Infrared Illuminating Bomb represents a major step forward for 81mm mortar system technology. The IR technology allows troops in the field to greatly enhanced visibility for night time operations and allows friendly forces to effectively observe the environment through night vision equipment.

**DESCRIPTION**
The round consists of a tubular steel body and tail cone with a plastic obturating band, a mechanical time fuze and an aluminium tail assembly. It contains an expelling charge (black powder), the illuminating canister and parachute. The tail assembly is fixed with the ignition primer and the propellant increments.

**STATUS**
In service

---

**TECHNICAL DATA**
- **Type**: IR (Infrared Illuminating)
- **Caliber**: 81mm
- **Round mass**: 4.5kg
- **Round length**: 650mm
- **Bomb filling (Illuminating Comp.)**: IR (Infrared)
- **Fuze**: Mechanical time
- **Propellant**: Max 6 propellant increments

*Charge configuration in accordance to Client’s requirements.

**PERFORMANCES**
- **Range (High Pressure Mortar)**: 4,800m
- **Burst height**: 500m
- **Descent rate**: ≤7m/s
- **Illuminating rate - period**: >50s
- **Illuminating rate - intensity**: 250W/Steradians
- **Operational temperature**: -46°C to +63°C

**PACKAGING**
- 2 rounds for container, 2 containers per metal box, 32 metal box per pallet or in accordance to Client’s requirements
- UN Classification: 1.2 UN 0171
**60mm MORTAR HE LR**

**M710**

**MISSION**

For use with long range and light weight (commando type) 60mm mortars (M19, M224 and equivalents), to produce blast and fragmentation effects when used against structures, material targets and personnel.

**DESCRIPTION**

The round consists of a high fragmentation cast iron bomb body loaded with Composition B. The bomb body is fitted with a plastic obturator, a nose fuze and an aluminium tail assembly. The tail assembly contains the ignition cartridge and the "horseshoe" type charge increments. The M710-2 has 2 increments for use in M19 type mortars. The M710-4 has 4 increments for use in M224 type mortars. The M710-5 has an additional increment to obtain maximum range in the M224 mortar.

**STATUS**

Under development

**TECHNICAL DATA**

- **Type**: HE
- **Caliber**: 60mm
- **Round mass (nominal)**: 1.8kg
- **Round length**: 375mm
- **Projectile filling (Comp. B)**: 0.25kg
- **Fuze**: PD SQ
- **Primary ignition cartridge**: M705
- **Charge increments**: 2, 4 or 5 horseshoes - M706

**PERFORMANCES**

- **Muzzle safety**: >40m
- **Range (Charge 0-5 in M224)**: 70 to 4,000m
- **Range (Charge 0-4 in M224)**: 70 to 3,500m
- **Range (Charge 0-2 in M19)**: 70 to 2,150m
- **Lethal radius**: >16m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**

1 round per container, 2 containers per wooden box

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**60mm MORTAR SMK(WP)**

**M711**

**MISSION**

For use with long range and light weight (commando type) 60mm mortars (M19, M224 and equivalents), to release instant white smoke for spotting, signalling or screening purposes and to produce an incendiary effect against material targets.

**DESCRIPTION**

The round consists of a nodular cast iron bomb body with a plastic obturator, a nose fuze and an aluminium tail assembly. The bomb is loaded with White Phosphorus and has a centrally oriented high explosive burster. The tail assembly contains the ignition cartridge and the “horseshoe” type charge increments. The M711-2 has 2 increments for use with M19 type mortars. The M711-4 has 4 increments for use with M224 type mortars. The M711-5 has an additional increment to obtain maximum range in the M224 mortar.

**STATUS**

Under development

**TECHNICAL DATA**

- **Type**: SMK(WP)
- **Caliber**: 60mm
- **Round mass (nominal)**: 1.8kg
- **Round length**: 375mm
- **Projectile filling (Comp. B)**: 0.25kg
- **Fuze**: PD (Delay or Superquick)
- **Primary ignition cartridge**: M705
- **Charge increments**: 2, 4 or 5 horseshoes - M706

**PERFORMANCES**

- **Muzzle safety**: >40m
- **Range (Charge 0-5 in M224)**: 70 to 4,000m
- **Range (Charge 0-4 in M224)**: 70 to 3,500m
- **Range (Charge 0-2 in M19)**: 70 to 2,150m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**

1 round per container, 2 containers per wooden box
**60mm MORTAR ILL M712**

+ **MISSION**
  For use with low and high pressure 60mm mortars (M19, M224 and equivalents), for the illumination of a specific point or area of operations.

+ **DESCRIPTION**
  The round consists of a tubular steel bomb body with a plastic obturating band, a mechanical time fuze, a tail cone and aluminium tail assembly. It is loaded with the illuminating flare/parachute assembly and a black powder expelling charge. The tail assembly contains the ignition cartridge and "horseshoe" type increment charges. The M712-2 has 2 increments for use in M19 type mortars. The M712-4 has 4 increments for use in M224 type mortars.

+ **STATUS**
  Under development

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
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<tr>
<td><strong>Caliber</strong></td>
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<tr>
<td><strong>Round mass (nominal)</strong></td>
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<tr>
<td><strong>Round length</strong></td>
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<tr>
<td><strong>Projectile filling</strong></td>
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<td><strong>Fuze</strong></td>
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<tr>
<td><strong>Primary ignition cartridge</strong></td>
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<td><strong>Charge Increments</strong></td>
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<th>PERFORMANCES</th>
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<tbody>
<tr>
<td><strong>Muzzle safety</strong></td>
</tr>
<tr>
<td><strong>Range (Charge 0-4 in M224)</strong></td>
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<tr>
<td><strong>Range (Charge 0-2 in M19)</strong></td>
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<tr>
<td><strong>Burst height</strong></td>
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<tr>
<td><strong>Descent rate</strong></td>
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<td><strong>Illuminated rate - period</strong></td>
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<td><strong>Illuminated rate - intensity</strong></td>
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<tr>
<td><strong>Operational temperature</strong></td>
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</table>

<table>
<thead>
<tr>
<th>PACKAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 round per container, 2 containers per wooden box</td>
</tr>
</tbody>
</table>

**FB652**

+ **MISSION**
  The FB 652 is a dual-safety mechanical time fuze designed to be used on 60mm, 81mm and 120mm illuminating mortar rounds.

+ **DESCRIPTION**
  The FB 652 is a derivative of the FB650 with the addition of a second safety feature for compliance with STANAG 4187. The fuze contains a highly accurate clockwork mechanism, which can be set manually for a time delay between 6 and 54 seconds with steps of 0.5 second. A dual safety device requires the combination of 1 second time elapsed after launch, and the spin of an air-activated nose flywheel to provide armanent. The fuze features a standard 1.5" thread in accordance to the figure 5 of Mil-Std-333.

+ **STATUS**
  In service

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
</tr>
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<tbody>
<tr>
<td><strong>Type</strong></td>
</tr>
<tr>
<td><strong>Caliber</strong></td>
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<td><strong>Fuze mass (nominal)</strong></td>
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<td><strong>Fuze length (nominal)</strong></td>
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<td><strong>Booster charge mass (nominal)</strong></td>
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<td><strong>Power supply</strong></td>
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<table>
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<tr>
<th>PERFORMANCES</th>
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<tbody>
<tr>
<td><strong>Functions</strong></td>
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<tr>
<td><strong>Mechanical safety distance</strong></td>
</tr>
<tr>
<td><strong>Minimum operating distance</strong></td>
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<td><strong>Operational temperature</strong></td>
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<table>
<thead>
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<th>PACKAGING</th>
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</thead>
<tbody>
<tr>
<td>50 fuzes per wooden container</td>
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<tr>
<td>24 wooden containers per pallet</td>
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<tr>
<td>UN Classification: 1.2D UN 0409</td>
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</table>
**MISSION**

The 120mm HE F1 belongs to an ammunition family complying with STANAG 4385 and Mopi AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted a 120mm smoothbore gun. The 120mm HE F1 is designed to defeat reinforced concrete structures, light armored vehicles and personnel in the open field thanks to its capability of functioning at high grazing incidence (88.5°). The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

**DESCRIPTION**

The Cartridge 120mm HE F1 is a high explosive round with tracer and consists of a projectile, a propelling charge assembly, and a point detonating (PD) fuze. The propulsion system consists of a metallic stub case with a combustible cartridge case, granular propellant and an electric semi- combustible primer. The projectile is based on a forged steel body filled with explosive. A fin tail assembly with 6 deployable fins, is fixed on the shell body.

**TECHNICAL DATA**

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<thead>
<tr>
<th>Type</th>
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<td>Caliber</td>
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<td>Round mass</td>
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<td>945mm</td>
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<td>Projectile</td>
<td>16.8kg</td>
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<tr>
<td>Propellant</td>
<td>Single Base</td>
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<tr>
<td>Cartridge case</td>
<td>Combustible</td>
</tr>
<tr>
<td>Fuze</td>
<td>Point detonating Super Quick, 2 independent safety devices compliant with STANAG 4187</td>
</tr>
<tr>
<td>Primer</td>
<td>Semi-combustible, Electrical primer</td>
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<tr>
<td>Projectile type</td>
<td>HE SQ</td>
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<tr>
<td>Explosive mass</td>
<td>3kg</td>
</tr>
<tr>
<td>Type of explosive</td>
<td>Compo B</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Range: 4,000m
- Muzzle velocity (+21°C): 1,050m/s (52 cal.)
- Precision/Dispersion: <0.35mil @ 2,000m
- Operational temperature: -31°C to +51°C

**PACKAGING**

- Box: Plastic container

**STATUS**

In service
FB650

**MISSION**
The FB 650 is a mechanical time fuze designed to be used on 60mm, 81mm and 120mm illuminating mortar rounds.

**DESCRIPTION**
The fuze contains a highly accurate clockwork mechanism, which can be set manually for a time delay between 6 and 54 seconds with steps of 0.5 second. A safety device delays the armament of the fuze by 1” so ensuring the necessary safety distance. The fuze features a standard 1.5” thread in accordance with the figure 5 of Mil-Std-333.

**STATUS**
In service

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120mm HE IM3M
120mm AMMUNITION FOR NATO GUNS

**MISSION**
The 120mm HE IM3M (Insensitive Ammunition with 3 functioning Modes) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP26 requirements. It can be fired by the LECLERC MBT and other MBT's fitted with a 120mm smoothbore gun. The 120mm HE IM3M is a high explosive round equipped with a multimode fuze programmable for impact, delay time or airbursting modes. Its multimode capability enables the projectile to defeat a large spectrum of targets: light armored vehicles, dismounted troops, protected combat group in urban or landscape battlefields, hidden targets, bunkers. In addition 120mm HE IM3M is an insensitive 120mm high explosive ammunition compliant with STANAG 4439.

**DESCRIPTION**
The Cartridge 120mm HE IM3M is an insensitive high explosive round with tracer and consists of a projectile, and a propelling charge assembly. The propulsion system consists of a metallic stub case with combustible cartridge case, LOVA propellant and electric semi-combustible primer. The projectile is based on a forged steel body, with reinforced ogive filled with insensitive explosive, and a multimode programmable base fuze. A fin tail assembly with 6 deployable fins, is fixed on the shell body.

**STATUS**
Under development
**120mm APFSDS F1B**  
**120mm AMMUNITION FOR NATO GUNS**

**MISSION**  
The 120mm APFSDS F1B (Armour Piercing Fin Stabilized Discarding Sabot) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted a 120mm smoothbore gun. The 120mm APFSDS F1B is designed to defeat heavy armored vehicles such as MBT’s. The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

**DESCRIPTION**  
The 120mm APFSDS F1B is a Kinetic Energy round consisting of an assembly of a propelling charge and a projectile with Tungsten penetrator. The propulsion system consists of a metallic stub case with combustible cartridge case, granular propellant and electric semi-combustible primer. The projectile is based on a tungsten penetrator equipped with a six blades fin assembled in a 3 part-sabot. A ballistic cap is fitted to the front of the penetrator. The sabot has a silicone rubber seal at the rear to prevent gas leakage.

**STATUS**  
In service

**TECHNICAL DATA**
- **Type**: Armour Piercing Fin Stabilized Discarding Sabot
- **Caliber**: 120mm
- **Round mass**: 19.6kg
- **Round length**: 984mm
- **Projectile mass**: 7.3kg
- **Cartridge case**: Combustible
- **Propellant**: Double base
- **Primer**: Semi-combustible, Electrical primer

**PERFORMANCES**
- **Range**: 4,000m
- **Muzzle velocity (+21°C)**: 1,790m/s (52 cal.)
- **Precision/Dispersion**: <0.20mil @ 3,000m
- **Operational temperature**: -31°C to +51°C

**PACKAGING**
- **Box**: Plastic container

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**120mm CAN**  
**120mm AMMUNITION FOR NATO GUNS**

**MISSION**  
The 120mm CAN (Canister), with the design based on GD-OTS’ M1028 projectile, belongs to an ammunition family complying with all the STANAG 4385 and MOPI AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted with a 120mm smoothbore gun. The 120mm CAN provides the Main Battle Tanks crews with a very effective close-defense solution against various threats in urban or battlefields, while limiting collateral damages. The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

**DESCRIPTION**  
The 120mm CAN consists in a projectile containing Tungsten spheres stacked into an aluminum shell body, a propelling charge assembly. The propulsion system consists in a metallic stub case with combustible cartridge case, granular propellant and electric semi-combustible primer.

**STATUS**  
In service

**TECHNICAL DATA**
- **Type**: Canister
- **Caliber**: 120mm
- **Round mass (nominal)**: 22.5kg
- **Round length**: 761mm
- **Projectile mass (nominal)**: 11.5kg
- **Projectile filling**: 1,100 approx, Tungsten Spheres
- **Cartridge case**: Combustible
- **Primer**: Semi-combustible, Electrical primer
- **Propellant**: Double Base

**PERFORMANCES**
- **Muzzle velocity**: 1,410m/s approx
- **Maximum range**: 500m
- **Operational temperature**: -31°C to +51°C

**PACKAGING**
- **Box**: Plastic container
**120mm HEAT-TP F1A**

**120mm AMMUNITION FOR NATO GUNS**

**MISSION**

The 120mm HEAT-TP F1A (Training Practice) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted a 120mm smoothbore gun. The 120mm HEAT-TP is designed for Training purposes of the MBT’s crews. The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

**DESCRIPTION**

The 120mm HEAT-TP F1A is a training round consisting in an assembly of a propelling charge and of an inert projectile with a tracer. The propulsion system consists in a metallic stub case with a combustible cartridge case, granular propellant and an electric semi-combustible primer. The projectile consists of an inert steel shell body with a spike. A fin tail assembly, fitted with a tracer, is fixed on the shell body.

**TECHNICAL DATA**

- **Type**: Training practice
- **Caliber**: 120mm
- **Round mass**: 24.3kg
- **Round length**: 983mm
- **Projectile mass**: 14.4kg
- **Cartridge case**: Combustible
- **Propellant**: Single base
- **Projectile type**: Inert
- **Primer**: Semi-combustible, Electrical primer

**PERFORMANCES**

- **Range**: 2,500m
- **Muzzle velocity (+21°C)**: 1,100m/s (52 cal.)
- **Precision/Dispersion**: <0,25mil @ 2,000m
- **Operational temperature**: -31°C to +51°C

**PACKAGING**

- **Box**: Plastic container

**STATUS**

In service

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**120mm APFSDS-TP**

**120mm AMMUNITION FOR NATO GUNS**

**MISSION**

The 120mm APFSDS-TP (Armour Piercing Fin Stabilized Discarding Sabot – Training Practice) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted a 120mm smoothbore gun. The 120mm APFSDS-TP is a kinetic energy, target practice round designed to simulate a Kinetic Energy round gun firing effect, but at reduced maximum ranges to allow training firings on short ranges proving grounds and training areas. The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

**DESCRIPTION**

The 120mm APFSDS-TP is a training round consisting in an assembly of a propelling charge and of a projectile with a tracer. The propulsion system consists in a metallic stub case with a combustible cartridge case, granular propellant and an electric semi-combustible primer. The projectile consists in a one-piece steel rod with a tail cone assembly including a tracer, which is fixed into a 3-parts sabot. Reduced range is achieved by the aerodynamic blocking effect of slots located on the tail cone.

**TECHNICAL DATA**

- **Type**: Training practice
- **Caliber**: 120mm
- **Round mass**: 18kg
- **Round length**: 900mm
- **Projectile mass**: 6.1kg
- **Cartridge case**: Combustible
- **Propellant**: Single base
- **Projectile type**: Inert
- **Primer**: Electrical semi-combustible primer

**PERFORMANCES**

- **Range**: 3,000m
- **Muzzle velocity (+21°C)**: 1,750m/s (52 cal.)
- **Precision/Dispersion**: <0.25Mil @ 2,500M
- **Operational temperature**: -31°C to +51°C

**PACKAGING**

- **Box**: Plastic container

**STATUS**

In service
**115mm TK APFSDS-T**

**MISSION**
For use with 115mm tank guns, as fitted in the Russian T62 tanks, to defeat armored targets by means of the kinetic energy (KE) of its tungsten alloy long rod penetrator.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminium windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with a percussion primer and a wear reducing liner.

**TECHNICAL DATA**

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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Caliber</td>
<td>115mm</td>
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<td>Round mass (nominal)</td>
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<td>Projectile mass (nominal)</td>
<td>6.5kg</td>
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<tr>
<td>Penetrator</td>
<td>Tungsten alloy</td>
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<tr>
<td>Tracer</td>
<td>M21</td>
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<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
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<td>Cartridge case</td>
<td>Brass</td>
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<td>Primer</td>
<td>Percussion cap M61</td>
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<td>Propellant (nominal)</td>
<td>8.5kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,635m/s
- Dispersion: 0.3 mil
- Line of sight penetration (RHA at 2,000m & 60° obliquity): >500mm
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 1 round per container
- 2 containers per cardboard box
- 12 wooden boxes per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service

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**105mm TK SMK (WP)-T**

**MISSION**
For use with 105mm US M68, UK L7 and other Stanag 4458 compliant tank guns, to provide spotting, signalling, or screening smoke and incendiary effects against structures and material targets.

**DESCRIPTION**
The projectile comprises a thin walled, steel cylindrical body with two driving bands and a base plug which is fitted with a base detonating fuze and an external tracer. It is loaded with White Phosphorus (WP) and has a centrally positioned composition A5 burster. The projectile is assembled to a brass cartridge case fitted with an electric primer and loaded with a cool burning, single base, multi-perforated, bagged propelling charge.

**TECHNICAL DATA**

<table>
<thead>
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<th>Fixed round SMK(WP)-T</th>
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</thead>
<tbody>
<tr>
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<td>105mm</td>
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<td>Round mass (nominal)</td>
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<td>Round length</td>
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<tr>
<td>Projectile mass (nominal)</td>
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<td>Projectile filling (White Phosphorus)</td>
<td>2.6kg</td>
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<td>Fuze - BD</td>
<td>M10504</td>
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<td>Tracer</td>
<td>M12</td>
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<td>Cartridge case</td>
<td>Brass</td>
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<td>Primer</td>
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<td>Propellant SB (nominal)</td>
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<td>NSN</td>
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**PERFORMANCES**

- Muzzle velocity at (at 21°C) (nominal): 731.5m/s
- Maximum range: 9,150m
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 H UN 0245

**STATUS**
In service
**TANK AMMUNITION**

### 105mm TK HESH-TP-T

**M467A1-E**

**MISSION**
For use with 105mm US M68, UK L7 and other Stanag 4458 compliant tank guns, to provide cost effective marksmanship training and live fire training of gun crews.

**DESCRIPTION**
This round is similar in appearance and ballistically to the HESH-T (HEP-T) M393 family of ammunition. The projectile comprises a steel cylindrical body fitted with two driving bands, and a base plug to which is secured a tracer. The projectile is assembled to a brass cartridge case, which is fitted with an electric primer and loaded with a cool burning, single base, multi-perforated bagged type propelling charge. This round is based on the MECAR M467A1 round, That was type classified by the US Army.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: Fixed round HESH-TP-T
- **Caliber**: 105mm
- **Round mass (nominal)**: 20.6kg
- **Round length**: 940mm
- **Projectile mass (nominal)**: 11.3kg
- **Tracer**: M12
- **Cartridge case**: Brass
- **Primer**: Electric cap M120
- **Propellant SB (nominal)**: 2.8kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 730m/s
- **Dispersion**: 0.31 mil
- **Maximum range**: 9,510m
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- **UN Classification**: 1.2 C UN 0328

### 105mm TK HE

**M1010**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to provide blast and fragmentation effect against equipment, structures and personnel.

**DESCRIPTION**
The steel bodied projectile, loaded with a 2.0kg high explosive charge, is fitted with a gilding metal driving band and a point detonating impact fuze. The projectile is assembled to a brass or steel cartridge case, which is fitted with an electric primer and loaded with a cool burning, single base, multi-perforated propellant. The fuze has two independent in-bore safeties and complies with MIL-STD-1316. Please note that a new round is under development for the CMI CT-CV turret.

**STATUS**
Under development

**TECHNICAL DATA**
- **Type**: Fixed round HE
- **Caliber**: 105mm
- **Round mass (nominal)**: 23kg
- **Round length**: 998mm
- **Projectile mass (nominal)**: 12.1kg
- **Projectile (Explosive content)**: 2.0kg
- **Fuze**: PD
- **Cartridge case**: Brass
- **Primer**: Electric cap M83
- **Propellant SB (nominal)**: 3.0kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 700m/s
- **Maximum range (42°C elevation)**: 12,930m
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- **UN Classification**: 1.1 E UN 0006
105mm TK HEP-IM-T
M393B3-E

+ MISSION
For use with 105mm tank guns US M68 and UK L7 to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

+ DESCRIPTION
The HEP-IM-T (HESH-IM-T) projectile consists of a thin walled steel cylindrical body with two driving bands, a relatively short ogive and a base plug to which is secured the dual safety base detonating fuze and a tracer. The warhead is loaded with insensitive pressed explosive (P16945) and is compliant with STANAG 4439. The projectile is assembled to a brass cartridge case fitted with an electric primer and loaded with a cool burning, single base, multi perforated, bagged type propelling charge. This round is an upgrade of the MECAR M393A3 design, that was type classified by the US Army in 2004, which provides improved safety for personnel and equipments, limits the reaction created by different threats (fire, impact, ...) and has less safety constraints for logistics during the complete lifecycle of the product (storage, transport, operation).

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, HEP-IM-T (HESH-IM-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>20.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>940mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>11.5kg</td>
</tr>
<tr>
<td>Projectile filling (P16945)</td>
<td>3.3kg</td>
</tr>
<tr>
<td>Fuze - BD</td>
<td>M10503</td>
</tr>
<tr>
<td>Tracer</td>
<td>M12</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric cap M120</td>
</tr>
<tr>
<td>Propellant (SB) (nominal)</td>
<td>2.9kg</td>
</tr>
</tbody>
</table>

+ PERFORMANCES

| Muzzle velocity (at 21°C) (nominal) | 731.5m/s |
| Dispersion                          | 0.3 mil  |
| Maximum range                       | 9,510m   |
| Operational temperature             | -32°C to +52°C |

+ PACKAGING

<table>
<thead>
<tr>
<th>2 rounds per twin container, 12 containers per pallet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brass weight (twin container)</td>
</tr>
<tr>
<td>Dimension ext (twin container)</td>
</tr>
<tr>
<td>Brass weight (complete pallet)</td>
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<td>Dimension ext (complete pallet)</td>
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<td>UN Classification: Under qualification</td>
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+ STATUS
Qualified

105mm TK HESH-T
M393A3-E

+ MISSION
For use with 105mm US M68, UK L7 and other Stanag 4458 compliant tank guns, to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

+ DESCRIPTION
The HESH-T (HEP-T) projectile consists of a thin walled steel cylindrical body with two driving bands, a relatively short ogive and a base plug to which is secured the dual safety base detonating fuze and a tracer. It is loaded with Composition A3 explosive. The projectile is assembled to a brass cartridge case fitted with an electric primer and loaded with a cool burning, single base, multi perforated, bagged type propelling charge. This round is based on the MECAR M393A3 round, that was type classified by the US Army in 2004.

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HESH-T (HEP-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>20.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>940mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>11.2kg</td>
</tr>
<tr>
<td>Projectile filling (Comp B)</td>
<td>3.0kg</td>
</tr>
<tr>
<td>Fuze - BD</td>
<td>M10503</td>
</tr>
<tr>
<td>Tracer</td>
<td>M12</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric cap M120</td>
</tr>
<tr>
<td>Propellant (SB) (nominal)</td>
<td>2.9kg</td>
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<tr>
<td>NSN</td>
<td>1315-00-728-0704</td>
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</tbody>
</table>

+ PERFORMANCES

| Muzzle velocity (at 21°C) (nominal) | 731.5m/s |
| Dispersion                          | 0.3 mil  |
| Maximum range                       | 9,510m   |
| Operational temperature             | -32°C to +52°C |

+ PACKAGING

<table>
<thead>
<tr>
<th>2 rounds per twin container</th>
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</thead>
<tbody>
<tr>
<td>Brass weight (twin container)</td>
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<tr>
<td>Dimension ext (twin container)</td>
</tr>
<tr>
<td>Brass weight (complete pallet)</td>
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<tr>
<td>Dimension ext (complete pallet)</td>
</tr>
<tr>
<td>UN Classification: 1.1 E UN 0006</td>
</tr>
</tbody>
</table>

+ STATUS
In service
**105mm TK HEAT-TP-T M490A1**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**
This round is similar in appearance and ballistically to the MECAR M1061A1 and to the US M456 Series service rounds. The inert, steel bodied projectile is fitted with a polymer obturating band, a steel standoff spike, a tail fin assembly and a tracer. The projectile is assembled to a brass cartridge case, which is filled with triple base propellant and fitted with an electric primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
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<tr>
<td>Caliber</td>
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<td>Projectile mass (nominal)</td>
<td>10.9kg</td>
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<tr>
<td>Projectile</td>
<td>Inert</td>
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<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
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<tr>
<td>Primer</td>
<td>Electric cap MB3</td>
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<tr>
<td>Propellant TB (nominal)</td>
<td>5.3kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,173 m/s
- Dispersion: 0.3 mil
- Maximum range: 8,200m
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service

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**105mm TK TPFSDS-T M1056**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a fin stabilized steel rod and a tracer assembled in the fin assembly. The sub-projectile is contained in a 3-piece aluminium Discarding Sabot, held in place with a polymer band at the forward end and a polymer obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case, which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with an electric primer and a wear reducing liner. This round is similar, in appearance and ballistically to the MECAR 105mm APFSDS-T M1060A2/A3 rounds as well as most other existing APFSDS-T rounds, up to a range of 2.5km.

**TECHNICAL DATA**

<table>
<thead>
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<th>Type</th>
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<td>Round mass (nominal)</td>
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<tr>
<td>Projectile</td>
<td>Steel</td>
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<tr>
<td>Tracer</td>
<td>M13</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric cap M120</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>5.6kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,505 m/s
- Dispersion: 0.32 mil
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service
**105mm TK TPCSDS-T M1057**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a cone stabilized steel rod and a tracer assembled in the cone assembly. The sub-projectile is contained in a 3-piece aluminium discarding sabot, held in place with a polymer band at the forward end and a polymer obturating band at the rear end of the sabot.

The projectile is crimped to the cartridge case, which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with an electric primer and a wear reducing liner. This round is similar, in appearance and ballistically to the MECAR 105mm APFSDS-T M1060A2/A3 rounds as well as most other existing APFSDS-T rounds, up to a range of 2.5km. The cone tail design ensures that the maximum range of the projectile is less than 10km.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round TPCSDS-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
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<tr>
<td>Round mass (nominal)</td>
<td>17.3kg</td>
</tr>
<tr>
<td>Round length</td>
<td>962mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>5.2kg</td>
</tr>
<tr>
<td>Projectile</td>
<td>Steel</td>
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<tr>
<td>Tracer</td>
<td>M13</td>
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<tr>
<td>Cartridge case</td>
<td>Brass</td>
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<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric cap M120</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>5.6kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,475m/s*
- Dispersion: 0.3 mil
- Maximum range: <10km
- Operational temperature: -32°C to +50°C

*Velocity can be adjusted to provide ballistic match to APFSDS-T round.

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service

---

**105mm TK APFSDS-T M1060A2**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to defeat armored targets by means of the kinetic energy (KE) of its monobloc tungsten alloy long rod penetrator. This model of KE round is a major product improvement of the MECAR 105mm APFSDS-T M1060A1.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminium windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium discarding sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the lined, brass cartridge case which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with an electric primer and a wear reducing liner.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round APFSDS-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
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<tr>
<td>Round mass (nominal)</td>
<td>18.5kg</td>
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<td>Round length</td>
<td>990mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
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<tr>
<td>Penetrator</td>
<td>Tungsten alloy</td>
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<td>Tracer</td>
<td>M21</td>
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<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric cap M83</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>5.9kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,460m/s
- Dispersion: 0.25 mil
- Line of sight penetration (RHA at 2,000 & 60° obliquity): 440mm
- Operational temperature: -32°C to +50°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service
105mm TK APFSDS-T
M1060A3

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to defeat armored targets by means of the kinetic energy (KE) of its monobloc tungsten alloy long rod penetrator. This model of KE round is a major product improvement of the MECAR 105mm APFSDS-T M1060A2.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminium windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with an electric primer and a wear reducing liner.

**TECHNICAL DATA**
- Type: Fixed round APFSDS-T
- Caliber: 105mm
- Round mass (nominal): 18.7kg
- Round length: 1,000mm
- Projectile mass (nominal): 6.2kg
- Penetrator: Tungsten alloy
- Tracer: M21
- Cartridge case: Brass
- Anti-wear additive: Titanium dioxide
- Primer: Electric cap M83
- Propellant (nominal): 6.1kg

**PERFORMANCES**
- Muzzle velocity (at 21°C) (nominal): 1,560m/s
- Dispersion: 0.25 mil
- Line of sight penetration (RHA at 2,000 & 60° obliquity): >500mm
- Operational temperature: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service

105mm TK HEAT-MP-T
M1061A1

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to defeat armored targets and structures by means of its shaped charge effect and personnel with blast and fragmentation effect.

**DESCRIPTION**
The steel bodied projectile is fitted with a polymer obturating band, a stand-off spike assembly, a tail fin assembly, and a tracer. It is equipped with a dual safety Point Impact Base Detonating (PIBD) fuze, which complies with Mil-Std-1316. It has a high explosive shaped charge with a copper liner. The projectile is assembled to a brass cartridge case which is fitted with triple base propellant and fitted with an electric primer. This round is based on the US 105mm M456 series and is similar in appearance and ballistically.

**TECHNICAL DATA**
- Type: Fixed round HEAT-MP-T
- Caliber: 105mm
- Round mass (nominal): 22.2kg
- Round length: 992mm
- Projectile mass (nominal): 10.5kg
- Projectile filling (Comp B): 1.1kg
- Fuze: PIBD
- Tracer: M13
- Cartridge case: Brass
- Anti-wear additive: Titanium dioxide
- Primer: Electric cap M83
- Propellant TB (nominal): 5.3kg

**PERFORMANCES**
- Muzzle velocity (at 21°C) (nominal): 1,173m/s
- Dispersion: 0.3 mil
- Maximum range: 8,200m
- Penetration (at operational ranges): >NATO Single Heavy
- Operational temperature: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
In service
**105mm TK CANISTER M1204**

**MISSION**
For use with 105mm US M68, UK L7, CN105F1 and other Stanag 4458 compliant tank guns, to defeat massed infantry attack and to break up infantry concentrations and personnel in dense foliage. This round is particularly effective in the anti-ambush role.

**DESCRIPTION**
The M1204 CANISTER is a fixed round with the projectile crimped into a brass cartridge case. The projectile is loaded with steel spheres which are dispersed when the projectile exits the gun barrel. The cartridge case contains a propelling charge which is initiated by an electric M120 type primer.

**STATUS**
In service

---

**105mm L51 HEAT-T**

**MISSION**
The Simmel Difesa 105mm L51mm HEAT-T cartridge ensure the maximum reliability, accuracy and lethality. Its penetration capability is greater than the standard HEAT-T M456A1 ammunition. The HEAT-T is a dual-purpose ammunition, effective against medium-armored vehicles due to a unique shaped charge and against infantry due to its natural fragmentation and blast.

**DESCRIPTION**
The steel body projectile is fitted with a plastic obturator, a threaded standoff spike assembly, a fin and boom assembly, and a point initiating base-detonating fuze. A copper liner within the body shapes the explosive charge of Composition B. A piezoelectric element retained in a nose cap is fitted to the spike assembly and is connected to the base detonating fuze in the body. The fin is fitted with a tracer. The projectile is assembled to a brass cartridge case which is filled with triple a base propellant and fitted with an electric primer.

**TECHNICAL DATA**
- Type: Fixed round HEAT-T
- Caliber: 105mm
- Round mass (nominal): 22.1kg
- Round length: 992mm
- Projectile mass (nominal): 10.25kg
- Projectile filling (Comp B): 0.97kg
- Fuze: PIBD
- Tracer: M13
- Cartridge case: Brass
- Primer: Electric
- Propellant TB (nominal): 5.49kg

**PERFORMANCES**
- Muzzle velocity (at 21°C) (nominal): 1,173m/s
- Dispersion: 0.24 mil horizontal, 0.20 mil vertical
- Maximum range: 8,200m
- Penetration (at operational ranges): > than the standard M456A1 model
- Operational temperature: -46°C to +52°C

**PACKAGING**
- 1 round per fiber container, 2 containers per wooden box
- UN Classification: 1.1E UN 0006

**STATUS**
In service
**105mm L51 HEP-T (HESH-T)**

**MISSION**
The Simmel Difesa 105mm L51mm HEP-T cartridge is designed to be used against armored targets, light materiel and personnel.

**DESCRIPTION**
The HEP-T (HESH-T) projectile consists of a steel cylindrical body fitted with BD (Base Detonating) fuze and a tracer is secured. The projectile is loaded with a high explosive charge of Composition A3. The projectile is assembled to a brass (or steel) cartridge case fitted with an electric primer and containing a bagged propelling charge.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEP-T (HESH-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>20.5kg</td>
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<tr>
<td>Round length</td>
<td>938mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>11.35kg</td>
</tr>
<tr>
<td>Projectile filling (Comp A3)</td>
<td>3.0kg</td>
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<tr>
<td>Fuze</td>
<td>BD</td>
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<tr>
<td>Tracer</td>
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<td>Cartridge case</td>
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<td>Primer</td>
<td>Electric</td>
</tr>
<tr>
<td>Propellant 5B (nominal)</td>
<td>2.7kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 731 m/s
- Dispersion: 0.3 mil
- Maximum range: 9,510 m
- Operational temperature: -40°C to +52°C

**PACKAGING**

- 1 round per fiber container, 2 containers per wooden box
- UN Classification: 1.1E UN 0006

**105mm L51 TP-T**

**MISSION**
The 105mm L51 TP-T ammunition with dummy fuze is a training round. It has the same internal and external ballistics behaviour of the HEAT-T ammunition.

**DESCRIPTION**
The cartridge is similar in external appearance to the HEAT-T. The inert projectile, fitted with a tracer, is assembled to a brass cartridge case which is filled with a triple base propellant and fitted with an electric primer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round TP-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
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<tr>
<td>Round mass (nominal)</td>
<td>21.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>999mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>10.25kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Inert</td>
</tr>
<tr>
<td>Tracer</td>
<td>M13</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
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<td>Primer</td>
<td>Electric</td>
</tr>
<tr>
<td>Propellant TB (nominal)</td>
<td>5.44kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,125 m/s
- Dispersion: 0.3 mil
- Maximum range: 8,200 m
- Operational temperature: -40°C to +52°C

**PACKAGING**

- 1 round per fiber container, 2 containers per wooden box
- UN Classification: 1.2 C UN 0328
**105mm HE F3B**

**105mm AMMUNITION FOR AMX-10 RC GUN**

**MISSION**
Nexter Ammunitions offers a range of combat and training ammunition intended for the 105mm F2 gun fitted to the AMX-10RC and RCR reconnaissance vehicle. The 105mm HE F3B provides blast and fragmentation for use against light structures and material targets, personnel or for general demolition.

**DESCRIPTION**
The round consists of a steel body filled with explosive, a tracer, a tail fin assembly and a PD fuze. The projectile is mounted on a brass cartridge case which is filled with double base propellant and fitted with a primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
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<td>Caliber</td>
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<tr>
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<td>Round length</td>
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<td>Projectile mass</td>
<td>7.2kg</td>
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<td>Projectile filling</td>
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<td>Projectile type</td>
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<tr>
<td>Explosive mass</td>
<td>1.7kg</td>
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<td>Type of explosive</td>
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<td>Brass</td>
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<tr>
<td>Propellant</td>
<td>Double base</td>
</tr>
<tr>
<td>Type of fuze</td>
<td>Point detonating, Super Quick</td>
</tr>
<tr>
<td>Primer</td>
<td>Electrical primer</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Muzzle velocity (at 21°C) (nominal) | 800m/s |
| Range                               | >1,000m |
| Precision/dispersion               | <0.40mil |
| Safety distance                     | 12m     |
| Operational temperature             | -35°C to 51°C |

**PACKAGING**

| Box | Plastic container |

---

**105mm HEAT F3B**

**105mm AMMUNITION FOR AMX-10 RC GUN**

**MISSION**
Nexter Ammunitions offers a range of combat and training ammunition intended for the 105mm F2 gun fitted to the AMX-10RC and RCR reconnaissance vehicle. The 105mm HEAT F3B defeats armored targets and structures by means of its shaped charge effect.

**DESCRIPTION**
A High Explosive, Anti-Tank round, with a nose cone, a body, a tail fin, assembly and a tracer. The body is filled with high explosive and is fitted with a copper liner and a Base Detonating fuze. The fuze has a nose switch. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>13.7kg</td>
</tr>
<tr>
<td>Round length</td>
<td>842mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>5.7kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Shaped charge</td>
</tr>
<tr>
<td>Projectile type</td>
<td>HEAT</td>
</tr>
<tr>
<td>Explosive mass</td>
<td>0.9kg</td>
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<tr>
<td>Type of explosive</td>
<td>HEAT</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Propellant</td>
<td>Single base</td>
</tr>
<tr>
<td>Type of fuze</td>
<td>Point detonating, base fuze</td>
</tr>
<tr>
<td>Primer</td>
<td>Electrical primer</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Muzzle velocity (at 21°C) (nominal) | 1,120m/s |
| Range                               | >1,700m  |
| Precision/dispersion               | <0.40MIL |
| Safety distance                     | 6m       |
| Operational temperature             | -31°C to 51°C |

**PACKAGING**

| Box | Plastic container |

---

**STATUS**

- In service
**105mm APFSDS F3**

**105mm AMMUNITION FOR AMX-10 RC GUN**

+ **MISSION**
Nexter Ammunitions offers a range of combat and training ammunition intended for the 105mm F2 gun fitted to the AMX-10RC and RCR reconnaissance vehicle. The 105mm APFSDS F3 defeats armored targets, including multi plate spaced armour, using the kinetic energy of the tungsten alloy long rod penetrator.

+ **DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminium windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to cartridge case which is loaded with propellant.

+ **STATUS**
In service

+ **TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>13kg</td>
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<td>Round length</td>
<td>884mm</td>
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<tr>
<td>Projectile mass</td>
<td>3.8kg</td>
</tr>
<tr>
<td>Projectile type</td>
<td>Tungsten penetrator</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel</td>
</tr>
<tr>
<td>Propellant</td>
<td>Single base</td>
</tr>
<tr>
<td>Prime</td>
<td>Electrical primer</td>
</tr>
</tbody>
</table>

+ **PERFORMANCES**

  | Muzzle velocity (at + 21°C) (nominal) | 1,400m/s |
  | Range                              | >2,000m  |
  | Precision/dispersion               | <0.25ml  |
  | Operational temperature            | -31°C to +51°C |

+ **PACKAGING**

  | Box       | Plastic container |

**105mm HEAT-TP F3A**

**105mm AMMUNITION FOR AMX-10 RC GUN**

+ **MISSION**
Nexter Ammunitions offers a range of combat and training ammunition intended for the 105mm F2 gun fitted to the AMX-10RC and RCR reconnaissance vehicle. The 105mm HEAT-TP F3A is used for training purpose.

+ **DESCRIPTION**
A High Explosive, Anti-Tank Training Practice round, with an inert warhead, and fitted with a tail fin assembly and tracer. It is mounted on a brass cartridge case, uses single base propellant and is fitted with a primer. The round is designed to match the ballistics of the in-service HEAT F3B round.

+ **STATUS**
In service

+ **TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Combat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>105mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>13.7kg</td>
</tr>
<tr>
<td>Round length</td>
<td>842mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>5.7kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Inert</td>
</tr>
<tr>
<td>Projectile type</td>
<td>HEAT-TP</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Propellant</td>
<td>Single base</td>
</tr>
<tr>
<td>Primer</td>
<td>Electrical primer</td>
</tr>
</tbody>
</table>

+ **PERFORMANCES**

  | Muzzle velocity (at 21°C) (nominal) | 1,120m/s |
  | Range                              | >1,500m  |
  | Precision/dispersion               | <0.40ml  |
  | Operational temperature            | -31°C to +51°C |

+ **PACKAGING**

  | Box       | Plastic container |
### 100mm TK APFSDS-T

**Type:** M1000A1

**MISSION**
For use with 100mm tank guns – D10T-2S, D10-S, D10T and variants, as fitted to the Russian T54 & T55 and the Chinese Type 69 tanks, to defeat armored targets.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminum windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminum Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with a mechanical primer and a wear reducing liner.

**STATUS**
Qualified

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round APFSDS-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>100mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>21kg</td>
</tr>
<tr>
<td>Round length</td>
<td>1064mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>5.0kg</td>
</tr>
<tr>
<td>Penetrator</td>
<td>Tungsten alloy</td>
</tr>
<tr>
<td>Tracer</td>
<td>M21</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>8kg</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Muzzle velocity (at 21°C) (nominal):** 1,475m/s
- **Effective range:** 3,000m
- **Penetration (at 1,000m):** 380mm RHA
- **Operational temperature:** -32°C to +52°C

### PACKAGING

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

---

### 90mm MK8 APFSDS-T

**Type:** M690A1

**MISSION**
For use with the CMI 90mm MKVIII gun to defeat armored targets by means of the kinetic energy (KE) of its monobloc tungsten alloy long rod penetrator.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminum windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminum Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with a mechanical primer and a wear reducing liner.

**STATUS**
In service

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round APFSDS-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>977mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>3.8kg</td>
</tr>
<tr>
<td>Penetrator</td>
<td>Tungsten alloy</td>
</tr>
<tr>
<td>Tracer</td>
<td>M21</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Anti-wear additive</td>
<td>Titanium dioxide</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>3.4kg</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Muzzle velocity (at 21°C) (nominal):** 1,330m/s
- **Dispersion:** 0.32 mil
- **Defeats 150mm target at 60° (NATO HEAVY TARGET):** 2,000m
- **Operational temperature:** -32°C to +62°C

### PACKAGING

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328
**MISSION**
For use with the CMI 90mm MKVIII gun, to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

**DESCRIPTION**
The HESH-IM-T (HEP-IM-T) projectile consists of a thin walled steel cylindrical body with a driving band, a relatively short ogive and a base plug to which is secured the dual safety base detonating fuze and a tracer. The warhead is loaded with insensitive pressed explosive (P16945) and is compliant with STANAG 4439. The projectile is assembled to a brass cartridge case loaded with a cool burning, single base, multi-perforated, bagged type propelling charge. This round is an upgrade of the 90mm MK8 HESH-T M691A2, US Army Safety Certified in December 2002 which provides improved safety for personnel and equipments, limits the reaction created by different threats (fire, impact, ...) and has less safety constraints for logistics during the complete lifecycle of the product (storage, transport, operation).

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, HESH-IM-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>14.7kg</td>
</tr>
<tr>
<td>Round length</td>
<td>948mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>8.0kg</td>
</tr>
<tr>
<td>Projectile filling (P16945)</td>
<td>2.2kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>BD/Graze</td>
</tr>
<tr>
<td>Tracer</td>
<td>M12</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (SB) (nominal)</td>
<td>1.8kg</td>
</tr>
<tr>
<td>Muzzle velocity (at 21°C) (nominal)</td>
<td>712m/s</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.42 mil</td>
</tr>
<tr>
<td>Defeats</td>
<td>US Army HEL Bunker &amp; 8&quot; Double Reinf. Concrete Wall</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
<tr>
<td>PACKAGING</td>
<td>2 rounds per twin container, 12 containers per pallet</td>
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<tr>
<td>Gross weight (twin container)</td>
<td>40kg</td>
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<tr>
<td>Dimension ext (twin container)</td>
<td>1100x410x200mm</td>
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<tr>
<td>Gross weight (complete pallet)</td>
<td>500kg</td>
</tr>
<tr>
<td>Dimension ext (complete pallet)</td>
<td>1220x1100x910mm</td>
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<tr>
<td>UN Classification: Under qualification</td>
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</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 712m/s
- Dispersion: 0.42 mil
- Defeats: US Army HEL Bunker & 8" Double Reinf. Concrete Wall
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
Qualified

---

**MISSION**
For use with the CMI 90mm MKVIII gun, to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

**DESCRIPTION**
The HESH-T (HEP-T) projectile consists of a thin walled steel cylindrical body with a driving band, a relatively short ogive and a base plug to which is secured the dual safety base detonating fuze and a tracer. It is loaded with Composition A3 explosive. The projectile is assembled to a brass cartridge case loaded with a cool burning, single base, multi-perforated, bagged type propelling charge. The round has been US Army Safety Certified in December 2002.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HESH-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>14.4kg</td>
</tr>
<tr>
<td>Round length</td>
<td>948mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>7.7kg</td>
</tr>
<tr>
<td>Projectile filling (comp a3)</td>
<td>1.9kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>BD/Graze</td>
</tr>
<tr>
<td>Tracer</td>
<td>M12</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (SB) (nominal)</td>
<td>1.8kg</td>
</tr>
<tr>
<td>Muzzle velocity (at 21°C) (nominal)</td>
<td>712m/s</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.42 mil</td>
</tr>
<tr>
<td>Defeats</td>
<td>US Army HEL Bunker &amp; 8&quot; Double Reinf. Concrete Wall</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 712m/s
- Dispersion: 0.42 mil
- Defeats: US Army HEL Bunker & 8" Double Reinf. Concrete Wall
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
In service
**90mm MK8 HESH-TP-T**  
**M692A2**

**MISSION**  
For use with the CMI 90mm MKVIII gun, to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**  
This round is similar in appearance and ballistically similar to the HESH-T M691A2 service round. The projectile comprises a steel cylindrical body fitted with a driving band, and a base plug to which is secured a tracer. The projectile is assembled to a brass cartridge case loaded with a cool burning, single base multi-perforated bagged type propelling charge. The round has been US Army Safety Certified in December 2002.

**TECHNICAL DATA**

- **Type**: Fixed round HESH-TP-T  
- **Caliber**: 90mm  
- **Round mass (nominal)**: 13.7kg  
- **Round length**: 948mm  
- ** Projectile mass (nominal)**: 7.5kg  
- **Tracer**: M12  
- **Cartridge case**: Brass  
- **Primer**: Percussion cap M61  
- **Propellant SB (nominal)**: 1.8kg

**PERFORMANCES**

- **Muzzle velocity (at 21°C) (nominal)**: 709m/s  
- **Dispersion**: 0.42 mil  
- **Operational temperature**: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container  
- 12 containers per pallet  
- UN Classification: 1.2 C UN 0328

**STATUS**  
In service

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**90mm MK8 SMK(WP)-T**  
**M693A2**

**MISSION**  
For use with the CMI 90mm MKVIII gun, to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

**DESCRIPTION**  
The projectile comprises a thin walled, steel cylindrical body with a driving band and a base plug which is fitted with a base detonating fuze and an external tracer. It is loaded with White Phosphorus (WP) and has a centrally positioned composition B5 burster. The projectile is assembled to a brass cartridge case loaded with a cool burning, single base, multi-perforated, bagged type propelling charge. It is ballistically similar to the HESH-T M691A2 and the HESH-TP-T M692A2 rounds.

**TECHNICAL DATA**

- **Type**: Fixed round SMK(WP)-T  
- **Caliber**: 90mm  
- **Round mass (nominal)**: 14.4kg  
- **Round length**: 948mm  
- ** Projectile mass (nominal)**: 7.7kg  
- ** Projectile filling (White Phosphorus)**: 1.3kg  
- **Tracer**: M12  
- **Cartridge case**: Brass  
- **Primer**: Percussion cap M61  
- **Propellant SB (nominal)**: 1.6kg

**PERFORMANCES**

- **Muzzle velocity (at 21°C) (nominal)**: 709m/s  
- **Dispersion**: 0.42 mil  
- **Operational temperature**: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container  
- 12 containers per pallet  
- UN Classification: 1.2 H UN 0243

**STATUS**  
In service
**90mm MK8 TPFSDS-T**

**M697A1**

**MISSION**
For use with the 90mm MKVIII gun, to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**
A Training Practice round, consisting of a steel penetrator, an aluminium alloy fin assembly and tracer, and a three-piece aluminium alloy sabot. The round is assembled to a brass cartridge case, which is filled with cool burning, multiperforated, loose propellant, and is fitted with a wear reducing liner. The round is ballistically matched to the M690A1 APFSDS-T round.

**TECHNICAL DATA**
- **Type**: Fixed round TPFSDS-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 11.5kg
- **Round length**: 956mm
- **Penetrator**: Steel
- **Tracer**: M24
- **Propellant TB (nominal)**: 3.6kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1360m/s
- **Dispersion**: 0.32 mil
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service

---

**90mm MK3 HE-T**

**M616**

**MISSION**
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns to provide blast and fragmentation for use against light structures and material targets, personnel or for general demolition.

**DESCRIPTION**
The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a mechanical PD fuze. The fuze has one mechanical safety and an additional transport safety cap. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer.

**OPTION:** A delay mode can be added to the current fuze.

**TECHNICAL DATA**
- **Type**: Fixed round HE-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 9.0kg
- **Round length**: 611mm
- **Penetrator filling (Comp B)**: 1.1kg
- **Fuze**: PDM
- **Tracer**: M22
- **Propellant SB (nominal)**: 1.1kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 714m/s
- **Dispersion**: 0.5 mil
- **Operational range**: 800mm
- **Effective range**: >2,000m
- **Operational temperature**: -33°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
In service
90mm MK3 HE-T
M616A1

+ MISSION
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns to provide blast and fragmentation for use against light structures and material targets, personnel or for general demolition.

+ DESCRIPTION
The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a PD fuze. The fuze has two independent arming mechanisms and is compliant with STANAG 4187. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer.

+ OPTION:
A delay mode can be added to the current fuze.

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>9.0kg</td>
</tr>
<tr>
<td>Round length</td>
<td>611mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>5.1kg</td>
</tr>
<tr>
<td>Projectile filling (Comp B)</td>
<td>1.3kg</td>
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<tr>
<td>Fuze</td>
<td>EPD</td>
</tr>
<tr>
<td>Tracer</td>
<td>M22</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>1.1kg</td>
</tr>
</tbody>
</table>

+ PERFORMANCES

| Muzzle velocity (at 21°C) (nominal) | 714m/s |
| Dispersion                        | 0.5 mil |
| Operational range                 | 800m   |
| Effective range                   | >2,000m |
| Operational temperature           | -32°C to +52°C |

+ PACKAGING

- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

+ STATUS
In service

90mm MK3 SMK(WP)-T
M618A1

+ MISSION
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns for screening, signalling or target spotting purposes as well as for its incendiary effects.

+ DESCRIPTION
The round consist of a steel body filled with White Phosphorus and fitted with an explosive burster charge, a tracer, a tail fin assembly and a PD and Graze fuze. The fuze has two independent safeties, and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer. Ballistically similar to the HE-T M616A1 round.

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round SMK(WP)-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>9.1kg</td>
</tr>
<tr>
<td>Round length</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>5.3kg</td>
</tr>
<tr>
<td>Projectile filling (White Phosphorus)</td>
<td>0.9kg</td>
</tr>
<tr>
<td>Tracer</td>
<td>M22</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>1.3kg</td>
</tr>
</tbody>
</table>

+ PERFORMANCES

| Muzzle velocity (at 21°C) (nominal) | 714m/s |
| Dispersion                        | 0.5 mil |
| Operational range                 | 800m   |
| Effective range                   | >2,000m |
| Operational temperature           | -32°C to +52°C |

+ PACKAGING

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 H UN 0243

+ STATUS
In service
**90mm MK3 HEAT-T**

**M620A1**

**MISSION**
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns to defeat armored targets and structures by means of its shaped charge effect.

**DESCRIPTION**
A High Explosive Anti-Tank round, with a nose cone, a body, a tail fin assembly and a tracer. The body is filled with high explosive and is fitted with a copper liner and an electronic Base Detonating fuze with two independent inbore safeties. The fuze also functions in graze impact mode and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
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<td>Round length</td>
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<td>Projectile mass (nominal)</td>
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<td>Projectile filling (Octol)</td>
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<td>Fuze</td>
<td>Electronic PBD</td>
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<td>Tracer</td>
<td>M13</td>
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<td>Brass</td>
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<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>1.4kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 890m/s
- Dispersion: 0.5 mkt
- Effective range: 1,500m
- Penetration: 250mm RHA
- Operational temperature: -52°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
In service

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**90mm MK3 HEAT-TP-T**

**M623A2**

**MISSION**
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns for gunnery training.

**DESCRIPTION**
A High Explosive Anti-Tank Training Practice round, with an inert warhead, and fitted with a tail fin assembly and a tracer. It is mounted on a brass cartridge case, uses single base propellant and is fitted with a mechanical primer. The round is designed to match the ballistics of the in-service HEAT-T M620A1 round.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-TP-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>8.4kg</td>
</tr>
<tr>
<td>Round length</td>
<td>667mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>4.1kg</td>
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<tr>
<td>Projectile</td>
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</tr>
<tr>
<td>Tracer</td>
<td>M13</td>
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<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>1.4kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 890m/s
- Dispersion: 0.5 mkt
- Effective range: 1,500m
- Operational temperature: -52°C to +52°C

**PACKAGING**

- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**
In service
**90mm MK3 HESH-T M625A1**

**MISSION**
For use with current in-service 90mm Cockerill MkIII and Engesa EC-90 guns to defeat reinforced concrete structures, bunkers, light armored vehicles and personnel targets.

**DESCRIPTION**
The HESH-T (HEP-T) projectile consist of a thin walled steel cylindrical body with a driving band, a relatively short ogive and a base plug to which is secured the tracer and the dual safety base detonating electronic fuze, which complies with Stanag 4187 and MIL-STD-1316. It is loaded with Composition A3 explosive. The projectile is assembled to a brass cartridge case which is loaded with a cool burning, single base, multi-perforated propelling charge.

**STATUS**
In service

**TECHNICAL DATA**
- Type: Fixed round HESH-T
- Caliber: 90mm
- Round mass (nominal): 8.5kg
- Round length: 590mm
- Projectile mass (nominal): 4.5kg
- Projectile filling (Comp B): 1.2kg
- Fuze: BD
- Tracer: M13
- Cartridge case: Brass
- Primer: Percussion cap M61
- Propellant SB (nominal): 1.3kg

**PERFORMANCES**
- Muzzle velocity (at 21°C) (nominal): 800m/s
- Dispersion: 0.5 mil
- Effective range: >2,000m
- Operational temperature: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

**90mm MK3 HE-TP-T M637A1**

**MISSION**
For use with current in-service 90mm Cockerill MkIII and Engesa EC-90 guns for gunnery training.

**DESCRIPTION**
A training practice round with an inert warhead, a tracer and tail fin assembly, mounted on a brass cartridge case. The round uses single base propellant and is fitted with a mechanical primer. It is designed to match the ballistics of the in-service HE-T M618A1 round.

**STATUS**
In service

**TECHNICAL DATA**
- Type: Fixed round HE-TP-T
- Caliber: 90mm
- Round mass (nominal): 9.0kg
- Round length: 611mm
- Projectile mass (nominal): 5.1kg
- Projectile filling: Inert
- Tracer: M22
- Cartridge case: Brass
- Primer: Percussion cap M61
- Propellant SB (nominal): 1.1kg

**PERFORMANCES**
- Muzzle velocity (at 21°C) (nominal): 714m/s
- Dispersion: 0.5 mil
- Operational range: 800m
- Effective range: >2,000m
- Operational temperature: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.2 C UN 0328
TD 20-90
M640 SERIES

+ MISSION
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns for gunnery training.

+ DESCRIPTION
The Training Device (TD) 20-90 is a sub-caliber system used for gun crew training. It consists of a Training Device comprising a 20mm rifled barrel in a mounting having the shape of a 90mm round. 20mm sub-caliber M634A1 TP-T rounds are loaded in the Training Device to be fired from the 90mm gun out to the combat range of the full bore rounds. The Training Device is loaded into the gun chamber, and the TP-T round is then loaded into the Training Device and is fired using the main gun firing mechanism. Requiring minimum routine maintenance, it provides a complete and inexpensive training system.

+ STATUS
In service

TRAINING DEVICE: TD 20-90 M640

| Caliber | 90mm |
| Round mass (nominal) | 9.3kg |
| Round length | 703mm |

SUBCALIBER

| Caliber | 20mm |
| Round length | 703mm |
| Rifling | 12 grooves |
| Service life | >2,000 rounds |

AMMUNITION: TD 20-90 M634A1

20mm Target Practice round with tracer, for use with the sub-caliber Training Device TD 20-90 M640. The trajectory of the projectile will provide a match to M616 HE rounds at a range of 1,000 metres.

| Round mass (nominal) | 190g |
| Round length | 187mm |
| Projectile mass | 85g |
| Launch velocity | 783m/s |
| Duration of tracer | 4s |
| Ignition | Percussion primer |
| Method of firing | Main gun firing mechanism |

90mm MK3 APFSDS-T
M652A1

TECHNICAL DATA

| Type | Fixed round TPFSDS-T |
| Caliber | 90mm |
| Round mass (nominal) | 7.2kg |
| Round length | 690mm |
| Projectile mass (nominal) | 2.5kg |
| Penetrator | Steel |
| Tracer | M21 |
| Cartridge case | Brass |
| Anti-wear additive | Titanium dioxide |
| Primer | Percussion cap M61 |
| Propellant (nominal) | 1.8kg |

PERFORMANCES

| Muzzle velocity (at 21°C) (nominal) | 1,210m/s |
| Dispersion | 0.3 mrad |
| Penetration (90° obliquity) | 100mm RHA |
| Operational range | >1,600m |
| Operational temperature | -32°C to +52°C |

PACKAGING

2 rounds per twin container
18 containers per pallet
UN Classification: 1.2 C UN 0328

+ MISSION
For use with current in-service 90mm Cockerill MKIII MA1 guns and similarly equipped ENGESIA EC-90 light guns to defeat armored targets, including multi plate spaced armour, using the kinetic energy of the tungsten alloy long rod penetrator.

+ DESCRIPTION
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin-Stabilized tungsten alloy long rod penetrator, an aluminium windshield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant.

+ STATUS
Under development
90mm MK3 HESH-TP-T

**MISSION**
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns to provide cost effective and live fire training of gun crews.

**DESCRIPTION**
This round is similar in appearance and ballistically similar to the HESH-T M625A1 service round. The projectile consists of an inert body with a driving band, a relatively short ogive and a base plug to which is secured the tracer. The projectile is assembled to a brass cartridge case which is loaded with a single base, multi-perforated propelling charge.

**STATUS**
In service

---

90mm MK3 TPFSDS-T

**MISSION**
For use with current in-service 90mm Cockerill MKIII and ENGESA EC-90 light guns for gunnery training.

**DESCRIPTION**
The projectile consists of a sub-projectile and a sabot. The sub-projectile comprises a steel penetrator and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant. The form, weight and ballistics of the M663 provide a good match to the M652A1 round.

**STATUS**
In service
**MISSION**
For use with 90mm F3 & F4 guns, used in the TS90 and FL10 turrets which are fitted to various armored vehicles such as AMX13, AMX10 PAC, ERC 90, SAGAIE, VAB and MOWAG, for screening, signalling or target spotting purposes as well as for its incendiary effects.

**DESCRIPTION**
The round consists of a steel body filled with white phosphorus and fitted with an explosive burster charge, a tracer, a tail fin assembly and a PD and Graze fuze. The fuze has two independent safeties, and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with double base propellant and fitted with a mechanical primer. Ballistically similar to the HE-T M678 round.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round SMK(WP)-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>10.7kg</td>
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<tr>
<td>Round length</td>
<td>857mm</td>
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<tr>
<td>Projective filling (White Phosphorus)</td>
<td>0.9kg</td>
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<tr>
<td>Projective mass (nominal)</td>
<td>5.2kg</td>
</tr>
<tr>
<td>Tracer</td>
<td>M22</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant DB (nominal)</td>
<td>1.6kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 744m/s
- Dispersion: 0.5 mil
- Effective range: 2,000m
- Operational temperature: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 H UN 0243

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**MISSION**
For use with 90mm F4 guns, used in the TS90 turret which is fitted to various armored vehicles, to defeat armored targets, including multi plate spaced armour, using the kinetic energy of the tungsten alloy long rod penetrator.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises an Armour Piercing Fin Stabilized tungsten alloy long rod penetrator, an aluminium wind shield and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round APFSDS-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
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<td>Round length</td>
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<td>Projective mass (nominal)</td>
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<tr>
<td>Penetrator</td>
<td>Tungsten Alloy</td>
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<tr>
<td>Tracer</td>
<td>M21</td>
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<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>2.8kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 1,275m/s
- Dispersion: 0.32 mil
- Defeats 150mm target at 60° (NATO HEAVY TARGET): 1,000m
- Operational temperature: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328
**90mm F3/F4 HE-T**

**M678**

### TECHNICAL DATA

- **Type:** Fixed round HE-T
- **Caliber:** 90mm
- **Round mass (nominal):** 10.6kg
- **Round length:** 860mm
- **Projectile mass (nominal):** 5.1kg
- **Projective filling (Comp B):** 1.1kg
- **Fuze:** PDM
- **Tracer:** M22
- **Cartridge case:** Brass
- **Primer:** Percussion cap M61
- **Propellant DB (nominal):** 1.1kg

### DESCRIPTION

The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a PD and Graze fuze. The fuze has two independent safeties, and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with double base propellant and fitted with a mechanical primer.

### PERFORMANCEs

- **Muzzle velocity (at 21°C) (nominal):** 766m/s
- **Dispersion:** 0.5 mil
- **Operational range:** 910m
- **Effective range:** 2,000m
- **Operational temperature:** -42°C to +52°C

### PACKAGING

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.1 E UN 0006

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**90mm F3/F4 HEAT-T**

**M679**

### TECHNICAL DATA

- **Type:** Fixed round HEAT-T
- **Caliber:** 90mm
- **Round mass (nominal):** 9.8kg
- **Round length:** 900mm
- **Projectile mass (nominal):** 4.0kg
- **Projective filling (Octol):** 600g
- **Fuze:** PIBD
- **Tracer:** M13
- **Cartridge case:** Brass
- **Primer:** Percussion cap M61
- **Propellant SB (nominal):** 1.1kg

### DESCRIPTION

A High Explosive Anti-Tank round, with a nose cone, a body, a tail fin assembly and a tracer. The body is filled with high explosive and is fitted with a copper liner and an electronic Base Detonating fuze with two independent in-bore safeties. The fuze has a nose switch and a graze element and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer.

### PERFORMANCEs

- **Muzzle velocity (at 21°C) (nominal):** 962m/s
- **Dispersion:** 0.5 ml
- **Effective range:** 2,000m
- **Penetration (RHA at 0°obliquity):** 250mm
- **Operational temperature:** -42°C to +52°C

### PACKAGING

- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.1 E UN 0006

---

**MISSION**

For use with 90mm F3 & F4 guns, used in the TS90 and FL10 turrets which are fitted to various armored vehicles such as AMX13, AMX 10 PAC, ERC 90, SAGAIE, VAB and MOWAG, to provide blast and fragmentation for use against light structures and material targets, personnel or for general demolition.

**STATUS**

In service
**90mm F4 TPFSDS-T M698**

**MISSION**
For use with 90mm F4 guns, used in the TS90 turret which is fitted to various armored vehicles, for gunnery training.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a steel penetrator and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot.

The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant. The trajectory of the projectile is ballistically similar to the standard M669 APFSDS-T round.

**TECHNICAL DATA**
- **Type**: Fixed round TPFSDS-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 10.3kg
- **Round length**: 944mm
- **Penetrator mass (nominal)**: 3.2kg
- **Penetrator**: Steel
- **Tracer**: M13
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant (nominal)**: 2.9kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1,300m/s
- **Dispersion**: 0.32 mil
- **Operational range**: 2,000m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 H UN 0328

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**90mm F3/F4 HEAT-TP-T M699**

**MISSION**
For use with 90mm F3 & F4 guns, used in the TS90 and FL10 turrets which are fitted to various armored vehicles such as AMX13, AMX10 PAC, ERC 90, SAGAIE, VAB and MOWAG, for gunnery training.

**DESCRIPTION**
A High Explosive Anti-Tank Training Practice round, with an inert warhead, and fitted with a tail fin assembly and tracer. It is mounted on a brass cartridge case, uses single base propellant and is fitted with a mechanical primer. The round is designed to match the ballistics of the in-service HEAT-T M679 round.

**TECHNICAL DATA**
- **Type**: Fixed round HEAT-TP-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 9.8kg
- **Round length**: 902mm
- **Penetrator mass (nominal)**: 4.1kg
- **Penetrator**: Inert
- **Tracer**: M13
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant SB (nominal)**: 1.1kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 950m/s
- **Dispersion**: 0.5 mil
- **Effective range**: 2,000m
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 12 containers per pallet
- UN Classification: 1.2 C UN 0328
### 90mm F1 HEAT-T M630

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns to defeat armored targets and structures by means of its shaped charge effect.

**DESCRIPTION**
A High Explosive Anti-Tank round, with a nose cone, a body, a tail fin assembly and a tracer. The body is filled with high explosive and is fitted with a copper liner and an electronic Base Detonating fuze with two independent inbore safeties. The fuze has a nose switch and a graze element and complies with Stanag 4187 and Mil-Std-1316.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>8.4kg</td>
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<tr>
<td>Round length</td>
<td>690mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>4.2kg</td>
</tr>
<tr>
<td>Projectile filling (Octol)</td>
<td>0.6kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PIBD</td>
</tr>
<tr>
<td>Tracer</td>
<td>M13</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>1.3kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 750m/s
- Dispersion: 0.5 mL
- Effective range: 800m
- Penetration (RHA at 0° Obliquity): 250mm
- Operational temperature: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

### 90mm F1 HE-T M631

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns to defeat light structures and material targets, personnel or for general demolition.

**DESCRIPTION**
The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a mechanical PD fuze. The fuze has one mechanical safety and an additional transport safety cap. The projectile is mounted on a brass cartridge case which is filled with single base multi-perforated propellant and fitted with a mechanical primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>90mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>9.0kg</td>
</tr>
<tr>
<td>Round length</td>
<td>612mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>5.1kg</td>
</tr>
<tr>
<td>Projectile filling (Comp B)</td>
<td>1.3kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PDM</td>
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<tr>
<td>Tracer</td>
<td>M22</td>
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<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>1.1kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 658m/s
- Dispersion: 0.5 mL
- Combat range: 1,000m
- Maximum range: 1,800mm
- Operational temperature: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.1 E UN 0006

**STATUS**
In service
90mm F1 HE-T

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns to defeat light structures and material targets, personnel or for general demolition.

**DESCRIPTION**
The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a PD and Graze fuze. The fuze has two independent safeties, and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with single base multi-perforated propellant and fitted with a mechanical primer.

**TECHNICAL DATA**
- **Type**: Fixed round HE-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 9.0kg
- **Round length**: 612mm
- **Projectile mass (nominal)**: 5.1kg
- **Projective filling (Comp B)**: 1.1kg
- **Fuze**: EDP
- **Tracer**: M22
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant SB (nominal)**: 1.1kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 658m/s
- **Dispersion**: 0.5 mld
- **Combat range**: 1,000m
- **Maximum range**: 1,800m
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- **UN Classification**: 1.1 E UN 0006

**STATUS**
In service

---

90mm F1 SMK (WP)-T

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns. A spotting and smoke screen round, with incendiary effects.

**DESCRIPTION**
The round consists of a steel body filled with White Phosphorus and fitted with an explosive burster charge, a tracer, a tail fin assembly and an electronic PD and Graze fuze. The fuze has two independent safeties, and complies with Stanag 4187 and Mil-Std-1316. The projectile is mounted on a brass cartridge case which is filled with single base propellant and fitted with a mechanical primer. Ballistically similar to the HE-T M631 round.

**TECHNICAL DATA**
- **Type**: Fixed round SMK(WP)-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 9.2kg
- **Round length**: 612mm
- **Projectile mass (nominal)**: 5.2kg
- **Projective filling (White Phosphorus)**: 1kg
- **Fuze**: EDP, Graze
- **Tracer**: M22
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant SB (nominal)**: 1.1kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 658m/s
- **Dispersion**: 0.5 mld
- **Combat range**: 1,000m
- **Maximum range**: 1,800m
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- **UN Classification**: 1.2 H UN 0245

**STATUS**
In service
90mm F1 HEAT-TP-T  
**M653**

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns, for gunnery training.

**DESCRIPTION**
A High Explosive Anti-Tank Training Practice round, with an inert warhead, and fitted with a tail fin assembly and tracer. It is mounted on a brass cartridge case, uses single base propellant and is fitted with a mechanical primer. The round is designed to match the ballistics of the in-service HEAT-T M630 round.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: Fixed round HEAT-TP-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 7.8kg
- **Round length**: 670mm
- **Projectile mass (nominal)**: 4.2kg
- **Projective**: Inert
- **Tracer**: M13
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant (nominal)**: 1.1kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 750m/s
- **Dispersion**: 0.5 mil
- **Effective range**: 800m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.2 C UN 0328

---

90mm F1 TPFSDS-T  
**M664**

**MISSION**
For use with current in-service 90mm CN 90 F1 (DEFA) guns, for gunnery training.

**DESCRIPTION**
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a steel penetrator and a tracer assembled in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: Fixed round TPFSDS-T
- **Caliber**: 90mm
- **Round mass (nominal)**: 6.8kg
- **Round length**: 665mm
- **Projectile mass (nominal)**: 2.5kg
- **Penetrator**: Steel
- **Tracer**: M13
- **Cartridge case**: Brass
- **Primer**: Percussion cap M61
- **Propellant (nominal)**: 1.4kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1,050m/s
- **Dispersion**: 0.32 mil
- **Operational temperature**: -32°C to +52°C

**PACKAGING**
- 2 rounds per twin container
- 18 containers per pallet
- UN Classification: 1.2 C UN 0328
### 76mm HESH-T M329

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) against personnel, bunkers, light armour and structures and other material targets.

**DESCRIPTION**
The hollow steel thin wall forged projectile has a flat base and a cylindrical body with an ogive nose. The projectile is loaded with 1kg of Composition A3 high explosive. The fuze is mounted in the rear of the projectile. A tracer is mounted on the projectile base. The projectile is fixed on a brass cartridge case, which contains a single base multi-perforated propellant and is fitted with a mechanical primer.

**TECHNICAL DATA**
- **Type**: Fixed round, HESH-T
- **Caliber**: 76mm
- **Round mass (nominal)**: 7.7kg
- **Round length**: 540mm
- **Projectile mass (nominal)**: 5.6kg
- **Projectile filling (Comp A3)**: 1.2kg
- **Fuze**: BD/graze
- **Tracer**: M23
- **Cartridge case**: Brass
- **Primer**: Percussion cap
- **Propellant SB (nominal)**: 0.7kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 533m/s
- **Dispersion**: 0.5 m/100m
- **Range, Direct Fire**: 2,400m
- **Range, Indirect Fire**: 6,000m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 36 containers per pallet
- **UN Classification**: 1.1 E UN 0006

**STATUS**
In service

### 76mm HE-T M330

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) against personnel and material targets and in order to provide fire support to infantry.

**DESCRIPTION**
The high fragmentation steel projectile is loaded with Composition B and is equipped with a Point Detonating fuze model M739 or equivalent. A tracer is mounted on the projectile base. The projectile is fixed on a brass cartridge case, which contains a single base multi-perforated propellant and a mechanical primer.

**TECHNICAL DATA**
- **Type**: Fixed round, HE-T
- **Caliber**: 76mm
- **Round mass (nominal)**: 7.7kg
- **Round length**: 535mm
- **Projectile mass (nominal)**: 5.6kg
- **Projectile filling (Comp B)**: 0.7kg
- **Fuze**: PD
- **Tracer**: M23
- **Cartridge case**: Brass
- **Primer**: Percussion cap
- **Propellant SB (nominal)**: 0.7kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 514m/s
- **Dispersion**: 0.5 m/100m
- **Range, Direct Fire**: 2,400m
- **Range, Indirect Fire**: 6,000m
- **Number of fragments**: +/- 800
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container
- 36 containers per pallet
- **UN Classification**: 1.1 E UN 0006

**STATUS**
In service
**76mm HESH-TP-T M331**

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) to provide cost effective marksmanship and live fire training of gun crews.

**DESCRIPTION**
The round is similar in appearance and ballistically to the HESH-T M329 Service round. The projectile consists of a steel cylindrical body with a relatively short ogive, and a flat base with a tracer. The projectile is assembled to a brass cartridge case, which is loaded with a single base multi-perforated propelling charge and a mechanical primer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, HESH-TP-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>7.7kg</td>
</tr>
<tr>
<td>Round length</td>
<td>540mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>5.6kg</td>
</tr>
<tr>
<td>Tracer</td>
<td>M23</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>0.7kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 533m/s
- Dispersion: 0.5 mil
- Range, Direct Fire: 2,400m
- Range, Indirect Fire: 6,000m
- Operational temperature: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container
- 36 containers per pallet
- UN Classification: 1.2 C UN 0328

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**76mm CANISTER M333**

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) against personnel at close quarters.

**DESCRIPTION**
The thin walled cylindrical body is loaded with steel pellets and is fitted with a base plug. When fired, the projectile breaks open, upon leaving the muzzle, and projects the steel pellets in a cone with an effective range of approximately 100 metres. The projectile is fixed on a brass cartridge case, which contains a single base multi-perforated propelling charge and is fitted with a mechanical primer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, Canister</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>7.7kg</td>
</tr>
<tr>
<td>Round length</td>
<td>530mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>5.6kg</td>
</tr>
<tr>
<td>Fragments (Ø 1/16 steelspheres)</td>
<td>+/- 800 spheres</td>
</tr>
<tr>
<td>Fragments weight</td>
<td>4kg</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>0.7kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 533m/s
- Effective Range: 100m
- Maximum Range: 700m
- Operational temperature: -32°C to +62°C

**PACKAGING**

- 2 rounds per twin container
- 36 containers per pallet
- UN Classification: 1.2 C UN 0328
76mm BLANK
M335

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) to provide battlefield sound effects for training. It may also be used for saluting purposes.

**DESCRIPTION**
The 76mm Blank cartridge uses a standard brass cartridge case and primer. It is filled with a charge which provides an audible sound when ignited by the primer. The charge is held in place using a closure plug.

**TECHNICAL DATA**
- **Type**: Fixed round, Blank
- **Caliber**: 76mm
- **Round mass (nominal)**: 1.5kg
- **Round length**: 170mm
- **Cartridge case**: Brass
- **Primer**: Percussion cap
- **Propellant (nominal)**: 150g

**STATUS**
In service

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76mm SMK (WP)-T
M337

**MISSION**
For use in the 76mm L5A1 (on Saladin) or L23/23A1 guns (on SCORPION light tanks) to provide smoke screening, spotting and signaling.

**DESCRIPTION**
The steel bodied projectile is loaded with White Phosphorus, a central burster charge and is equipped with a Point Detonating fuze. A tracer is mounted on the projectile base. The projectile is fixed on a brass cartridge case, which contains a single base multi-perforated propellant. The round is ballistically similar to the HE-T M330 cartridge.

**TECHNICAL DATA**
- **Type**: Fixed round, SMK (WP)-T
- **Caliber**: 76mm
- **Round mass (nominal)**: 7.7kg
- **Round length**: 535mm
- **Projectile mass (nominal)**: 5.6kg
- **Projectile filling (White phosphorus)**: 0.5kg
- **Fuze**: PD
- **Tracer**: M23
- **Cartridge case**: Brass
- **Primer**: Percussion cap
- **Propellant SB (nominal)**: 0.7kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 514m/s
- **Dispersion**: 0.5 m
- **Range, Direct Fire**: 2,400m
- **Range, Indirect Fire**: 6,000m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- **2 rounds per twin container**
- **36 containers per pallet**
- **UN Classification**: 1.2 H UN 0245

**STATUS**
Qualified
MISSION
The 40mm ammunition is intended for use in the 40mm CTAS weapon. The General Purpose Round - Point Detonating - Tracer (GPR-PD-T) is a highly efficient multirole ammunition with high levels of suppression defeating reinforced concrete 200mm thick up to 1,000m.

The fuze, equipped with 2 safety systems compliant with STANAG 4187, ensures performances against light vehicles, urban and soft targets even at very short range, and allow self-destruction of the ammunition between 3,000m and 6,000m.

DESCRIPTION
The 40mm GPR-PD-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- a shell loaded with IM explosive,
- a day/night tracer,
- a mechanical fuze with SD mode (MR4015) equipped with two safety systems compliant with the STANAG 4187 requirements.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>General Purpose Round - Point Detonating - Tracer (GPR-PD-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~2,400g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>255mm</td>
</tr>
<tr>
<td>Cartridge diameter</td>
<td>65mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>980g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR4015</td>
</tr>
<tr>
<td>Muzzle safety ≥</td>
<td>15m</td>
</tr>
<tr>
<td>Explosive IM XP</td>
<td>~115g (Insensitive high explosive)</td>
</tr>
<tr>
<td>Propellant</td>
<td>Single base ~340 g</td>
</tr>
</tbody>
</table>

PERFORMANCES

| Initial velocity         | 1,000m/s                                                      |
| Operational use          | Up to 2,500m                                                  |
| Dispersion               | <0.5 mil RMS at 1,500m                                        |
| Perforation              | Single reinforced concrete wall 200mm thick and armor 15mm thick |
| Tracer duration (+21°C)  | ≥ 3.45                                                        |

PACKAGING

| Box                      | Metallic box M548                                           |
40mm APFSDS-T
40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)

+ MISSION
The 40mm ammunition is intended for use in the 40mm CTAS weapon. The Armor Piercing Fin Stabilised Discarding Sabot-Tracer (APFSDS-T) is an highly efficient ammunition to defeat medium armored vehicles and early generation of Main battles Tanks. The 40mm APFSDS-T ammunition is equipped with a projectile optimised and able to penetrate 140mm of steel RHA at 1,500m.

+ DESCRIPTION
The 40mm APFSDS-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert penetrator in tungsten alloy,
- a discarding sabot,
- a day/night tracer.

+ STATUS
Qualified

+ TECHNICAL DATA
<table>
<thead>
<tr>
<th>Type</th>
<th>Armor Piercing Fin Stabilised Discarding Sabot-Tracer (GPR-PD-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~1,900g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>255mm</td>
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<tr>
<td>Cartridge diameter</td>
<td>65mm</td>
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<tr>
<td>Projectile weight</td>
<td>550g</td>
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<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~525g IM propellant</td>
</tr>
</tbody>
</table>

+ PERFORMANCES
- Initial velocity: 1,510m/s
- Operational use: >2,500m
- Dispersion: <0.4 mil RMS at 1,500m
- Penetration RHA: 140mm at 1,500m
- Tracer duration (+21°C): ≥ 1.1s

+ PACKAGING
Box: Metallic box M548

+ MISSION
The 40mm ammunition is intended for use in the 40mm CTAS weapon. The General Purpose Round - Airburst - Tracer (GPR-AB-T) is a highly efficient multi-role ammunition is able to defeat reinforced concrete 200mm up to 1,000m. The 40mm GPR-AB-T can be used in airburst mode on ground targets or in point detonating mode. The SD base fuze, fully compliant with STANAG 4187 and generates projection of splinters behind a 15mm armor plate, ensures performance against light vehicles, urban and soft targets even at very short range, and allow self-destruction of the ammunition between 3,000m and 6,000m.

+ DESCRIPTION
The 40mm GPR-AB-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- a shell loaded with IM explosive,
- a discarding sabot,
- a day/night tracer,
- an electromechanical fuze (point detonating, Airburst and self destruction) compliant with STANAG 4187 requirements.
- Fully programmable when feeding. The ammunition does not contain any electrical energy in storage and regains its state of storage in case of unloading.

+ STATUS
Under development

+ TECHNICAL DATA
<table>
<thead>
<tr>
<th>Type</th>
<th>General Purpose Round Airburst - Tracer (GPR-AB-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~2,400g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>255mm</td>
</tr>
<tr>
<td>Cartridge diameter</td>
<td>65mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>980g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Fuze</td>
<td>40 GPR AB (dual mode point detonating and airburst)</td>
</tr>
<tr>
<td>Explosive IM XP</td>
<td>~115g (insensitive high explosive) IM Stanag 4439 compliant</td>
</tr>
<tr>
<td>Propellant</td>
<td>~350g</td>
</tr>
</tbody>
</table>

+ PERFORMANCES
- Initial velocity: 990m/s
- Operational use: Up to 2,500m
- Dispersion: <0.5 mil RMS at 1,500m
- Perforation: Single reinforced concrete wall 100mm thick at 500m
- Tracer duration (+21°C): ≥ 3.4s

+ PACKAGING
Box: Metallic box M548
**40mm TP-T OR 40mm BOAT**

**40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)**

**MISSION**
The 40mm ammunition is intended for use in the 40mm CTAS weapon. The 40mm Target Practice – Tracer is a training ammunition based on an inert projectile of the form used for GPR-PD-T and GPR-AB-T projectile and reproducing the ballistic trajectory of the combat ammunition. This ammunition can be also used in operation for its armor perforation function (BOAT).

**DESCRIPTION**
The 40mm TP-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert penetrator in tungsten alloy,
- a day/night tracer.

**STATUS**
Qualified

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice – Tracer (TP-T)</th>
</tr>
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<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~2,400g</td>
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<tr>
<td>Cartridge length</td>
<td>255mm</td>
</tr>
<tr>
<td>Cartridge diameter</td>
<td>65mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>980g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~350g</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: >1,000m/s
- Operational use: Up to 2,500m
- Dispersion: 0.5 mil RMS at 1,500m
- Tracer duration (+21°C): ≥ 3.5s

**PACKAGING**

- Box: Metallic box M548

---

**40mm TPRR-T**

**40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)**

**MISSION**
The 40mm ammunition is intended for use in the 40mm CTAS weapons. The Target Practice Reduced Range – Tracer (TPRR-T) is a training ammunition using a plastic case tube, lightweight projectile and reduced quantity of propellant to give a low cost training solution with low barrel pressure and reduced barrel wear.

**DESCRIPTION**
The TPRR-T ammunition is designed to be in accordance with GPR-PD-T and GPR-AB-T trajectories up to 900m and to limit the maximum range under 6,500m (GPR-PD-T and GPR-AB-T maximum range about 8,500m).

**STATUS**
Under development

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice Reduced Range Tracer (TPRR-T)</th>
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<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~1,900g</td>
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<tr>
<td>Cartridge length</td>
<td>255mm</td>
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<td>Cartridge diameter</td>
<td>65mm</td>
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<td>Projectile weight</td>
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<td>Cartridge case</td>
<td>Plastic</td>
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<td>Primer</td>
<td>Mechanical</td>
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<tr>
<td>Propellant</td>
<td>~250g</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: >1,000m/s
- Operational use: Up to 1,500m
- Tracer duration (+21°C): ≥ 3.5s

**PACKAGING**

- Box: Metallic box M548
## 30mm X 173 APFSDS-T
### M928

**MISSION**
This ammunition is intended for use against armored targets and can defeat multi-plate spaced armor using the kinetic energy of its long rod tungsten alloy penetrator. It has been specially designed for use in the 30x173mm MK44, MK30-2 and GI-30 cannons, as fitted on LAVs and AIFVs.

**DESCRIPTION**
This cartridge is an Armour Piercing Fin Stabilized Discarding Sabot with Tracer (APFSDS-T) type. It consists of a subcaliber fin stabilized tungsten alloy projectile launched by means of a lightweight sabot. Penetration at any given range, and conversely range for any given penetration, is greatly enhanced compared to older generation of APDS or AP projectiles.

**STATUS**
Qualified

### TECHNICAL DATA

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<thead>
<tr>
<th>Type</th>
<th>Fixed round, APFSDS-T</th>
</tr>
</thead>
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</tr>
<tr>
<td>Round mass (nominal)</td>
<td>530g* - 695g**</td>
</tr>
<tr>
<td>Round length</td>
<td>280mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>220g</td>
</tr>
<tr>
<td>Penetrator</td>
<td>Tungsten Alloy Cobalt Free</td>
</tr>
<tr>
<td>Tracer</td>
<td>2.5s</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Aluminium*/Steel**</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap</td>
</tr>
<tr>
<td>Propellant ECL (nominal)</td>
<td>165g</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Muzzle velocity at 21°C (nominal)**: 1430m/s
- **Penetration at 1,000m**: >60mm RHA steel at 60° obliquity
- **Dispersion**: <0.44 mil
- **Operational temperature**: -32°C to +62°C
- **Gross weight (metal container)**: 30kg* - 35kg**
- **Dimension ext (metal container)**: 470x228x355mm
- **Gross weight (complete pallet)**: 555kg* - 635kg**
- **Dimension ext (complete pallet)**: 1100x1000x900mm
- **UN Classification**: 1.2 C UN 0328

## 30mm TPFSDS-T
### M948

**USE**
This ammunition is intended for training purpose. It has been specially designed for use in the 30x173mm MK44, MK30-2 and GI-30 gun systems.

**DESCRIPTION**
This cartridge is a Training Practice Flare Stabilized Discarding Sabot projectile with Tracer (TPFSDS-T) type. It consists of a subcaliber flare stabilized steel projectile launched by means of a lightweight sabot. The projectile is ballistically similar to the standard APFSDS ammunition to a range up to 1,000 metres. It has a maximum range of less than 3,700 metres.

### CHARACTERISTICS

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, TPFSDS-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>500g* - 660g**</td>
</tr>
<tr>
<td>Round length</td>
<td>290mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>185g</td>
</tr>
<tr>
<td>Penetrator</td>
<td>Steel</td>
</tr>
<tr>
<td>Tracer</td>
<td>1s</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Aluminium*/Steel**</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap</td>
</tr>
<tr>
<td>Propellant ECL (nominal)</td>
<td>155g</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- **Muzzle velocity (at 21°C) (nominal)**: 1470m/s
- **Maximum range**: ≈ 3,700m
- **Dispersion**: <0.44 mil
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
15 rounds on a belt, and 2 belts per weatherproof metal container. 16 containers per pallet.

**Gross weight** (metal container): 30kg* - 35kg**
**Dimension ext (metal container)**: 470x228x355mm
**Gross weight** (complete pallet): 555kg* - 635kg**
**Dimension ext (complete pallet)**: 1100x1000x900mm
**UN Classification**: 1.2 C UN 0328
**30mm TPFSDS-T M949**

**USE**
This ammunition is intended for training purpose. It has been specially designed for use in the 30x165mm 2A42 gun systems.

**DESCRIPTION**
This cartridge is a Training Practice Flare Stabilized Discarding Sabot projectile with Tracer (TPFSDS-T) type. It consists of a subcaliber flare stabilized steel projectile launched by means of a lightweight sabot. The projectile is ballistically similar to the standard APFSDS ammunition to a range up to 1.000 metres. It has a maximum range of less than 3.700 metres.

**CHARACTERISTICS**
- **Type**: Fixed round, TPFSDS-T
- **Caliber**: 30mm
- **Round mass (nominal)**: 675g
- **Round length**: 293mm
- **Projectile mass (nominal)**: 220g
- **Penetrator**: Steel
- **Tracer**: 1s
- **Cartridge case**: Steel
- **Primer**: Percussion cap
- **Propellant (ECL) (nominal)**: 120g

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1.360m/s
- **Maximum range**: ≤ 3.700m
- **Dispersion**: <0.5 mil
- **Operational temperature**: -46°C to +66°C

**PACKAGING**
15 rounds on a belt, and 2 belts per weatherproof metal container. 16 containers per pallet.

**TECHNICAL DATA**
- **Type**: Fixed round, APFSDS-T
- **Caliber**: 30mm
- **Round mass (nominal)**: 690g
- **Round length**: 293mm
- **Projectile mass (nominal)**: 235g
- **Penetrator**: Tungsten Alloy Cobalt Free
- **Tracer**: 2.5s
- **Cartridge case**: Steel
- **Primer**: Percussion cap
- **Propellant ECL (nominal)**: 130g

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1.260m/s
- **Penetration at 1.000m**: >50mm RHA steel at 60° obliquity
- **Dispersion**: <0.44 mil
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
As per customer requirements

**STATUS**
Qualified.
The compatibility of the M929 with the 2A72 cannon, as used in the BMP3 vehicles, is currently being evaluated.

---

**30mm X 165 APFSDS-T M929**

**MISSION**
For use in the BMP 2 vehicles equipped with the 30mm 2A42 cannons. This cartridge is designed to defeat light and medium armored vehicles.

**DESCRIPTION**
This cartridge is an Armour Piercing Fin Stabilized Discarding Sabot with Tracer (APFSDS-T) type. It consists of a subcaliber fin stabilized tungsten alloy projectile launched by means of a lightweight sabot. Penetration, at any given range, and conversely range for any given penetration, is greatly enhanced compared to older generation of APDS or AP projectiles.

**TECHNICAL DATA**
- **Type**: Fixed round, APFSDS-T
- **Caliber**: 30mm
- **Round mass (nominal)**: 690g
- **Round length**: 293mm
- **Projectile mass (nominal)**: 235g
- **Penetrator**: Tungsten Alloy Cobalt Free
- **Tracer**: 2.5s
- **Cartridge case**: Steel
- **Primer**: Percussion cap
- **Propellant ECL (nominal)**: 130g

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1.260m/s
- **Penetration at 1.000m**: >50mm RHA steel at 60° obliquity
- **Dispersion**: <0.44 mil
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
As per customer requirements
**MISSION**
The 30mm x 150 ammunition is intended for use in the 30M791 automatic weapon fitted to Rafale aircraft. This ammunition has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 150 family is the only ammunition qualified for 30M791 weapon by French DGA and DASSAULT.

**DESCRIPTION**
The 30 x 150 SAPHEI cartridge is composed of:
- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load,
- an explosive shell loaded with RDX/aluminium,
- a SD base fuze (MR3015) equipped with two safety systems compliant with the STANAG 4187 requirements.

**STATUS**
In service

---

**MISSION**
The 30mm x 150 ammunition is intended for use in the 30M791 automatic weapon fitted to Rafale aircraft. This ammunition has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 150 family is the only ammunition qualified for 30M791 weapon by French DGA and DASSAULT.

**DESCRIPTION**
The 30 x 150 TP cartridge is composed of:
- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load,
- an inert shell fitted with a sintered-iron driving band.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Semi Armour Piercing High Explosive Incendiary (SAPHEI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>~550g</td>
</tr>
<tr>
<td>Round length</td>
<td>≤ 250mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - M650 1A/1W</td>
</tr>
<tr>
<td>Propellant</td>
<td>~90g</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR3015</td>
</tr>
<tr>
<td>Safety distance</td>
<td>≥15m</td>
</tr>
<tr>
<td>Self-destruction</td>
<td>5 to 17s</td>
</tr>
<tr>
<td>Link</td>
<td>30M791</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Initial velocity | 1,025 m/s |
| Operational use  | Up to 2,500m |
| Dispersion       | ≤ 0.6 mil |
| Perforation RHA(thickness/angle/distance) | 15mm/30°/800m |

**PACKAGING**

Metallic box CMC300

The inside of the box is covered with insulated material, which reinforces the ammunition fire protection. It can resist to a 75°C fire for 3mn without any pyrotechnical reaction. It ensures the non-transmission through influence in case of an unexpected detonation.

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice (TP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~550g</td>
</tr>
<tr>
<td>Cartridge Length</td>
<td>250mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - M650 1A/1W</td>
</tr>
<tr>
<td>Propellant</td>
<td>~90g</td>
</tr>
<tr>
<td>Link</td>
<td>30M791</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Initial velocity | 1,025 m/s |
| Operational use  | Up to 2,500m |
| Dispersion       | ≤ 0.6 mil |

**PACKAGING**

Metallic box CMC300

The inside of the box is covered with insulation material, which reinforces the ammunition fire protection.
30mm X 113B SAPHEI
AMMUNITION FOR DEFA 30mm WEAPON

**MISSION**
The 30mm x 113B ammunition is intended for use in the DEFA 30mm automatic weapons fitted to Mirage, Alphajet, Aermacchi...
This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions.
As OEM, the Nexter 30mm x 113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

**DESCRIPTION**
The 30 x 113 SAPHEI cartridge is composed of:
- a steel cartridge case,
- an electric primer,
- a propellant load,
- an explosive shell loaded with RDX/aluminium,
- a SD base fuze (MR3005) equipped with two safety systems.

**STATUS**
In service

---

30mm X 113B TP
DEFA 30mm WEAPON AMMUNITION

**MISSION**
The 30mm x113B ammunition is intended for use in the DEFA 30mm automatic weapons fitted to Mirage, Alphajet, Aermacchi...
This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions.
As OEM, the Nexter 30mm x113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

**DESCRIPTION**
The 30 x 113B TP cartridge is composed of:
- a steel cartridge case,
- an electric primer,
- a propellant load,
- an inert shell fitted with a sintered iron band.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Semi Armour Piercing High Explosive Incendiary (SAPHEI) F7670 type</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~490g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 200mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - type 52N92</td>
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<tr>
<td>Propellant</td>
<td>~50g</td>
</tr>
<tr>
<td>Explosive</td>
<td>~16g</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR3005 Safety distance: ≥20m Self-destruction: 8 to 15s</td>
</tr>
<tr>
<td>Link</td>
<td>F51</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Initial velocity   | 775m/s                                                              |
| Operational use    | Up to 2,000m                                                       |
| Accuracy           | H + L ≤ 50cm at 100m                                               |
| Perforation RHA (thickness/angle/distance) | 15mm/45°/200m |

**PACKAGING**

Box CMC300 or CMC30 Metallic box
## 30mm X 113B TP-T
### DEFA 30mm WEAPON AMMUNITION

**MISSION**
The 30mm x113B ammunition is intended for use in the DEFA 30mm automatic weapons fitted to Mirage, Alphajet, Aermacchi...
This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

**DESCRIPTION**
The 30 x 113 TP-T cartridge is composed of:
- a steel cartridge case,
- an electric primer,
- a propellant load,
- an inert shell fitted with a sintered iron band,
- a day/night tracer.

**STATUS**
In service

---

## 30mm X 113B 1A/1W SAPHEI
### MUNITION FOR DEFA F2B AND 30M781 WEAPONS

**MISSION**
The 30mm x 113B ammunition is intended for use in either the DEFA 30mm automatic weapons fitted to Super-Etendard or 30M781 weapon for Tigre helicopter.
This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 113B family is the only ammunition qualified on DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

**DESCRIPTION**
The 30 x 113 1A/1W SAPHEI cartridge is composed of:
- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load,
- an explosive shell loaded with RDX/aluminum,
- a SD base fuze (MR3005) equipped with two safety systems.

**STATUS**
In service

---

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Semi Armour Piercing High Explosive Incendiary (SAPHEI) F7671 type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~490g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 200mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (laquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - M650 1A/1W</td>
</tr>
<tr>
<td>Propellant</td>
<td>~50g</td>
</tr>
<tr>
<td>Explosive</td>
<td>16g</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR3005 Safety distance: ≥20m Self-destruction: 8 to 15s</td>
</tr>
<tr>
<td>Link</td>
<td>F51</td>
</tr>
</tbody>
</table>

### PERFORMANCES

| Initial velocity | 775m/s |
| Operational use  | Up to 2,000m |
| Accuracy         | H + L ≤ 50cm at 100m |
| Tracing duration | ≥ 3s   |

### PACKAGING

- Box CMC300 or CMC30 Metallic box
The 30mm x 113B ammunition is intended for use in either the DEFA 30mm automatic weapons fitted to Super-Etendard or 30M781 weapon for Tigre helicopter. This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 113B family is the only ammunition qualified on DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

**DESCRIPTION**

The 30 x 113 1A/1W cartridge is composed of:
- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant, and
- an inert shell fitted with a sintered iron band.

**PACKAGING**

Box CMC300 or CMC30 Metallic box

---

+ **TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Sem Armour Piercing High Explosive Incendiary – Super Safe (SAPHEI-SSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~490g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 200mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - M650 1A/1W</td>
</tr>
<tr>
<td>LOVA Propellant</td>
<td>~50g</td>
</tr>
<tr>
<td>Explosive IM</td>
<td>14g</td>
</tr>
<tr>
<td>Fuze</td>
<td>M93055 Safety distance: 220m; Self-destruction: 8 to 15s</td>
</tr>
<tr>
<td>Link</td>
<td>F51</td>
</tr>
</tbody>
</table>

+ **PERFORMANCES**

Initial velocity: 775m/s
Operational use: Up to 2,000m
Accuracy: H = L ≤ 50cm at 100m
Perforation RHA (thickness/angle/distance): 15mm/45°/200m

**STATUS**

Under development

---

The 30mm x 113B ammunition is intended for use in either the DEFA 30mm automatic weapons fitted to Super-Etendard or 30M781 weapon fitted to Tigre helicopter. This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 113B family is the only ammunition qualified on DEFA weapon family by the French DGA, DASSAULT and AIRBUS HELICOPTERS.

**DESCRIPTION**

The 30 x 113 1A/1W cartridge is composed of:
- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load, and
- an inert shell with a sintered iron band.

**PACKAGING**

Box CMC300 or CMC30 Metallic box

---

+ **TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target practice (TP) F2271 type</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~490g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 200mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>275g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric - M650 1A/1W</td>
</tr>
<tr>
<td>LOVA Propellant</td>
<td>~50g</td>
</tr>
<tr>
<td>Link</td>
<td>F51</td>
</tr>
</tbody>
</table>

+ **PERFORMANCES**

Initial velocity: 775m/s
Maximum range: Up to 2,000m
Accuracy: H = L ≤ 50cm at 100m

**STATUS**

In service
**MISSION**
The 30mm x 113B ADEN ammunition is intended for use in the 30mm automatic weapons as 30mm ADEN MK4 – MK5, 30mm M230, 30mm ASP-30 and similar. This ammunition has been developed to be fired during either Air-to-Air or Air-to-Ground missions. This ammunition is qualified by British Aerospace to be used in their aircraft all over the world.

**DESCRIPTION**
The 30 x 113B ADEN HEI cartridge is composed of:
- a steel cartridge case protected with zinc coating,
- an electric primer,
- a propellant load,
- an explosive shell loaded with RDX/Aluminum,
- a PD fuze (MR3001) equipped with two safety systems.

**TECHNICAL DATA**
- Type: High Explosive Incendiary (HEI) 5478 type
- Caliber: 30mm
- Cartridge weight: ~455g
- Cartridge length: ≤ 200mm
- Projectile weight: 245g
- Cartridge case: Steel (zinc protection)
- Primer: Electric - M78
- Propellant: ~50g
- Fuze: MR3001
- Safety distance: ≥ 15m
- Explosive: 22g
- Link: Mk1 ou Mr1

**PERFORMANCES**
- Muzzle velocity: 765m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 50cm at 100m

**PACKAGING**
- Box: 02D101 Wooden box or CMC300 Metallic box

---

**MISSION**
The 30mm x 113B ADEN ammunition is intended for use in the 30mm automatic weapons as 30mm ADEN MK4 – MK5, 30mm M230, 30mm ASP-30 and similar. This ammunition has been developed to be fired during either Air-to-Air or Air-to-Ground missions. This ammunition is qualified by British Aerospace to be used in their aircraft all over the world.

**DESCRIPTION**
The 30 x 113B ADEN TP cartridge is composed of:
- a steel cartridge case protected with zinc coating,
- an electric primer,
- a propellant load,
- an inert shell fitted with a sintered iron band.

**TECHNICAL DATA**
- Type: Target Practice (TP) 2468 type
- Caliber: 30mm
- Cartridge weight: ~455g
- Cartridge length: ≤ 200mm
- Projectile weight: 245g
- Cartridge case: Steel (zinc coating)
- Primer: Electric - M78
- Propellant: ~50g
- Link: Mk1 ou Mr1

**PERFORMANCES**
- Initial velocity: 765m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 50cm at 100m

**PACKAGING**
- Box: 02D101 Wooden box or CMC300 Metallic box

---

**STATUS**
- In service
**MISSION**
The 30mm x 113 B ammunition is intended for use in either the DEFA 30mm automatic weapons fitted to Super-Etendard or 30M781 weapon fitted to Tigre helicopter. This ammunition range has been developed for either Air-to-Air or Air-to-Ground missions. As OEM, the Nexter 30mm x 113B family is the only ammunition qualified for DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

**DESCRIPTION**
The 30 x 113 1A/1W HEI cartridge is composed of:

- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load,
- an explosive shell loaded with RDX/aluminum,
- a PD/SD fuze (MR3011) equipped with two safety systems compliant with the STANAG 4187 requirements.

**STATUS**
Under qualification

---

**MISSION**
The 30mm x 173 ammunition is intended for use in the 30mm Bushmaster II and equivalent weapons on a large type of ICV vehicles. This cartridge is a High Explosive Incendiary with Tracer (HEI-T) type. It consists of a steel shell filled with an explosive/incendiary mix and fitted with a self-destruct PD nose fuze. The tracer is loaded on the rear of the projectile.

**DESCRIPTION**
The 30 x 173 HEI-T cartridge is composed of:

- an aluminum cartridge case,
- a mechanical primer,
- a propellant load,
- an explosive shell loaded with RDX/aluminum,
- a point detonating fuze equipped with two safety systems and a self-destruction device,
- a day/night tracer.

**STATUS**
Qualification in progress
30mm X 173 TP-T
30mm BUSHMASTER II MK 44 AND GI-30 WEAPONS

**MISSION**
The 30mm x 173 ammunition is intended for use in the 30mm Bushmaster II and equivalent weapons on a large type of ICV vehicles. This cartridge is a Training Practice with tracer. It consists of an inert projectile with a tracer in the rear.

**DESCRIPTION**
The 30 x 173 TP-T cartridge is composed of:
- an aluminum cartridge case,
- a mechanical primer,
- a propellant load,
- an inert shell,
- a day/night tracer.

**STATUS**
Qualification in progress

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice with Tracer (TP-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>30mm</td>
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<tr>
<td>Cartridge weight</td>
<td>~670 g</td>
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<tr>
<td>Cartridge length</td>
<td>≤ 290 mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>363g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Aluminum with protection</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical primer</td>
</tr>
<tr>
<td>Propellant</td>
<td>~155 g</td>
</tr>
<tr>
<td>Link</td>
<td>MK15</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: 1,070 m/s
- Maximum range: Up to 2,500 m
- Accuracy: $S_H$ AND $S_V$ ≤ 0.5 mil
- Tracing duration: ≥3s

**PACKAGING**

| Box                        | Metallic box M548                  |

---

25mm X 137 HEI-T
25mm AUTOMATIC WEAPONS

**MISSION**
The 25mm x 137 ammunition is designed to be fired from 25mm automatic weapons operated by gas (KBA), by external energy (M811, M242 “Chain Gun”), or Gatling type (GAU 12) fitted to air-craft, light armored vehicles and naval vessels mounts. This cartridge meets the STANAG 4173 requirements (25mm x137 ammunition).

**DESCRIPTION**
The 25mm x 137 HEI-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an explosive shell loaded with RDX/Aluminium,
- a point detonating fuze equipped with two safety systems and a self-destruction device,
- a day/night tracer.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>High-Explosive Incendiary with Tracer (HEI-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>25mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~500 g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤220 mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>183g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~90g</td>
</tr>
<tr>
<td>Explosive</td>
<td>~27g</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR251</td>
</tr>
<tr>
<td>Safety distance:</td>
<td>≥15m</td>
</tr>
<tr>
<td>Self-destruction:</td>
<td>≥4.5s</td>
</tr>
<tr>
<td>Link</td>
<td>M28</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: 1,100 m/s
- Operational use: Up to 2,500 m
- Dispersion: $d_H$ and $d_V$ ≤ 0.8 mil
- Tracer duration: ≤ 2.5 m

**PACKAGING**

| Box                        | Metallic box CMC30 H200                   |

---
**MISSION**
The 25mm x 137 ammunition is intended for use in the 25mm automatic weapons operated by gas (KBA), by external energy (M811, M242 "Chain Gun"), or Gatling type (GAU 12) fitted to air-craft, light armored vehicles and naval vessels mounts. This cartridge meets the STANAG 4173 requirements (25mm x 137 ammunition). The 25mm x 137 HEI-AB can be used in airburst mode above ground targets or in point detonating mode. The SD base fuze, with 2 safety systems compliant with STANAG 4187, ensures performances against targets even at short range and allows self-destruction of the ammunition.

**DESCRIPTION**
The 25mm x 137 HEI-AB cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an shell loaded with IM explosive,
- a SD base chronometric fuze (point detonating, time delay and self destruction) with 2 safety systems compliant with STANAG 4187 requirements. Fully programmable on load into breech.

**STATUS**
Under development

---

**MISSION**
This cartridge is designed to be fired from the 25mm KBA, the M242 Bushmaster and the M811 gun systems, in order to defeat light and medium armored vehicles.

**DESCRIPTION**
This cartridge is an Armor Piercing Fin Stabilized Discarding Sabot with Tracer (APFSDS-T) type. It consists of a subcaliber fin stabilized tungsten alloy projectile launched by means of a lightweight sabot. The windshield is designed to provide excellent penetration characteristics against high obliquity targets. The use of a specially designed single base propellant ensures good wear life characteristics.

**STATUS**
In service
25mm X 137 TP-T
25mm AUTOMATIC WEAPONS

**MISSION**
This practice round is designed to be fired from 25mm automatic weapons operated by gas (KBA), by external energy (M811, M242 “Chain Gun”), or of the Gatling type (GAU12) fitted to aircraft mounts, light armored vehicles, naval vessels and aircrafts. This round meets the STANAG 4173 requirements (25mm x 137 ammunition).

**DESCRIPTION**
The 25mm x 137 TP-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert shell,
- a day/night tracer.

**TECHNICAL DATA**
- **Type**: TP-T
- **Caliber**: 25mm
- **Cartridge weight**: 500g
- **Cartridge length**: ≤220mm
- **Projectile weight**: 183g
- **Cartridge case**: Steel (lacquering protection)
- **Primer**: Mechanical
- **Propellant**: ~90g
- **Link**: M28

**PERFORMANCES**
- **Initial velocity**: 1,100m/s
- **Dispersion**: ±1.8 /S

**PACKAGING**
- **Box**: Metallic box CMC30 H200

---

25mm TP-T
M936

**MISSION**
This cartridge is designed to be fired from the 25mm KBA and the M242 Bushmaster gun system, for gunnery training.

**DESCRIPTION**
This cartridge is a Training Practice with Tracer (TP-T) type. It consists of an inert projectile with a tracer mounted in the rear. The projectile is mounted on a steel cartridge case which is filled with single base propellant. The M936 round is ballistically matched to the Mecar M938 HEI-T, and the US M793 TP-T and M792 HEI-T rounds. The M936 cartridge replaces the existing US M793 TP-T cartridge.

**TECHNICAL DATA**
- **Type**: Fixed round, TP-T
- **Caliber**: 25 x 137mm
- **Cartridge weight**: 500g
- **Cartridge length**: 217mm
- **Projectile weight**: 190g
- **Cartridge case**: Steel
- **Primer**: Percussion cap
- **Propellant (nominal)**: 90g

**PERFORMANCES**
- **Initial velocity**: 1,100m/s
- **Dispersion**: max. 0.5 mil
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
15 rounds on a belt, and 2 belts per weatherproof metal container. 28 containers per pallet
- **Gross weight (metal container)**: 23.5kg
- **Dimension ext. (metal container)**: 365x145x355mm
- **Gross weight (complete pallet)**: 670kg
- **Dimension ext. (complete pallet)**: 1,200x800x870mm

**UN Classification**: 1.2 C UN 0328

**STATUS**
In service
**25mm X 137 TPRR-T**

**25mm AMMUNITION**

**MISSION**
The 25mm x 137 ammunition is designed to be fired from 25mm automatic weapons operated by gas (KBA), by external energy (M811, M242 "Chain Gun"), or Gatling type (GAU 12) fitted to air-craft, light armored vehicles and naval vessels mounts. This cartridge meets the STANAG 4173 requirements (25mm x 137 ammunition).

**DESCRIPTION**
The TPRR-T ammunition is designed to be in accordance with HEI-T trajectory up to 1,000m and to limit the maximum range under 3,500m (HEI-T and TP-T maximum range ~ 6,000m). The 25mm x 137 TPRR-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert shell,
- a day/night tracer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice Reduced Range with Tracer (TPRR-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>25mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~ 500g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 220mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>183g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant (nominal)</td>
<td>~ 90g</td>
</tr>
<tr>
<td>Link</td>
<td>M28</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- **Initial velocity** 1,100m/s
- **Operational use** 1,000m
- **Dispersion** δH and δV<0.8 mil
- **Tracer duration** ≥ 1.8s

**PACKAGING**

- Metallic box CMC30 X5000

---

**25mm X 137 TPFSDS-T**

**M937**

**MISSION**
This cartridge is designed to be fired, for gunnery training, from the 25mm KBA, M242 Bushmaster and 25mm Nexter M811 gun systems.

**DESCRIPTION**
This cartridge is a Target Practice Fin Stabilized Discarding Sabot projectile with Tracer (TPFSDS-T) type. It consists of a subcaliber fin stabilized steel projectile launched by means of a lightweight sabot. The tracer element is contained within the aluminium alloy tail. The projectile is ballistically similar to the standard APFSDS ammunition to a range of 1,000 meters. It has a maximum range of less than 4,500 meters.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round, TPFSDS-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>25mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>450g</td>
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<tr>
<td>Round length</td>
<td>223mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>112g</td>
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<tr>
<td>Penetrator</td>
<td>Steel</td>
</tr>
<tr>
<td>Tracer (static)</td>
<td>Min 2.4s</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap DM 8242</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>95g</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- **Muzzle velocity** (at 21°C) (nominal) 1,440m/s
- **Maximum range** <4,500m
- **Dispersion** 0.7 mil
- **Operational temperature** -32°C to +62°C

**PACKAGING**

- 15 rounds on a belt, and 2 belts per weatherproof metal container
- 28 containers per pallet
- UN Classification: 1.2 C UN 0328

**STATUS**

In service
20mm X 139 HEI

MISSION
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M693 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

DESCRIPTION
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M693 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

TECHNICAL DATA
- Type: High-Explosive Incendiary (HEI)
- Caliber: 20mm
- Cartridge weight: ~315g
- Cartridge length: ≤213mm
- Projectile weight: 120g
- Cartridge case: Steel (lacquering protection)
- Primer: Mechanical
- Fuze: MR201B
  - Self-destruction: 3.5 to 8s
  - Safety distance: ≥15m
- Propellant: ~55g
- Explosive: ~9g
- Link: 24K711

PERFORMANCES
- Initial velocity: 1,050m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 60cm at 200m

PACKAGING
- Box: Metallic box 12D201

STATUS
In service

20mm X 139 HEI-T

MISSION
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M693 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

DESCRIPTION
The 20mm x 139 HEI-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an explosive shell loaded with RDX/aluminium,
- a point detonating fuze equipped with two safety systems and self-destruction,
- a day/night tracer.

TECHNICAL DATA
- Type: High-Explosive Incendiary Tracer (HEI-T)
- Caliber: 20mm
- Cartridge weight: ~315g
- Cartridge length: ≤213mm
- Projectile weight: 120g
- Cartridge case: Steel (lacquering protection)
- Primer: Mechanical
- Fuze: MR201B
  - Self-destruction: 3.5 to 8s
  - Safety distance: ≥15m
- Propellant: ~55g
- Explosive weight: ~6g
- Link: 24K711

PERFORMANCES
- Initial velocity: 1,050m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 60cm at 200m
- Tracer duration: ≥3.5s

PACKAGING
- Box: Metallic box 12D201

STATUS
In service
20mm X 139 AP-T
20mm AMMUNITION

+ MISSION
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M693 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

+ DESCRIPTION
The 20 x 139 AP-T cartridge is composed of:
• a steel cartridge case,
• a mechanical primer,
• a propellant load,
• an inert shell fitted with a sintered-iron driving band equipped with an armour-piercing core of high heavy metal,
• a day/night tracer.

+ STATUS
In service

+ TECHNICAL DATA
<table>
<thead>
<tr>
<th>Type</th>
<th>Armour Piercing with Tracer (AP-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>20mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~305g</td>
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<tr>
<td>Cartridge length</td>
<td>≤213mm</td>
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<tr>
<td>Projectile weight</td>
<td>111g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~55g</td>
</tr>
<tr>
<td>Link</td>
<td>24K711</td>
</tr>
</tbody>
</table>

+ PERFORMANCES
| Initial velocity      | 1,100m/s                            |
| Operational use       | Up to 2,000m                        |
| Accuracy              | H + L ≤ 60cm at 200m                |
| Penetration RHA (thickness/angle/distance) | 26mm/30°/800m            |
| Tracer duration       | ≥1.5s                              |

+ PACKAGING
| Box                   | Metallic box 12D201                 |

20mm X 139 TP
20mm AMMUNITION

+ MISSION
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M693 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

+ DESCRIPTION
The 20 x 139 TP cartridge is composed of:
• a steel cartridge case,
• a mechanical primer,
• a propellant load,
• an inert shell fitted with a sintered-iron driving band.

+ STATUS
In service

+ TECHNICAL DATA
<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice (TP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>20mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~315g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤213mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>120g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~55g</td>
</tr>
<tr>
<td>Link</td>
<td>24K711</td>
</tr>
</tbody>
</table>

+ PERFORMANCES
| Initial velocity      | 1,050m/s                            |
| Operational use       | Up to 2,000m                        |
| Accuracy              | H + L ≤ 60cm at 200m                |

+ PACKAGING
| Box                   | Metallic box 12D201                 |
20mm X 139 TP-T
20mm AMMUNITION

**MISSION**
The 20mm x 139 ammunition is intended for use in the KAD / 20HS820, GI-2, 20RH202, 20M683 automatic weapons fitted to antiaircraft, light armored vehicles and naval vessels mounts.

**DESCRIPTION**
The 20 x 139 TP-T cartridge is composed of:
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert shell fitted with a sintered-iron driving band,
- a day/night tracer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice with Tracer (TP-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>20mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>315g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 213mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>120g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Steel (lacquering protection)</td>
</tr>
<tr>
<td>Primer</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Propellant</td>
<td>~ 55g</td>
</tr>
<tr>
<td>Link</td>
<td>24K711</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: 1,050m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 60cm at 200m
- Tracing duration: ≥ 3.5s

**PACKAGING**

- Box: Metallic box 12D201

---

20mm X 102 HEI
20mm AMMUNITION

**MISSION**
The 20mm x 102 ammunition is compliant with international standards and has been particularly designed for use with the Nexter’s 20M621 automatic cannon. Fitted to the 15A mounts for vehicles and naval patrol boats, in the NC 621 cannon pod for helicopters and light fixed-wing aircraft, on 19A door mounts and 22A/23A coaxial mounts for helicopter, SH20 inboard mount, THL20 turret for helicopter, Narwhal system and ARX®20A.

**DESCRIPTION**
The 20 x 102 HEI cartridge is composed of:
- a brass cartridge case (M103 type),
- an electric primer,
- a propellant load adapted to thermal conditions,
- an explosive shell loaded with RDX/aluminium,
- a point detonating fuze equipped with two safety systems and self-destruction.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>High-Explosive Incendiary (HEI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>20mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~ 260g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>≤ 168mm</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>102g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Fuze</td>
<td>MR 221</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric M52A3B1</td>
</tr>
<tr>
<td>Explosive</td>
<td>9g</td>
</tr>
<tr>
<td>Propellant</td>
<td>~ 36g</td>
</tr>
<tr>
<td>Link</td>
<td>23TE711</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Initial velocity: 975m/s
- Operational use: Up to 2,000m
- Accuracy: H + L ≤ 60cm at 200m

**PACKAGING**

- Box: Wooden box 02D101 or Metallic box M548
**20mm X 102 AP-T**

**MISSION**
The 20mm x 102 ammunition is compliant with international standards and has been particularly designed for use with the Nexter’s 20M621 automatic cannon. Fitted to the 15A mounts for vehicles and naval patrol boats, in the NC 621 cannon pod for helicopters and light fixed-wing aircraft, on 19A door mounts and 22A/23A coaxial mounts for helicopter, SH20 inboard mount, THL20 turret for helicopter, Narwhal® system and ARX®20A.

**DESCRIPTION**
The 20 x 102 AP-T cartridge is composed of:
- a brass cartridge case (M103 type),
- an electric primer,
- a propellant load adapted to thermal conditions,
- an inert shell fitted with a sintered-iron driving band equipped with an armour-piercing core of high heavy metal,
- a day/night tracer.

**TECHNICAL DATA**
- **Type**: Armour Piercing with tracer (AP-T)
- **Caliber**: 20mm
- **Cartridge weight**: ~272g
- **Cartridge length**: ≤ 168mm
- **Projectile weight**: ~106g
- **Cartridge case**: Brass
- **Primer**: Electric M52A3B1
- **Propellant**: ~36g
- **Link**: 23T711

**PERFORMANCES**
- **Initial velocity**: 1,005m/s
- **Operational use**: 2,000m
- **Accuracy**: H + L ≤ 60cm at 200m
- **Penetration RHA (thickness/angle/distance)**: 20mm/30°/800m
- **Tracing duration**: ≥1.6s

**PACKAGING**
- **Box**: Wooden box 02D101 or Metallic box M548

**STATUS**
In service

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**20mm X 102 TP**

**MISSION**
The 20mm x 102 ammunition is compliant with international standards and has been particularly designed for use with the Nexter’s 20M621 automatic cannon. Fitted to the 15A mounts for vehicles and naval patrol boats, in the NC 621 cannon pod for helicopters and light fixed-wing aircraft, on 19A door mounts and 22A/23A coaxial mounts for helicopter, SH20 inboard mount, THL20 turret for helicopter, Narwhal® system and ARX®20A.

**DESCRIPTION**
The 20 x 102 TP cartridge is composed of:
- a brass cartridge case (M103 type),
- an electric primer,
- a propellant load,
- an inert shell fitted with a sintered-iron driving band.

**TECHNICAL DATA**
- **Type**: Target Practice (TP)
- **Caliber**: 20mm
- **Cartridge weight**: ~260g
- **Cartridge length**: ≤ 168mm
- **Projectile weight**: 102g
- **Cartridge case**: Brass
- **Primer**: Electric M52A3B1
- **Propellant**: ~36g
- **Link**: 23T711

**PERFORMANCES**
- **Initial velocity**: 975m/s
- **Operational use**: Up to 2,000m
- **Accuracy**: H + L ≤ 60cm at 200m

**PACKAGING**
- **Box**: Wooden box 02D101 or Metallic box M548

**STATUS**
In service
**MISSION**
The 20mm x 102 ammunition is compliant with international standards and has been particularly designed for use with the Nexter’s 20M621 automatic cannon. Fitted to the 15A mounts for vehicles and naval patrol boats, in the NC 621 cannon pod for helicopters and light fixed-wing aircraft, on 19A door mounts and 22A/23A coaxial mounts for helicopter, SH20 inboard mount, THL20 turret for helicopter, Narwhal® system and ARX®20A.

**DESCRIPTION**
The 20 x 102 TP-T cartridge is composed of:
- a brass cartridge case,
- an electric primer,
- a propellant load,
- an inert shell fitted with a sintered-iron driving band,
- a day/night tracer.

**STATUS**
In service

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Target Practice with Tracer (TP-T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>20mm</td>
</tr>
<tr>
<td>Cartridge weight</td>
<td>~260g</td>
</tr>
<tr>
<td>Cartridge length</td>
<td>~168g</td>
</tr>
<tr>
<td>Projectile weight</td>
<td>102g</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Electric M52A3B1</td>
</tr>
<tr>
<td>Propellant</td>
<td>~36g</td>
</tr>
<tr>
<td>Link</td>
<td>23TE711</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Initial velocity**: 975 m/s
- **Operational use**: 2,000m
- **Accuracy**: H + L ≤ 60cm at 200m
- **Tracing duration**: ≥ 2s

### PACKAGING

- **Box**: Wooden box 02D101 or Metallic box M548
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-TP-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>106mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>16.4kg</td>
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<tr>
<td>Round length</td>
<td>999mm</td>
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<tr>
<td>Projectile mass (nominal)</td>
<td>8.3kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Inert</td>
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<tr>
<td>Tracer</td>
<td>M84</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Perforated steel</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant DB (nominal)</td>
<td>3.7kg</td>
</tr>
</tbody>
</table>

### PERFORMANCE

- **Muzzle velocity (at 21°C) (nominal)**: 500m/s
- **Dispersion**: 0.8 mil
- **Maximum range**: 2,750m
- **Operational temperature**: -32°C to +52°C

### PACKAGING

- 2 rounds per twin container, 12 containers per pallet
- **Gross weight (container)**: 43kg
- **Dimension ext (container)**: 1,100x410x200mm
- **Gross weight (complete pallet)**: 565kg
- **Dimension ext (complete pallet)**: 1,200x1,100x910mm
- **UN Classification**: 1.2 C UN 0328

---

### MISSION

For use with 106mm recoilless rifle, to provide cost effective marksmanship and live fire training of gun crews. This round is ballistically matched to the M1070 HEAT-T projectile.

### DESCRIPTION

The projectile consists of a steel body with the same physical characteristics as the M1070 HEAT-T projectile. A tail fin assembly with tracer is mounted on the rear of the body. The projectile is assembled to the steel perforated cartridge case and has a mechanically initiated primer.

### STATUS

In service

---

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>106mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
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<tr>
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<td>Projectile filling (Comp B)</td>
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<td>Fuze</td>
<td>PIBD</td>
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<tr>
<td>Tracer</td>
<td>M84</td>
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<td>Cartridge case</td>
<td>Perforated steel</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
</tr>
<tr>
<td>Propellant DB (nominal)</td>
<td>3.7kg</td>
</tr>
</tbody>
</table>

### PERFORMANCE

- **Muzzle velocity (at 21°C) (nominal)**: 500m/s
- **Dispersion**: 0.8 mil
- **Maximum range**: 2,750m
- **Penetration (at 60° obliquity)**: 150mm
- **Operational temperature**: -32°C to +52°C

### PACKAGING

- 2 rounds per twin container, 12 containers per pallet
- **UN Classification**: 1.1 E UN 0006

---

### MISSION

For use with 106mm recoilless rifle, to defeat armored fighting vehicles, bunkers and hard targets. This round replaces the US M344 model type, and has improved fuzing and explosive filling. A ballistically matched training round is also available.

### DESCRIPTION

The steel nose cone adapter of the projectile carries a cap with a piezoelectric element to initiate the PIBD fuze in the base. The fuze has two independent safety devices to ensure safety during handling, storage and transport. It also functions in graze mode to ensure functioning at all impact angles. A copper cone within the projectile generates the shaped charge effect. The explosive charge is Composition B. In the event of a non-functioning, the fuze will discharge all electrical power and be rendered inert within 10 minutes of firing.

### STATUS

In service
### 106mm RCL HESH-T

**M1072**

**MISSION**
For use with 106mm recoilless rifle, optimized for Urban Warfare to defeat armored fighting vehicles, bunkers and reinforced concrete structures, hard targets, personnel and similar targets. This round replaces the US M346 model type, and has improved explosive filling and improved fuzing. A ballistically matched training round is available.

**DESCRIPTION**
The HESH-T (HEP-T) projectile comprises a thin walled steel cylindrical body with a premachined driving band, a relatively short ogive and a flat base to which is secured the base detonating fuze and a tracer. It is loaded with Composition A3 explosive. The projectile is assembled to a steel cartridge case fitted with a mechanical primer and loaded with double base, multi perforated propelling charge. The new base detonating fuze has two independent safety mechanisms, improved muzzle safety and improved graze performance. In the event of a non-function after firing, the firing pin will be mechanically locked. The fuze complies with STANAG 4187 and MIL-STD-1318D.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HESH-T</th>
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</thead>
<tbody>
<tr>
<td>Caliber</td>
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<td>Round mass (nominal)</td>
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<td>Fuze</td>
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<td>Perforated steel</td>
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<tr>
<td>Primer</td>
<td>Percussion cap M61</td>
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<tr>
<td>Propellant DB (nominal)</td>
<td>3.8kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21° C) (nominal): 500m/s
- Dispersion: 0.8 mI
- Effective range: 1,350m
- Maximum range: 6,800 m
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container, 12 containers per pallet
- UN Classification: 1.1 E UN 0006

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### 106mm RCL HESH-TP-T

**M1073**

**MISSION**
For use with the 106mm recoilless rifle, to provide cost effective marksmanship and live fire training of gun crews. This round is ballistically matched to the M1072 HESH-T projectile.

**DESCRIPTION**
The HESH-TP-T (HEP-TP-T) projectile comprises a steel cylindrical body with a pre-machined driving band, a relatively short ogive and a flat base to which is secured the base tracer. The projectile is assembled to a steel cartridge case fitted with a mechanical primer and loaded with double base, multi perforated propelling charge.

**STATUS**
In service

**TECHNICAL DATA**

<table>
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<tr>
<th>Type</th>
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<tbody>
<tr>
<td>Caliber</td>
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</tr>
<tr>
<td>Round mass (nominal)</td>
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<td>Primer</td>
<td>M57</td>
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</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21° C) (nominal): 500m/s
- Dispersion: 0.8 mI
- Range, Direct fire: 1,350m
- Range, Indirect fire: 6,800 m
- Operational temperature: -32°C to +52°C

**PACKAGING**

- 2 rounds per twin container, 12 containers per pallet
- UN Classification: 1.2 C UN 0328
INFINITY AMMUNITION

SUB-CALIBER ADAPTER
M1076

+ MISSION
For use with current 106mm recoilless rifle M40A1, for gunnery training.

+ DESCRIPTION
The sub-caliber adapter M1076 is a sub-caliber system used for gun crew training. It consists of a Training Device comprising a 7.62mm rifled barrel in a mount having the shape of a 106mm HESH round. 7.62 rounds are loaded in the Adapter to be fired from the 106mm rifle out to the combat range of full bore rounds. The sub-caliber adapter is loaded into the rifle chamber and is fired using the main rifle firing mechanism. Requiring minimum routine maintenance, it provides a complete and inexpensive training system.

+ STATUS
In service

+ TECHNICAL DATA
Caliber: 106mm
Round mass (nominal): 16kg
Round length: 920mm

+ SUB-CALIBER
Caliber: 7.62mm

+ PACKAGING
1 round per container, 2 containers per wooden box, 12 wooden boxes per pallet

84mm SUB-CALIBER TRAINING DEVICE
M525

+ MISSION
For use with current 84mm recoilless rifles, such as the Carl Gustav & M560A1 SAKR, for gunnery training.

+ DESCRIPTION
The sub-caliber adapter M525 is a sub-caliber system used for rifle crew training. It consists of a Training Device comprising a 7.62mm rifled barrel in a mount having the shape of an 84mm round. M115 7.62 tracer rounds are loaded into the adapter to be fired from the 84mm rifle out to the combat range of full-bore rounds. The sub-caliber adapter is loaded into the rifle chamber and is fired using the main rifle firing mechanism. Requiring minimum routine maintenance, it provides a complete and inexpensive training system.

+ STATUS
In service

+ TECHNICAL DATA
Type: Sub-caliber
Caliber: 84mm
Round mass (nominal): 3.7kg
Round length: 600mm
Sub-caliber barrel: Caliber 7.62mm
Projectile: FN Tracer Round M115
Cap and holder ass: M573
Primer: Flobert 6mm blank cartridge

+ PACKAGING
2 rounds per twin container, 3 containers per wooden box, 8 wooden boxes per pallet

+ PERFORMANCE
Ballistic match with HEAT round: To 300m
84mm HE

**MISSION**
For use with 84mm recoilless rifle M560A1 and equivalents, to provide blast and fragmentation effects for the defeat of light structures, material and similar targets.

**DESCRIPTION**
The projectile consists of a high fragmentation cast iron body containing a HE bursting charge. It has a copper driving band and a multipurpose time fuze. The fuze can be set to range and will also function in PD Mode. It is assembled to a light weight aluminium cartridge which is fitted with a percussion cap, an ignition charge and a blow-out disc. The cartridge case is loaded with a double base strip propellant.

**TECHNICAL DATA**
- **Type**: Fixed round, HE
- **Caliber**: 84mm
- **Round mass (nominal)**: 3.3kg
- **Round length**: 370mm
- **Projectile mass (nominal)**: 2.4kg
- **Projective filling (Comp B)**: 0.4kg
- **Fuze**: PD/Time
- **Cartridge case**: Aluminium
- **Primer**: Percussion cap
- **Propellant DB (nominal)**: 0.4kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 240m/s
- **Muzzle safety**: 20m
- **Arming distance**: 70m
- **Dispersion**: 1 mil
- **Effective Range**: 1,300m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 36 containers per pallet
- **UN Classification**: 1.1 E UN 0006

**STATUS**
In service

84mm SMK (TTC)

**MISSION**
For use with 84mm recoilless rifle M560A1 and equivalents, to provide instant tactical non toxic screening smoke.

**DESCRIPTION**
The projectile consists of a light alloy body with a copper driving band, the adapter with the PD/Graze fuze. It is filled with Titanium Tetra Chloride (TTC) and fitted with a Composition A5 burster charge. It is assembled to a light weight aluminium cartridge which is fitted with a percussion cap, an ignition charge and a blow-out disc. The cartridge case is loaded with a double base strip propellant.

**TECHNICAL DATA**
- **Type**: Fixed round SMK
- **Caliber**: 84mm
- **Round mass (nominal)**: 3.2kg
- **Round length**: 440mm
- **Projectile mass (nominal)**: 2.3kg
- **Projective filling (TTC)**: 0.5kg
- **Burster (Comp A5)**: 0.02kg
- **Fuze**: PD/Graze
- **Cartridge case**: Aluminium
- **Primer**: Percussion cap
- **Propellant DB (nominal)**: 0.4kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 240m/s
- **Muzzle safety**: 20m
- **Arming distance**: 70m
- **Dispersion**: 2 mil
- **Effective Range**: 1,300m
- **Smoke screen**: 15m width
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 36 containers per pallet
- **UN Classification**: 1.2 G UN 0015

**STATUS**
In service
84mm ILL M542

**TECHNICAL DATA**
- **Type**: Fixed round ILL
- **Caliber**: 84mm
- **Round mass (nominal)**: 3.2kg
- **Round length**: 465mm
- **Projectile mass (nominal)**: 2.3kg
- **Projective filling (illuminating comp)**: 0.5kg
- **Fuze**: Pyrotechnical
- **Cartridge case**: Aluminium
- **Primer**: Percussion cap
- **Propellant (nominal)**: 0.4kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C)** (nominal): 260m/s
- **Range to burst - max**: 1,800m
- **Range to burst - min**: 800m
- **Burst height**: 200m
- **Descent rate**: +/-5m/s
- **Illuminated rate - period**: Approx 30s
- **Illuminated rate - intensity**: 650,000cd
- **Illuminated area (diameter)**: 400-500m
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 36 containers per pallet
- **UN Classification**: 1.2 G UN 0171

**MISSION**
For use with 84mm recoilless rifle M560A1 and equivalents, to provide tactical illumination of a specific area of operation.

**DESCRIPTION**
The projectile consists of a light alloy body with a copper driving band, a base plate held by six shear pins and a pyrotechnical fuze. The illuminating canister and parachute assembly is loaded in the projectile body. It is assembled to a light weight aluminium cartridge which is fitted with a percussion cap, an ignition charge and a blow-out disc. The cartridge case is loaded with a double base strip propellant.

**STATUS**
In service

84mm HEAT M543

**TECHNICAL DATA**
- **Type**: Fixed round HEAT
- **Caliber**: 84mm
- **Round mass (nominal)**: 3.4kg
- **Round length**: 610mm
- **Projectile mass (nominal)**: 2.5kg
- **Projective filling (Comp A3)**: 0.5kg
- **Fuze**: Electronic BD
- **Cartridge case**: Aluminium
- **Primer**: Percussion cap
- **Propellant DB (nominal)**: 0.4kg
- **Rocket motor**: 0.3kg

**PERFORMANCES**
- **Muzzle velocity at 21°C** (nominal): 255m/s
- **Maximum velocity**: +/-340m/s
- **Muzzle safety**: 15m
- **Arming distance**: 30m
- **Dispersion**: 1 mkt
- **Effective range**: 600m
- **Penetration**: 300mm RHA
- **Operational temperature**: -32°C to +62°C

**PACKAGING**
- 2 rounds per twin container, 36 containers per pallet
- **UN Classification**: 1.1 E UN 0006

**MISSION**
For use with 84mm recoilless rifle M560A1 and equivalents to defeat armored fighting vehicles and hard targets utilizing a shaped charge.

**DESCRIPTION**
The projectile consists of an aluminium alloy nose cone and an aluminium alloy body, which contains the shaped charge, the electronic BD fuze, the rocket motor and the delay ignitor. The projectile has a nylon slip obturator and is stabilized by 6 hinged fins, which deploy upon exit from the rifle. The projectile is assembled to a light weight aluminium cartridge which is fitted with a percussion cap, an ignition charge and a blow-out disc. The cartridge case is loaded with a double base strip propellant.

**STATUS**
In service
### 84mm HEAT-TP

**M52**

**MISSION**
For use with 84mm recoilless rifle M560A1 and equivalents to provide live fire crew training.

**DESCRIPTION**
The projectile consists of an aluminium alloy nose cone and an aluminium alloy body, which contains the rocket motor and the delay igniter. The projectile has a nylon slip obturator and is stabilized by 6 hinged fins, which deploy upon exit from the rifle. The projectile is assembled to a light weight aluminium cartridge which is fitted with a percussion cap, an ignition charge and a blow-out disc. The cartridge case is loaded with a double base strip propellant. This round is ballistically matched to the HEAT M543.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HEAT-TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>84mm</td>
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<tr>
<td>Round mass (nominal)</td>
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</tr>
<tr>
<td>Round length</td>
<td>610mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>2.4kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Insert</td>
</tr>
<tr>
<td>Rocket motor</td>
<td>0.3kg</td>
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<tr>
<td>Cartridge case</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion cap</td>
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<tr>
<td>Propellant 5B (nominal)</td>
<td>0.4kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity at 21° (nominal): 255m/s
- Maximum velocity: +/-340m/s
- Dispersion: 1 mld
- Effective range: 600m
- Operational temperature: +32°C to -62°C

**PACKAGING**

- 2 rounds per twin container, 36 containers per pallet
- UN Classification: 1.2 C UN 0328

### 84mm CANISTER

**M587**

**MISSION**
For use with the 84mm recoilless rifles M560A1 and equivalents against personnel at close quarters.

**DESCRIPTION**
The thin walled cylindrical body is loaded with steel pellets and is fitted with a base plug. When fired, the projectile breaks open, upon leaving the muzzle, and projects the steel pellets in a cone with an effective range of approximately 100 meters.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
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<tbody>
<tr>
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<td>Primer</td>
<td>Percussion cap</td>
</tr>
<tr>
<td>Propellant 5B (nominal)</td>
<td>0.4kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C) (nominal): 260m/s
- Effective range: 100m
- Operational temperature: +32°C to -62°C

**PACKAGING**

- 2 rounds per twin container, 36 containers per pallet
- UN Classification: 1.2 C UN 0328
### 40X46mm LV HE-FRAG-SD IM

**MISSION**
The Simmel Difesa 40x46mm LV HE-FRAG-SD IM is an impact grenade, designed to be highly insensitive and lethal in the target area up to 10m from the impact point. It acts by means of simultaneous blast and fragmentation effects. It can be fired by any low velocity (LV) grenade launchers.

**DESCRIPTION**
The grenade projectile, is fitted with an insensitive and high explosive charge operated by a dual-safety fuze fully complying with MILSTD-1316. The projectile is assembled with an aluminium cartridge case, filled with a double base propellant and fitted with a percussion capsule. The grenade design ensures a high level of insensitivity (between level V and level VI, STANAG 4439). A HE-FRAG-SD (no IM) version with the same performances and ballistics of the is available.

**STATUS**
In service

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### 40X46mm LV EB-SD IM

**MISSION**
The Simmel Difesa 40x46mm LV EB-SD IM is an impact grenade, designed to be highly insensitive and lethal in the target area up to 5m from the impact point. It acts by means of an enhanced blast. It can be fired by any low velocity (LV) grenade launchers.

**DESCRIPTION**
The grenade projectile is fitted with an insensitive and high explosive charge operated by a dual-safety fuze fully complying with MILSTD-1316. The projectile is assembled with an aluminium cartridge case, which is filled with a double base propellant and fitted with a percussion capsule. The grenade design ensures a high level of insensitivity (between level V and level VI, STANAG 4439).

**STATUS**
In service
**MISSION**  
The Simmel Difesa 40x46mm HEDP-SD IM is an impact grenade, designed to penetrate over 80mm of steel and to be lethal in the target area up to 10m from the impact point by means of simultaneous blast and fragmentation effects. It can be fired by any low velocity (LV) grenade launchers.

**DESCRIPTION**  
The grenade projectile is fitted with a shaped charge and a dual-safety fuze fully complying with MIL-STD-1316. The projectile is assembled with an aluminium cartridge case, filled with a double base propellant and fitted with a percussion capsule. The grenade design ensures a high level of insensitivity (between level V and level VI, STANAG 4439). A HEDP-SD (non IM) version with the same performances and ballistics of the IM one is available.

**STATUS**  
In service

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**MISSION**  
The Simmel Difesa 40x46mm TPM is a Target Practice Marker grenade that produces a visible signature upon impact. It has the same ballistic of the HE (High Explosive) versions and is designed for practice or for proof testing weapons. The Simmel Difesa 40x46mm TPM can be fired by any low velocity (LV) grenade launchers.

**DESCRIPTION**  
The inert Target Practice Marker projectile is loaded with orange dye powder and it is assembled with an aluminium cartridge case filled with a double base propellant and fitted with a percussion capsule.

**STATUS**  
In service
**40X46mm LV TP**

**MISSION**
The Simmel Difesa 40x46mm TP grenade has the same ballistic of the HE (High Explosive) versions and is designed for practice or proof testing weapons. The Simmel Difesa 40x46mm TP can be fired by any low velocity (LV) grenade launchers.

**DESCRIPTION**
The Target Practice projectile is assembled with an aluminium cartridge case filled with a double base propellant and fitted with a percussion capsule.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: Fixed round TP
- **Caliber**: 40mm
- **Round mass (nominal)**: 280g
- **Round length (nominal)**: 123mm
- **Projectile mass (nominal)**: 210g
- **Primer**: Percussion
- **Cartridge case**: Aluminum
- **Prpellant**: Double base

**PERFORMANCES**
- **Muzzle velocity at 21°**: 78m/s
- **Maximum range**: 430m
- **Operational temperature**: -46°C to +63°C

**PACKAGING**
- No. 18 grenades in a M2A1 metal box
- No. 84 metal boxes per pallet
- UN Classification: 1.2 C UN 0328

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**35mm RFL GREM BTU HEDP M200**

**MISSION**
The HEDP 35mm rifle grenade is designed for use with 5.56 and 7.62 caliber assault rifles, to provide a safe, accurate and effective direct and indirect fire capability. The grenade can be used against enemy personnel, urban targets and light armored vehicles.

**DESCRIPTION**
The HEDP 35mm rifle grenade consists of a warhead with a double-safety fuze in accordance with STANAG 4187. The warhead consists of an HE filled fragmented steel body and a small copper cone providing an additional anti-armour shaped charge effect. Mecar’s patented and well-proven bullet trap fitted in the tail assembly allows the grenade to be fired by any standard military (5.56mm and 7.62mm) rifle with a 22mm diameter muzzle. A semi-active version M232 and a reusable training version M230 with the same characteristics are also available.

**STATUS**
In service

**TECHNICAL DATA**
- **Caliber**: 35mm
- **Round mass (nominal)**: 440g
- **Round length**: 343mm
- **Explosive (Comp A3)**: 38g
- **Fuze**: BD fuze electromechanical
- **Aiming grid**: Provided with grenade for specific rifle
- **Bullet trap**: Universal for all types of 5.56 & 7.62 ammunition

**PERFORMANCES**
- **Operation range (direct fire)**: 150m* - 300m**
- **Maximum range (indirect fire)**: 300m* - 450m**
- **Launch velocity**: 55m/s* - 75m/s**
- **Lethal radius**: >8m
- **Penetration against RHA at 0° impact**: >75mm
- **Dispersion**: 0.25m
- **Muzzle safety**: >5m
- **Arming distance**: <20m
- **Operational temperature**: -32°C to +52°C

*nominal 5.56mm
**nominal 7.62mm

**PACKAGING**
- Each grenade individually packed in a waterproof polyethylene container; 25 containers in a wooden box
- 12 wooden boxes per pallet
- Gross weight (wooden box): 23kg
- Dimension ext (wooden box): 460x340x380mm
- Gross weight (complete pallet): 325kg
- Dimension ext (complete pallet): 1,020x1,000x870mm
- UN Classification: 1.1 D UN 0284
**35mm RFL GREN BTU HEDP PRAC M232**

**MISSION**
The HEDP PRAC 35mm rifle grenade is designed for use with 5.56 and 7.62 caliber assault rifles, to train the soldier to use the HEDP rifle grenade M200.

**DESCRIPTION**
The HEDP PRAC 35mm rifle grenade consists of a semi-active version of M200 Grenade using a flash and bang composition to simulate the impact effect. Mecar’s patented and well-proven bullet trap fitted in the tail assembly allows the grenade to be fired by any standard military (5.56mm and 7.62mm) rifle with a 22mm diameter muzzle.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<td>Round mass (nominal)</td>
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</tr>
<tr>
<td>Round length</td>
<td>343mm</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Flash &amp; bang composition</td>
</tr>
<tr>
<td>Aiming grid</td>
<td>Provided with grenade for specific rifle</td>
</tr>
<tr>
<td>Bullet trap</td>
<td>Universal for all types of 5.56 &amp; 7.62 ammunition</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation range (direct fire)</td>
<td>150m* - 300m**</td>
</tr>
<tr>
<td>Maximum range (indirect fire)</td>
<td>300m* - 450m**</td>
</tr>
<tr>
<td>Launch velocity</td>
<td>55m/s* - 75m/s**</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.25m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

*nominal 5.56mm
**nominal 7.62mm

**PACKAGING**

- Each grenade individually packed in a waterproof polyethylene container, 25 containers in a wooden box
- 12 wooden boxes per pallet
- Gross weight (wooden box): 25kg
- Dimension ext (wooden box): 460x340x360mm
- Gross weight (complete pallet): 325kg
- Dimension ext (complete pallet): 1,020x1,000x870mm
- UN Classification: 1.3 G UN 0318
- UN Classification: 1.4 G UN 0303

**40mm RFL GREN SMK(RP) M256**

**MISSION**
The Smoke (RP) rifle grenade is designed for use with 5.56 and 7.62 caliber assault rifles to produce a persistent, opaque, highly intense white smoke for spotting or screening effects.

**DESCRIPTION**
The 40mm Smoke (RP) rifle grenade consists of a Red Phosphorus canister assembly, mounted on Mecar’s patented and well-proven bullet trap fitted in the tail assembly of the grenade. It allows the grenade to be fired by any standard military (5.56mm and 7.62mm) rifle with a 22mm diameter muzzle. When fired, the canister is initiated at impact and produces white smoke with screening effect in the visible and infrared spectrum.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>490g</td>
</tr>
<tr>
<td>Round length</td>
<td>360mm</td>
</tr>
<tr>
<td>Ignition</td>
<td>At impact</td>
</tr>
<tr>
<td>Red phosphorus charge</td>
<td>160g</td>
</tr>
<tr>
<td>Aiming grid</td>
<td>Provided with grenade for specific rifle</td>
</tr>
<tr>
<td>Bullet trap</td>
<td>Universal for all types of 5.56 &amp; 7.62 ammunition</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation range (direct fire)</td>
<td>175m</td>
</tr>
<tr>
<td>Maximum range (indirect fire)</td>
<td>250m</td>
</tr>
<tr>
<td>Launch velocity</td>
<td>55m/s</td>
</tr>
<tr>
<td>Smoke duration</td>
<td>40s</td>
</tr>
<tr>
<td>Typical dimension of smoke screen with one grenade (good weather conditions)</td>
<td>20mx10m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

*nominal 5.56mm

**PACKAGING**

- Each grenade individually packed in a waterproof polyethylene container, 25 containers in a wooden box
- 12 wooden boxes per pallet – Marking to NATO Standards
- UN Classification: 1.6 G UN 0303
40mm RFL GREN PFL

**M259A1**

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Illuminating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>460g</td>
</tr>
<tr>
<td>Round length</td>
<td>360mm</td>
</tr>
<tr>
<td>Illuminating compound</td>
<td>70g</td>
</tr>
<tr>
<td>Ignition</td>
<td>4s delay</td>
</tr>
<tr>
<td>Aiming grid</td>
<td>Provided with grenade for specific rifle</td>
</tr>
<tr>
<td>Bullet trap</td>
<td>Universal for all types of 5.56 &amp; 762 ammunition</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Range</th>
<th>35 to 150m*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst height</td>
<td>70 to 130m*</td>
</tr>
<tr>
<td>Descent rate</td>
<td>1.5m/s</td>
</tr>
<tr>
<td>Illuminating rate - period</td>
<td>30s</td>
</tr>
<tr>
<td>Illuminating rate - intensity</td>
<td>75000cd</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

*nominal 5.56mm. **nominal 762mm.

**PACKAGING**

Each grenade individually packed in a waterproof polyethylene container, 25 containers in a wooden box (12 wooden boxes per pallet)

| Gross weight (wooden box) | 22kg |
| Dimension ext (wooden box) | 485x345x385mm |
| Gross weight (complete pallet) | 280kg |
| Dimension ext (complete pallet) | 1,075x1,000 x875mm |

UN Classification: 1.3 G UN 0254

**MISSION**
The Parachute Flare rifle grenade is designed for use with 5.56 and 762 caliber assault rifles, to provide high intensity illumination.

**DESCRIPTION**
The 40mm Parachute Flare rifle grenade consists of a parachute and canister assembly, mounted on Mecar’s patented and well-proven bullet trap fitted in the tail assembly allows the grenade to be fired by any standard military (5.56mm and 762mm) rifle with a 22mm diameter muzzle. When fired, the delay charge is initiated, and after 4 seconds, the parachute and canister are deployed, providing 75,000 candelas of illumination for over 30 seconds. Typically, the grenade is fired at an elevation of 80°, which allows the canister and parachute to deploy at a height of approx. 100 meters.

**STATUS**
In service

40mm RFL GREN CS

**M294A1**

**TECHNICAL DATA**

| Caliber | 40mm |
| Round mass (nominal) | 440g |
| Round length | 360mm |
| CS filling | 4x 30g pellets |
| Ignition | 2s delay |
| Aiming grid | Provided with grenade for specific rifle |
| Bullet trap | Universal for all types of 5.56 & 762 ammunition |

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Effective range</th>
<th>75 to 175m*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ejection time</td>
<td>2s</td>
</tr>
<tr>
<td>Duration of gas emissions</td>
<td>30s</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

*nominal 5.56mm. **nominal 762mm

**PACKAGING**

Each grenade individually packed in a waterproof polyethylene container, 25 containers in a wooden box (12 wooden boxes per pallet)

| Gross weight (wooden box) | 22kg |
| Dimension ext (wooden box) | 485x345x385mm |
| Gross weight (complete pallet) | 280kg |
| Dimension ext (complete pallet) | 1,075x1,000 x875mm |

UN Classification: 1.1 D UN 0284

**MISSION**
A shoulder fired Mecar Bullet Trap Universal (BTU) rifle grenade, used to dispense tear and irritant gas (CS), to aid in crowd control during periods of civil disobedience and/or unrest.

**DESCRIPTION**
The grenade comprises a cylindrical aluminium body containing 4 CS pellets, a pyrotechnic delay, a Black Powder expelling charge and an aluminium tail tube assembly with the Mecar Bullet Trap Universal (BTU) in its forward end and polymer tail fins at the rear. The grenade is launched, using ball or ballistite cartridges, from 5.56 or 762mm assault rifles having a 22mm muzzle diameter. The delay element is initiated at launch and, after 2 seconds, ignites the Black Powder charge to both ignite and expel CS gas producing pellets. Burning at a high temperature, the dispersed pellets produce tear and irritant gas for approximately 30 seconds. Grenades may be adapted to other special purpose rifles.

**STATUS**
In service
The Parachute Infrared rifle grenade is designed for use with 5.56 and 7.62 caliber assault rifles, to provide high intensity illumination in the near infrared for use of night vision goggles.

The 40mm Parachute Infrared rifle grenade consists of a parachute and canister assembly, mounted on MECAR’s patented and well-proven bullet trap fitted in the tail assembly allows the grenade to be fired by any standard military (5.56mm) and 7.62mm) rifle with a 22mm diameter muzzle. When fired, the delay charge is initiated, and after 4 seconds, the parachute and canister are deployed, providing 50W.sr⁻¹ of illumination for over 30 seconds. Typically, the grenade is fired at an elevation of 80°, which allows the canister and parachute to deploy at a height of approx. 100 metres. The pyrotechnic composition is REACH compliant.

The Parachute Infrared rifle grenade is designed for use with 5.56 and 7.62 caliber assault rifles, to provide high intensity illumination in the near infrared for use of night vision goggles.

For 35mm and 40mm

The firing indicator consists of 3 red points spaced 120° around the base of the tail. They are revealed once the grenade is fired. The firing selector consists of a threaded ring which allows direct firing (closed position) and accurate indirect firing (open position). A special aiming grid is needed to allow indirect firing.

The firing indicator consists of 3 red points spaced 120° around the base of the tail. They are revealed once the grenade is fired. The firing selector consists of a threaded ring which allows direct firing (closed position) and accurate indirect firing (open position). A special aiming grid is needed to allow indirect firing.
MISSION
The Mecar hand grenade FRAG-C M72 is a controlled effectiveness grenade producing an optimized fragmentation pattern due to the use of a Composition B explosive with a specially designed liner for maximum splintering effect. The grenade is at the same time offensive and defensive. This means that the soldier is safe when he throws the grenade beyond a distance of 25m. The dispersion of the effective splinters is uniform around the point of explosion whatever the orientation of the grenade.

The M72A1 is the grenade fuze designed to be used in the HE Fragmentation grenade M72. Due to the weight and shape of the M72, it is much more convenient for handling than other grenades of this type.

STATUS
In service

MISSION
The hand grenade NR8 is designed for offensive and defensive roles.

DESCRIPTION
The Mecar hand grenade NR8 is a controlled effectiveness grenade producing an optimized fragmentation pattern due to the use of a Composition B explosive with a specially designed liner for maximum splintering effect. For defensive roles, the grenade is used with the spiral notched steel fragmentation sleeve. For offensive roles, the sleeve can be removed. The grenade fuze NR2433A1 has a constant delay.

STATUS
In service

GRENade CHARACTERISTICs

HAND GRENADE FRAG

Type
Hand grenade - FRAG
Diameter
52mm
Height
85mm
Mass
180g
Explosive Charge (Comp B)
60g
NSN
1930-13-113-7278

FUZE CHARACTERISTICS

Mass
52g
Net Explosive Quantity
2.5g
Delay
4s

PERFORMANCES

Lethal radius
9.5m
Security distance
25m
Operational temperature
-32°C to +52°C

PACKAGING

4 grenades + 4 time fuzes separately in a plastic box
10 plastic boxes in a wooden case
24 wooden cases per pallet
UN Classification: 1.1 D UN 0284

GRENade CHARACTERISTICs

HAND GRENADE NR8A2

Type
Hand grenade - FRAG
Diameter
50mm
Height
112mm
Mass
446g
Explosive Charge (Comp B)
98g

FUZE CHARACTERISTICS

Mass
55g
Net Explosive Quantity
2.3g
Delay
4s

PERFORMANCES

Mass of fragment sleeve
+/- 300g
Lethal radius
12m
Security distance
45m
Operational temperature
-32°C to +52°C

PACKAGING

6 grenades + 6 time fuzes separately in a plastic box
10 plastic boxes in a wooden case
24 wooden cases per pallet
UN Classification: 1.1 D UN 0284
**MISSION**
The hand grenade NR8A2 (PRAC) is used for training, specifically the care, handling and throwing of fragmentation hand grenades NR8A2.

**DESCRIPTION**
The Mecar hand grenade NR8A2 (PRAC) is composed of an aluminium case and a fragmentation sleeve. This fragmentation sleeve is a steel wire of square section, which is pre-notched, spirally wound and removable. The PRAC Grenade must be used with the fuze PRAC NR2178A1.

**STATUS**
In service

---

**GRENade CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Hand grenade - PRAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>50mm</td>
</tr>
<tr>
<td>Height</td>
<td>112mm</td>
</tr>
<tr>
<td>Mass</td>
<td>446g</td>
</tr>
</tbody>
</table>

**FUZE CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Mass</th>
<th>55g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security distance</td>
<td>10m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-32°C to +52°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 4 grenades + 4 time fuzes separately in a plastic box
- 10 plastic boxes in a wooden case
- 24 wooden cases per pallet

**UN Classification:** 1.1 D UN 0284
127mm L54 HE

**MISSION**
The 127mm HE projectile is designed and manufactured by Simmel Difesa to be fired by the OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun. This projectile can be fired either with full or reduced charge. This type of ammunition can be equipped with PD or Proximity fuzes in order to guarantee the best response to the Navy requirements in every situation.

**DESCRIPTION**
The projectile consists of a steel shell filled with high explosive and fitted with a proximity fuze or a point detonating fuze. This 127mm projectile is in accordance with NATO design and safety standards.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>127mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>32kg</td>
</tr>
<tr>
<td>Projectile length</td>
<td>661mm</td>
</tr>
<tr>
<td>Projectile filling (Comp. B)</td>
<td>3.7kg</td>
</tr>
</tbody>
</table>

| Fuze*     | VTPA FBO 127 (Proximity fuze) or PD (Point detonating fuze) |

| Fuze*     | VTPA FBO 127 (Proximity fuze) |

*The projectile can be supplied without fuze

**PERFORMANCES**

- Muzzle velocity at 32°C: 808m/s
- Maximum range: 20,750m
- Operational temperature: -31°C to +55°C

**PACKAGING**

- 24 projectiles per pallet/crate
- UN Classification: 1.1 D UN 0168

127mm L54 PFFC

**MISSION**
The 127mm PFFC projectile is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun. The 127mm PFFC is the latest addition to the 127mm L54 family. This projectile has the same external ballistics of the HE projectile, but it is fitted with about 2,270 tungsten cubes, lined to the steel shell, that enhances its effectiveness, especially for shore bombardment mission. For naval gunfire support, the availability of a Height-Of-Burst (HOB) fuze makes the PFFC extremely effective when a large area is to be cleared. In this case, a detonation at a few meters above the ground ensures the distribution of fragments over a large area.

**DESCRIPTION**
The projectile shell is fitted with tungsten cubes. The projectile consists of a steel shell filled with high explosive and fitted with a proximity fuze.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>PFFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>127mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>32kg</td>
</tr>
<tr>
<td>Projectile length</td>
<td>661mm</td>
</tr>
<tr>
<td>Projectile filling (Comp. B)</td>
<td>4.1kg</td>
</tr>
</tbody>
</table>

| Fuze*     | VTPA FBO 127 (Proximity fuze) |
| Fuze*     | VTPA FBO 127 (Proximity fuze) |

| Fragments | Tungsten |

*The projectile can be supplied without fuze

**PERFORMANCES**

- Muzzle velocity at 32°C: 808m/s
- Maximum range: 20,750m
- Operational temperature: -31°C to +55°C

**PACKAGING**

- 24 projectiles per pallet/crate
- UN Classification: 1.1 D UN 0168
127mm L54 TP

**MISSION**
The 127mm TP projectile is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. guns and the 127mm L64 OTO Melara Lightweight gun. The TP projectile with dummy fuze is equivalent to HE projectile and it is used for training only. This projectile has the same ballistics, weight and dimensional characteristics of the HE, but it is filled with inert substance.

**DESCRIPTION**
The projectile consists of a steel shell filled with an inert compound and fitted with a dummy fuze.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: TP
- **Caliber**: 127mm
- **Projectile mass**: 32kg
- **Projectile length**: 661mm
- **Projectile filling**: 3.7 kg of Inert compound
- **Fuze**: Dummy fuze

**PERFORMANCES**
- **Muzzle velocity at 32°C**: 808m/s
- **Maximum range**: 20,750m
- **Operational temperature**: All climatic zones

**PACKAGING**
- 24 projectiles per pallet/crate
- UN Classification: Not Applicable

---

127mm L54 FNF

**MISSION**
The 127mm FNF projectile is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun. It completes the family of 127mm projectiles. The FNF ammunition has the same internal and external ballistics of the HE projectiles and is used for fuzes testing and for training.

**DESCRIPTION**
The projectile consists of a steel shell filled with an inert substance and contains a flash charge. This flash charge consisting in a mixture of flash composition and black powder provides a flash and sound indication in case of fuze functioning without the fragmentation of the shell.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: FNF
- **Caliber**: 127mm
- **Projectile mass**: 32kg
- **Projectile length**: 661mm
- **Projectile filling**: (inert mixture) 3.4kg
- **Flash charge**: 0.085kg

**PERFORMANCES**
- **Muzzle velocity at 32°C**: 808m/s
- **Maximum range**: 20,750m
- **Operational temperature**: -31°C to +55°C

**PACKAGING**
- 24 projectiles per pallet/crate
- UN Classification: 1.3 C UN 0488
127mm PROPELLING CHARGE FULL CHARGE

**MISSION**
The 127mm Full Propelling Charge is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. guns and the 127mm OTO Melara L64 Lightweight gun.

**DESCRIPTION**
The Full charge is separated from the projectile and is separately packaged in a metal container. The Full Charge is fired with several types of 127mm standard projectiles such as HE, PFF, TP and FNF.

**TECHNICAL DATA**
- **Type**: Full Charge
- **Caliber**: 127mm
- **Projectile mass**: 15.8kg
- **Projectile length**: 889mm
- **Charge filling**: 8.2kg
- **Primer**: Electric

**PERFORMANCES**
- **Operational temperature**: -31°C to +55°C

**PACKAGING**
- 1 Charge per metal container
- 36 metal containers per pallet
- UN Classification: 1.2C - UN 0488

**STATUS**
In service

---

127mm PROPELLING CHARGE REDUCED AND CLEARING

**MISSION**
The 127mm Reduced and Clearing Propelling Charge is designed and manufactured by Simmel Difesa in order to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm OTO Melara L64 Lightweight gun.

**DESCRIPTION**
The Reduced Charge is used during target practice firings to reduce the firing range and the gun wear. The Cleaning Charge is designed and manufactured to be used to clear the gun tube in the event of a projectile stuck inside it.

**TECHNICAL DATA**
- **Type**: Reduced Charge, Clearing Charge
- **Caliber**: 127mm
- **Charge mass**: 13.0kg, 9.0kg
- **Charge length**: 889mm, 559mm
- **Charge filling SB (SPSF)**: 2.9kg, 4.0kg
- **Primer**: Electric, Electric

**PERFORMANCES**
- **Operational temperature**: -31°C to +55°C

**PACKAGING**
- 1 Charge per metal container
- 36 metal containers per pallet
- UN Classification: 1.2C - UN 0414

**STATUS**
In service
### FB340

**Mission**
The FB340 fuze is a mechanical fuze designed to be used with 127mm L54 ammunition with PD and PD Delay functions.

**Description**
The FB340 fuze was designed in accordance with STANAG 4187. A graze plunger assembly is assembled in the fuze to ensure the graze functioning. The fuze is waterproof.

**Technical Data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanical fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>127mm L54</td>
</tr>
<tr>
<td>Fuze mass</td>
<td>2.12kg</td>
</tr>
<tr>
<td>Fuze length</td>
<td>119mm (overall 248mm)</td>
</tr>
<tr>
<td>Booster charge</td>
<td>118g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>Firing forces</td>
</tr>
</tbody>
</table>

**Performances**

<table>
<thead>
<tr>
<th>Function</th>
<th>PD super quick and PD super quick graze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>100m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>350m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-40°C to +60°C</td>
</tr>
</tbody>
</table>

**Packaging**

- 15 fuzes per wooden container
- 24 wooden containers per pallet
- UN Classification: 1.2 D UN 0409

**Status**
In service

### VTPA FBO127

**Mission**
The VTPA FBO127 is a proximity fuze designed to be used with for 127mm L54 HE and PFF ammunition. It was designed to defeat aircraft, missiles and small boats.

**Description**
The VTPA FBO127 is a self-powered radio transmitting and receiving unit. The VTPA FBO127 proximity fuze was designed in accordance with STANAG 4187 and developed and tested in accordance with the criteria of MIL-STD-331. One mode of functioning: Proximity + Point detonating + Self-destruction. The fuze is set to initiate detonation when proximity with the target is detected. Point detonating function is provided as backup, in event of direct hit. Self-destruction is activated if neither of the above conditions occurs.

**Technical Data**

<table>
<thead>
<tr>
<th>Type</th>
<th>Electronic fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>127mm L 54</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>2.12kg</td>
</tr>
<tr>
<td>Projectile length</td>
<td>120mm (overall 248mm)</td>
</tr>
<tr>
<td>Booster charge mass</td>
<td>118g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>Lithium Battery</td>
</tr>
</tbody>
</table>

**Performances**

<table>
<thead>
<tr>
<th>Function</th>
<th>Proximity, Self-destruction, Point detonating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>100m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>300m</td>
</tr>
<tr>
<td>Electrical safety distance</td>
<td>300m min - 600m max</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>18,000g (176,590 m/s²)</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>18,000rpm (1,885 rad/s)</td>
</tr>
<tr>
<td>Self-destruction time</td>
<td>35s</td>
</tr>
<tr>
<td>Miss distance</td>
<td>10m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-21°C to +50°C</td>
</tr>
</tbody>
</table>

**Packaging**

- 20 fuzes per wooden container
- 24 wooden containers per pallet
- UN Classification: 1.2D UN 0409

**Status**
In service
**100mm HE F1**

**MISSION**
The HE F1 multipurpose high-explosive round is used for surface warfare and shore bombardment. This round can be used with the automatic guns of the Model 53 mounts and derivatives as well as with that of the 100mm COMPACT Mk 2 mounts.

**DESCRIPTION**
The 100 mm HE F1 cartridge is delivered and stored, without fuze (the fuze is a separate supply) in an individual aluminum water proof container and consists of:
- a high explosive shell filled with TNT,
- a Mod 1953 100mm steel case,
- a Mod 1961 (60g) tube ignition system (TIS),
- a Mod 1992 11mm percussion primer,
- a single base propelling charge,
- a shell sealing plug for storage.

**STATUS**
In service

---

**100mm HE PFF F4**

**MISSION**
The HE PFF F4 round is optimised for air defense, including against sea-skimmer antiship missiles. This round can be used with the automatic guns of the Model 53 mounts and derivatives as well as with that of the 100mm COMPACT Mk 2 mounts.

**DESCRIPTION**
The 100 mm Pre Formed Fragment cartridge is delivered and stored without fuze (the fuze is a separate supply) in an individual aluminum water proof container and consists of:
- a 100 HE PFF F4 shell filled with explosive,
- a Mod 1953 100mm steel case,
- a Mod 1951 (60g) tube ignition system (TIS),
- a Mod 1992 11mm percussion primer,
- a single base propelling charge,
- a shell sealing plug for storage.

**STATUS**
In service

---

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Multi-purpose high-explosive ammunition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>100mm</td>
</tr>
<tr>
<td>Weight of shell</td>
<td>13.5kg with fuze</td>
</tr>
<tr>
<td>Weight of cartridge</td>
<td>23.450kg without fuze</td>
</tr>
<tr>
<td>Length of shell</td>
<td>450mm with fuze</td>
</tr>
<tr>
<td>Length of cartridge</td>
<td>1,085mm with fuze</td>
</tr>
<tr>
<td>Cartridge</td>
<td>~4.5 kg of single base propelant</td>
</tr>
<tr>
<td>Fuze</td>
<td>Dual mode fuze or proximity fuze</td>
</tr>
<tr>
<td>Loading</td>
<td>1,050kg of TNT</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum range surface targets: 17,400m
- Muzzle velocity (new barrel): 867m/s
- Standard deviation angle (mrad): 0.3 up to 5.000m
- Terminal effectiveness: Blast and splinters

**PACKAGING**
Light alloy, watertight and fireproof individual containers
**100mm TP**

**MISSION**
The ammunition range includes the Target Practice shell known as 100mm TP for firing and training. This round can be used with the automatic guns of the Model 53 mounts and derivatives as well as with that of the 100mm COMPACT Mk II mounts.

**DESCRIPTION**
The 100mm Target Practice shell cartridge is a practice ammunition with a dummy fuze designed to be used in the mod 1953 100mm or L55 100mm gun. The 100mm Target Practice consists of:
- a 100mm shell filled with inert ballast,
- a dummy fuze,
- a Mod 1953 100mm steel case,
- a Mod 1961 (60g) tube ignition system (TIS),
- a Mod 1992 11mm percussion primer,
- a single base propellant.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>100mm</td>
</tr>
<tr>
<td>Round length</td>
<td>1.085mm with fuze</td>
</tr>
<tr>
<td>Round mass</td>
<td>23.5kg without fuze</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>13.5 kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>Dummy fuze</td>
</tr>
<tr>
<td>Warhead/payload</td>
<td>Ballast</td>
</tr>
<tr>
<td>Weight of propellant</td>
<td>4.500 kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Maximum range surface targets: 17,400m
- Muzzle velocity: 867m/s (new barrel)
- Operational temperature: Display of shell operation, Training and Warning shot

**PACKAGING**

- Light alloy, watertight and fireproof individual containers

**STATUS**

In service

---

**76mm L62 HE-PD**

**MISSION**
The 76mm L62 HE–PD round is designed and manufactured by Simmel Difesa to be fired by all OTO Melara gun systems and equivalent. It is filled with HE (High Explosive) and fitted with a PD (point detonating) fuze. The High-Explosive charge is initiated by the fuze functioning at the impact against the target. This cartridge is used against low flying aircrafts and ground targets.

**DESCRIPTION**
The projectile consists of a steel shell filled with High Explosive and a point detonating fuze. The fuze has two independent mechanical safeties. The projectile is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant and fitted with a percussion primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Pompe filling (Comp. A3)</td>
<td>0.56kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PD</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.45kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- Muzzle velocity (at 21°C): 905m/s
- Dispersion: External ballistic i.a.w. OTO Melara range table
- Maximum range: 15,900m
- Operational temperature: -33°C to +63°C

**PACKAGING**

- 2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client's requirements
- UN Classification: 1.1 E UN 0006

**STATUS**

In service
### 76mm L62 HE-PROX

**MISSION**
The 76mm L62 HE-PROX round is designed and manufactured by Simmel Difesa to be fired by all versions of 76mm OTO Melara gun systems and equivalent. It is filled with HE (High Explosive) and fitted with a proximity fuze that can be also provided with self-destruction capability. This round is used against patrol boats at short range, large ships and protected on-shore targets at long range.

**DESCRIPTION**
The projectile consists of a steel shell filled with high explosive and a proximity fuze. The projectile is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>12.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling (Comp. A3)</td>
<td>0.56kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>VTPA FBO 76 (proximity)</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.49kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Muzzle velocity (at 21°C) | 905m/s |
| Disperion                |       |
| Maximum range            | 15,900m |
| Operational temperature  | -33°C to +63°C |

**PACKAGING**

- 2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client’s requirements
- UN Classification: 1.1 E UN 0006

### 76mm L62 HE-PF-IM6-OES

**MISSION**
The 76mm L62 HE-PF-IM6-OES ammunition is designed by Simmel Difesa and OTO Melara to increase the safety during storage and transport by its IM characteristics. It can be fired by the 76mm L62 OTO Melara compact gun in anti-missile role as well as against aircraft threats.

**DESCRIPTION**
The HE-PF-IM6-OES round is a Pre-Fragmented Ammunition filled with insensitive explosive. The HE-PF-IM6-OES body incorporates preformed fragments to maximize the round effectiveness to engage aerial targets (missiles and aircrafts) as well as fast jet boats. The lethal beam consists of pre-formed fragments made of high quality tungsten cubes and steel fragments coming from the shell. The pre-formed fragments assure high levels of penetrations. The round is fitted with the 3AP microwave fuze. It can ignite the HE charge by target impact or proximity function. The projectile is assembled on a brass cartridge case filled with a multi-perforated single base propellant and fitted with a percussion primer.

**STATUS**
In service

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling (B2263A)</td>
<td>0.73kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>3AP</td>
</tr>
<tr>
<td>Fragments</td>
<td>Tungsten cubes</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.49kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

| Muzzle velocity (at 21°C) (nominal) | 905m/s |
| Disperion                           |       |
| Maximum range                       | 15,900m |
| Operational temperature             | -33°C to +63°C |

**PACKAGING**

- 2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client’s requirements
- UN Classification: 1.1 E UN 0006
**76mm L62 HE SAP IM345**

**MISSION**
The 76mm L62 HE SAP IM345 round is designed and manufactured by Simmel Difesa to be fired by all versions of 76mm OTO Melara gun systems and equivalent. It is a High Explosive Incendiary Semi Armour Piercing ammunition fitted with a Base Detonating Electronic Delayed fuze. This ammunition was developed to optimize the effectiveness of the 76mm L62 systems in the anti-surface target role and against thick hullplates of ships.

**DESCRIPTION**
The projectile consists of an armour piercing high quality steel shell in order to assure high perforation capability. This projectile is fitted with a special anti-ricochet element, which guarantees an improved engagement capability against target with flat-enough angle of impact. The presence of the aluminium in the high explosive composition assures an enhanced incendiary and blast effect. The projectile is assembled on a brass cartridge case, which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed HE Semi-Armour Piercing round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length (nominal)</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling (HEXAL or COMP A3)</td>
<td>0.53kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>Base Detonating with Delay (i.a.w Client’s requirements)</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.44kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- **Muzzle velocity (at 21°C)** (nominal): 905m/s
- **Dispersion**: External ballistic i.a.w. OTO Melara range table
- **Maximum range**: 15,900m
- **Operational temperature**: -33°C to +63°C

**PACKAGING**

- 2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w Client’s requirements
- UN Classification: 1.1 E UN 0006

**STATUS**

Qualified

---

**76mm L62 TP AND TP-T**

**MISSION**
The 76mm L62 TP with Dummy fuze is equivalent to the HE round but is used for training only. This round has the same ballistic, weight and dimensional characteristics as the HE, but it is filled with inert substance. This ammunition is used for training practice. This practice ammunition can be supplied also with the tracer element which burns for at least five seconds after firing. In this case the projectile will be defined as TP-T model.

**DESCRIPTION**
The projectile, filled with an inert material, is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round TP Fixed round TP-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>Inert mixture</td>
</tr>
<tr>
<td>Fuze</td>
<td>Dummy</td>
</tr>
<tr>
<td>Tracer</td>
<td>Absent</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.44kg</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

- **Muzzle velocity (at 21°C)** (nominal): 905m/s
- **Dispersion**: External ballistic i.a.w. OTO Melara range table
- **Maximum range**: 15,900m
- **Operational temperature**: -33°C to +63°C

**PACKAGING**

- 2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w Client’s requirements
- UN Classification: 1.2 C UN 0328

**STATUS**

In service
### 76mm L62 FNF

**Mission**
The 76mm L62 FNF round is designed and manufactured by Simmel Difesa to be fired by all OTO Melara gun systems and equivalent. The 76mm L62 FNF has the same internal and external ballistics behaviour of the HE ammunition and it is used for fuzes testing and training.

**Description**
The projectile consists of a steel shell filled with an inert compound and contains a flash charge. This flash charge consisting in a mixture of flash composition and black powder provides a flash and sound indication in case of fuze functioning without shell fragmentation. The projectile is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

**Status**
In service

#### Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round FNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling (nominal)</td>
<td>0.40kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>Without</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.45kg</td>
</tr>
</tbody>
</table>

*The round can be supplied with fuze

#### Performances

- Muzzle velocity (at 21°C): 905 m/s
- Dispersion: External ballistic i.a.w. OTO Melara range table
- Maximum range: 15,900 m
- Operational temperature: -33°C to +63°C

#### Packaging

2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client’s requirements

UN Classification: 1.2 C UN 0488

### 76mm L62 CLEARING CHARGE

**Mission**
The 76mm L62 Clearing Charge is compatible with all configuration of 76mm L62 OTO Melara weapon systems. The Clearing Charge is designed and manufactured to be used to clear the gun tube in the event of a projectile stuck inside it.

**Description**
The Clearing Charge consists in a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

**Status**
In service

#### Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Clearing Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Charge mass (nominal)</td>
<td>6.30kg</td>
</tr>
<tr>
<td>Charge length</td>
<td>608mm</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant SB (nominal)</td>
<td>2.45kg</td>
</tr>
</tbody>
</table>

#### Performances

- Operational temperature: -33°C to +63°C

#### Packaging

2 complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client’s requirements

UN Classification: 1.2 C UN 0414
3AP MOD 2 MICROWAVE FUZE

**MISSION**
The 3AP Mod 2 fuze was designed to increase the capability of target interception to defeat aircrafts, missiles and small boats by an advanced RF sensor and by different settable proximity modes. The delayed impact mode allows the fuze to penetrate boat or bunker.

**DESCRIPTION**
The 3AP Mod 2 fuze is an electronic multifunction fuze designed to be used with 76mm L62 ammunition. It can perform in different modes: proximity, time, air burst, point detonation, point detonation delayed and self-destruction. The fuze is fully programmable using a gun-mounted electronic setter, and can be set automatically at firing or manually. The fuze is fully compliant with STANAG 4187 and it is certified IM. The point detonation delayed function activates the fuze 3ms after the impact. The fuze has been qualified in accordance with STANAG 4157, and its profile is compliant with STANAG 2916 pag B-11.

**TECHNICAL DATA**
- **Type**: Electronic multifunction fuze
- **Caliber**: 76mm L62
- **Fuze mass (nominal)**: 930g
- **Fuze length (nominal)**: 95mm (overall 203mm)
- **Booster charge mass (nominal)**: 15g of IM explosive (95% HMX)
- **Power supply**: Lithium Battery

**PERFORMANCES**
- **Functions**: Proximity, PD, PD Delay, Time, SD
- **Mechanical safety distance**: 100m
- **Minimum operating distance**: 300m
- **Electrical safety distance for proximity**: 500m max
- **Setback acceleration**: 24,000g (235,440 m/s²)
- **Rotating spin**: 24,000rpm (2.513 rad/s)
- **Self-destruction time (nominal)**: 23s
- **Operational temperature**: -31°C to +63°C

**PACKAGING**
- 20 fuzes per wooden container
- 24 wooden containers per pallet
- **UN Classification**: 1.2D UN 0409

**STATUS**
In service

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VTPA – FB76

**MISSION**
The VTPA FB76 fuze is a proximity fuze to be used with 76mm L62 HE and PFF ammunition. It was designed by Simmel Difesa to defeat aircrafts, missiles and small boats.

**DESCRIPTION**
The VTPA FB76 fuze is fully compliant with the requirements of STANAG 4187 and was designed, developed and tested in accordance with the criteria of MIL-STD-331. The fuze is a self-powered radio transmitting and receiving unit, operating on the base of the Doppler effect. Two operating modes are selectable electrically at the time of firing:
- **Proximity + Point detonating + Self-destruction**. The fuze is set to initiate detonation when proximity with the target is detected. Point detonating function is provided as backup, in event of direct hit. Self-destruction is activated if neither of the above conditions occurs.
- **Point detonating**. This mode can be selected for hard targets engagement such as small patrol boats, ships and land targets. In this mode proximity and self-destruction are inhibited, and only impact can activate detonation. The fuze profile is compliant with STANAG 2916 pag B-11.

**TECHNICAL DATA**
- **Type**: Electronic fuze
- **Caliber**: 76mm L62
- **Fuze mass (nominal)**: 930g
- **Fuze length (nominal)**: 95mm (overall 203mm)
- **Booster charge mass (nominal)**: 15g of A5
- **Power supply**: Lithium Battery

**PERFORMANCES**
- **Functions**: Proximity, Self-destruction, Point detonating
- **Mechanical safety distance**: 50m
- **Minimum operating distance**: 300m
- **Electrical safety distance for proximity**: 500m max
- **Setback acceleration**: 24,000g (235,440 m/s²)
- **Rotating spin**: 24,000rpm (2.513 rad/s)
- **Self-destruction time (nominal)**: 25s
- **Operational temperature**: -21°C to +50°C

**PACKAGING**
- 20 fuzes per wooden container
- 24 wooden containers per pallet
- **UN Classification**: 1.2D UN 0409

**STATUS**
In service
**VTP FB76**

**MISSION**
The VTP FB76 fuze is a proximity fuze to be used with 76mm L62 HE and PFF ammunition. In addition to air defense roles against aircrafts, missiles and small boats, it offers shore bombardment capability.

**DESCRIPTION**
The VTP FB76 fuze is fully compliant with the requirements of STANAG 4187 and it was designed, developed and tested in accordance with the criteria of MIL-STD-331. The fuze profile is compliant with STANAG 2916 pag B-11.

The fuze is a self-powered radio transmitting and receiving unit, operating on the base of the Doppler effect. Two operating modes are selectable electrically at the time of firing:
- Proximity + Point detonating + Self-destruction / Shore bombardment
- Shore bombardment - Point detonating. In this mode the fuze activates detonation at a given height above the ground.

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Electronic fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm L62</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>930g</td>
</tr>
<tr>
<td>Fuze length (nominal)</td>
<td>95mm (overall 203mm)</td>
</tr>
<tr>
<td>Booster charge mass (nominal)</td>
<td>15g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>Lithium Battery</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Proximity, Point detonating, Self-destruction / Shore bombardment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>50m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>300m</td>
</tr>
<tr>
<td>Electrical safety distance for proximity</td>
<td>500m max</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>24,000g (235,440m/s²)</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>24,000rpm (2.513rad/s)</td>
</tr>
<tr>
<td>Self-destruction time (nominal)</td>
<td>25s</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-20°C to +50°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 20 fuzes per wooden container
- 24 wooden containers per pallet
- UN Classification: 1.2D UN 0409

**STATUS**

In service

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**FB 518A**

**MISSION**
The FB 518A fuze is a mechanical fuze designed to be used with 76mm L62 ammunition. The fuze has two operating modes, Super-Quick Point Detonation and Point Detonation Delayed, settable by means of the switch on the side of the fuze.

**DESCRIPTION**
The FB 518A fuze is fully compliant with the requirements of STANAG 4187 and was designed, developed and tested in accordance with the criteria of AOP 20. The Super-Quick mode can be selected to have detonation on the target. The Point Detonation Delayed mode can be selected to ensure a detonation delay of 0.05" after impact (standard – other delays are available on customer request).

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanical fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm L62</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>930g</td>
</tr>
<tr>
<td>Fuze length (nominal)</td>
<td>95mm (overall 203mm)</td>
</tr>
<tr>
<td>Booster charge mass (nominal)</td>
<td>15g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**PERFORMANCES**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Point detonating and PD Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>50m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>300m</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>24,000g (235,440 m/s²)</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>24,000rpm (2,513 rad/s)</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-40°C to +50°C</td>
</tr>
</tbody>
</table>

**PACKAGING**

- 20 fuzes per wooden container
- 24 wooden containers per pallet
- UN Classification: 1.2D UN 0409

**STATUS**

In service
FB 518B

MISSION
The FB 518B fuze is a mechanical fuze designed to be used on 76mm L62 ammunition. The fuze has Super-quick PD function and it has been designed to be a low cost PD fuze for 76mm L62.

DESCRIPTION
The FB 518B fuze is fully compliant with the requirements of STANAG 4187 and has been designed, developed and tested in accordance with the criteria of AOP 20. This is an mechanical fuze with point detonating function in the event of a direct hit.

STATUS
In service

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanical fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm L62</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>930g</td>
</tr>
<tr>
<td>Fuze length (nominal)</td>
<td>95mm (overall 203mm)</td>
</tr>
<tr>
<td>Booster charge mass (nominal)</td>
<td>35g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>Firing force</td>
</tr>
</tbody>
</table>

PERFORMANCES

<table>
<thead>
<tr>
<th>Functions</th>
<th>Point detonating and PD Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>50m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>300m</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>24,000g (225,440 m/s²)</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>24,000rpm (2,513 rad/s)</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-40°C to +50°C</td>
</tr>
</tbody>
</table>

PACKAGING

20 fuzes per wooden container
24 wooden containers per pallet
UN Classification: 1.2D UN 0409

40mm L70 HE-PD

MISSION
Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 guns. The high-explosive bursting charge is detonated by the fuze upon target impact. This cartridge is used against low flying aircrafts and ground targets also.

DESCRIPTION
The HE-PD round consists of a steel body filled with high explosive and a point detonating fuze. The fuze has dual mechanical safety. The projectile is mounted on a brass cartridge case which is filled with single base propellant multiperforated and fitted with a percussion primer.

STATUS
In service

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>2.9kg</td>
</tr>
<tr>
<td>Round length</td>
<td>535mm</td>
</tr>
<tr>
<td>Projectile mass (nominal)</td>
<td>0.96kg</td>
</tr>
<tr>
<td>Projectile filling (nominal)</td>
<td>0.098kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>Point Detonating Delay, Self-destruction, Point Detonating Super Quick</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant 5B</td>
<td>0.480kg</td>
</tr>
</tbody>
</table>

PERFORMANCES

| Muzzle velocity (at 21°C) | 1,005 m/s      |
| Maximum range             | 11,800m        |
| Operational temperature   | -40°C to +60°C |

PACKAGING

1 round per container, 20 containers per wooden box or 8 rounds per metal box or i.a.w. Client's requirements
UN Classification: 1.1 UN 0006
### 40mm L70 HE-PFF

**MISSION**
Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 gun systems. The HE-PFF body incorporates preformed fragments to maximize the round effectiveness for aerial target engagements. The lethal beam consists of pre-formed fragments made of high quality tungsten cubes and steel fragments coming from the shell. The pre-formed fragments assure high levels of penetrations. The round is fitted with a proximity fuze, based on RF Doppler function. It can initiate the HE charge upon target impact or in close proximity to the target. The HE charge explosion produces the lethal fragmentation and blast.

**DESCRIPTION**
The HE-PFF projectile consists of alloy steel shell, with tungsten pre-fragmented cubes filled with high explosive and a proximity fuze. The projectile is assembled with brass cartridge case which is filled with a multi-perforated propellant charge and fitted with a percussion primer.

**TECHNICAL DATA**
- Type: Fixed round HE-PFF
- Caliber: 40mm
- Round mass (nominal): 2.5kg
- Round length: 535mm
- Projectile mass (nominal): 0.96kg
- Projectile filling (comp B): 0.110kg
- Fuze: Proximity
- Fragments: Tungsten
- Cartridge case: Brass
- Primer: Percussion
- Propellant SB (nominal): 0.480kg

**PERFORMANCES**
- Muzzle velocity (at 21°C): 1,005m/s
- Maximum range: 11,800m
- Operational temperature: -40°C to +60°C

**STATUS**
In service

**PACKAGING**
1 round per container, 20 containers per wooden box or 8 rounds per metal box or i.a.w. Client’s requirements
UN Classification: 1.1 UN 0006

---

### 40mm L70 HE-T AND HEI-T

**MISSION**
Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 gun systems. The HE (High-Explosive) or the HEI (High-Explosive Incendiary) bursting charge is initiated by the fuze upon target impact. This cartridge is used to defeat low flying aircrafts and ground targets.

**DESCRIPTION**
The projectile consists of a steel body filled with high explosive, a point detonating fuze and a tracer. The fuze has two independent mechanical safety. The projectile is assembled with a brass cartridge case which is filled with a multi-perforated propellant charge and fitted with a percussion primer.

**TECHNICAL DATA**
- Type: Fixed round HE-T, Fixed round HEI-T
- Caliber: 40mm
- Round mass (nominal): 2.5kg
- Round length: 535mm
- Projectile mass (nominal): 0.96kg
- Projectile filling (nominal): 0.104kg Comp B, 0.104kg Tritolital
- Fuze: PDDLY-SD, PDSQ, PDDLY
- Tracer: Red effect, 4s (minimum)
- Cartridge case: Brass
- Primer: Percussion
- Propellant SB (nominal): 0.480kg

**PERFORMANCES**
- Muzzle velocity (at 21°C): 1,005m/s
- Maximum range: 11,800m
- Operational temperature: -40°C to +60°C

**STATUS**
In service

**PACKAGING**
1 round per container, 20 containers per wooden box or 8 rounds per metal box or i.a.w. Client’s requirements
UN Classification: 1.1 E UN 0006
**40mm L70 AP-T**

**MISSION**
Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 gun systems. The AP-T ammunition is a kinetic energy ammunition able to penetrate rolled homogeneous armour plates.

**DESCRIPTION**
The projectile consists of a hardened steel body penetrator fitted with a special anti-ricochet and a windshield cap to maintain the aerodynamic profile. The projectile is fitted with a tracer. The projectile is assembled with a brass cartridge case which is filled with a multi-perforated propellant and fitted with a percussion primer.

**TECHNICAL DATA**
- **Type**: Fixed round AP-T
- **Caliber**: 40mm
- **Round mass (nominal)**: 2.5kg
- **Round length**: 526mm
- **Projectile mass (nominal)**: 0.96kg
- **Projectile filling tracer element**: 8.4g
- **Tracer**: Red effect, 4s (minimum)
- **Cartridge case**: Brass
- **Primer**: Percussion
- **Propellant SB (nominal)**: 0.480kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C) (nominal)**: 1,005m/s
- **Penetration**: 50mm at 30°
- **Maximum range**: 11,800m
- **Operational temperature**: -40°C to +60°C

**STATUS**
In service

**PACKAGING**
- 1 round per container, 20 containers per wooden box or 8 rounds per metal box
- UN Classification: 1.2 C UN 0328

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**40mm L70 TP AND TP-T**

**MISSION**
Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 gun systems. The TP and TP-T are used to provide cost effective and live fire training of gun crews.

**DESCRIPTION**
The rounds have the same characteristics of the HE and HE-T. The projectiles, filled with an inert material have the same ballistic of the HE rounds. The TP-T projectile is fitted with a tracer. The projectile is assembled with a brass cartridge case which is filled with a multi-perforated propellant charge and fitted with a percussion primer.

**TECHNICAL DATA**
- **Type**: Fixed round TP, Fixed round TP-T
- **Caliber**: 40mm
- **Round mass (nominal)**: 2.5kg
- **Round length**: 535mm
- **Projectile mass (nominal)**: 0.96kg
- **Projectile filling**: Inert
- **Tracer**: Absent
- **Cartridge case**: Brass
- **Primer**: Percussion
- **Propellant SB (nominal)**: 0.480kg

**PERFORMANCES**
- **Muzzle velocity (at 21°C)**: 1,005m/s
- **Maximum range**: 11,800m
- **Operational temperature**: -40°C to +60°C

**PACKAGING**
- 11 rounds per container, 20 containers per wooden box or 8 rounds per metal box
- UN Classification: 1.2 C UN 0328
FB40

+ MISSION
The FB40 fuze is a proximity fuze for 40mm L70 HE and PFF ammunition. It was designed to defeat aircraft, missiles and small boat targets. A point detonating function allows to use the fuze against hard target.

+ DESCRIPTION
The FB40 fuze was designed in accordance with STANAG 4187 and developed and tested in accordance with the criteria of MIL-STD-331. This fuze ensures optimum performance against all land and naval targets. Two operating modes are selectable electrically at the time of firing:
- Proximity + Point detonating + Self-destruction. The FB40 fuze is set to initiate detonation when proximity with the target is detected. Point detonating function is provided as backup, in event of direct hit. Self-destruction is activated if neither of the above conditions occurs.
- Point detonating. This functioning mode can be selected for hard targets engagement. In this mode proximity and self-destruction are inhibited, and only impact can activate detonation.

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Electronic fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm L70</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>128g</td>
</tr>
<tr>
<td>Fuze length (nominal)</td>
<td>83.2mm (overall 98.3mm)</td>
</tr>
<tr>
<td>Booster charge mass (nominal)</td>
<td>1.43g of T4</td>
</tr>
<tr>
<td>Power supply</td>
<td>Lead Battery</td>
</tr>
</tbody>
</table>

+ PERFORMANCES

<table>
<thead>
<tr>
<th>Functions</th>
<th>Proximity, Self-destruction, Point detonating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>50m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>400m</td>
</tr>
<tr>
<td>Electrical safety distance for proximity</td>
<td>500m max</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>40,000g max</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>40,000rpm max</td>
</tr>
<tr>
<td>Self-destruction time (nominal)</td>
<td>9s</td>
</tr>
<tr>
<td>Miss distance</td>
<td>3m</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-21°C to +51°C</td>
</tr>
</tbody>
</table>

+ PACKAGING

- 20 fuzes per metallic box
- 2 metallic boxes per wooden container
- 24 wooden containers per pallet

UN Classification: 1.2D UN 0409

SIL M5

+ MISSION
The SIL M5 fuze is a PD Delay impact fuze with SD function designed for use with 40mm L70 HE projectiles. With a post impact delay function of a few milliseconds the fuze has the capability to penetrate soft target before detonating. It is a copy of the BPD M5 fuze produced in millions of items with some explosive changed in consequence of obsolescence.

+ DESCRIPTION
SIL M5 fuze is a pyrotechnical fuze with PD DLY and Self-destruction functions (after 7s of flight). The delay PD function activates the fuze 1.5ms after the impact. The fuze is waterproof, and fully compliant with the STANAG 4187.

+ STATUS
In service

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Pyrotechnical fuze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm L70</td>
</tr>
<tr>
<td>Fuze mass (nominal)</td>
<td>62g</td>
</tr>
<tr>
<td>Fuze length (nominal)</td>
<td>42mm (overall 74mm)</td>
</tr>
<tr>
<td>Booster charge mass (nominal)</td>
<td>1.5g of A5</td>
</tr>
<tr>
<td>Power supply</td>
<td>Firing force</td>
</tr>
</tbody>
</table>

+ PERFORMANCES

<table>
<thead>
<tr>
<th>Functions</th>
<th>PD Delay and SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical safety distance</td>
<td>50m</td>
</tr>
<tr>
<td>Minimum operating distance</td>
<td>300m</td>
</tr>
<tr>
<td>Setback acceleration</td>
<td>40,000g max</td>
</tr>
<tr>
<td>Rotating spin</td>
<td>40,000rpm max</td>
</tr>
<tr>
<td>Operational temperature</td>
<td>-45°C to +60°C</td>
</tr>
</tbody>
</table>

+ PACKAGING

- 20 fuzes per metallic box
- 2 metallic boxes per wooden container
- 24 wooden containers per pallet

UN Classification: 1.2D UN 0409
### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE-PFF IL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>40mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>2.5kg</td>
</tr>
<tr>
<td>Round length (nominal)</td>
<td>535mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>0.96kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>0.130kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>PDSQ, SD, PROX</td>
</tr>
<tr>
<td>Fragments</td>
<td>Tungsten</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant S8</td>
<td>0.480kg</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Muzzle velocity (at 21°C) (nominal)**: 1,005m/s
- **Maximum range**: 11,800m
- **Operational temperature**: from -40°C to +60°C

### STATUS

- In service

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### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Fixed round HE-PFF IL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliber</td>
<td>76mm</td>
</tr>
<tr>
<td>Round mass (nominal)</td>
<td>12.5kg</td>
</tr>
<tr>
<td>Round length (nominal)</td>
<td>907mm</td>
</tr>
<tr>
<td>Projectile mass</td>
<td>6.3kg</td>
</tr>
<tr>
<td>Projectile filling</td>
<td>0.76kg</td>
</tr>
<tr>
<td>Fuze</td>
<td>Proximity VTPA</td>
</tr>
<tr>
<td>Cartridge case</td>
<td>Brass</td>
</tr>
<tr>
<td>Primer</td>
<td>Percussion</td>
</tr>
<tr>
<td>Propellant S8 (nominal)</td>
<td>2.45kg</td>
</tr>
</tbody>
</table>

### PERFORMANCES

- **Muzzle velocity (at 21°C) (nominal)**: 905m/s
- **Dispersion**: External ballistic i.a.w. OTO Melara range table
- **Maximum range**: 15,900m
- **Operational temperature**: from -33°C to +63°C

### STATUS

- In service
**127mm L54 HE-IM**

**MISSION**
The 127mm HE-IM projectile is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun.

This projectile was developed to increase the safety during storage and transport due to its high IM characteristics i.a.w. STANAG 4439. This projectile may be fired either with full or reduced charge. This type of ammunition can be equipped with PD or Proximity fuzes in order to guarantee the best response to the Navy requirements in every situations.

**DESCRIPTION**
The projectile consists of a steel shell filled with high melt cast insensitive explosive SIL ECF (Simmel Difesa composition) and fitted with a proximity fuze or a point-detonating fuze. This 127mm projectile is in accordance with NATO design and safety standards.

**STATUS**
Qualified

**TECHNICAL DATA**

- **Type**: HE
- **Caliber**: 127mm
- **Projectile mass (nominal)**: 32kg
- **Projectile length (nominal)**: 661mm
- **Projectile filling (SIL ECF)**: 3.8kg
- **Fuze**: VTPA Proximity fuze or PD Point detonating fuze

*The projectile can be supplied without fuze*

**PERFORMANCES**

- **Muzzle velocity at 32°C (nominal)**: 808m/s
- **Maximum range**: 20,750m
- **Operational temperature**: from -31°C to +55°C

**PACKAGING**

- 24 projectiles per pallet/crate
- UN Classification: 1.1D UN 0168

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**127mm L54 HE-PFFC-IM**

**MISSION**
The 127mm HE PFFC-IM projectile is designed and manufactured by Simmel Difesa to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun.

This projectile was developed to increase the safety during storage and transport due to its high IM characteristics i.a.w. STANAG 4439. This projectile has the same external ballistics of the HE projectile, but it is fitted with about 2,270 tungsten cubes, lined to the steel shell, that enhances its effectiveness, especially for shore bombardment mission or engaging aerial targets. This type of ammunition can be equipped with different type of fuzes in order to guarantee the best response to the Navy requirements in every situations.

**DESCRIPTION**
The projectile consists of a steel shell, that incorporates tungsten-preformed fragments, filled with insensitive melt cast high explosive SIL ECF (Simmel Difesa composition) and fitted with a proximity fuze. This 127mm projectile is in accordance with NATO design and safety standards.

**STATUS**
Under development

**TECHNICAL DATA**

- **Type**: PFFC-IM
- **Caliber**: 127mm
- **Projectile mass (nominal)**: 32kg
- **Projectile length (nominal)**: 661mm
- **Projectile filling (SIL ECF)**: 4.2kg
- **Fuze**: VTPA Proximity fuze
- **Fragments**: Tungsten

*The projectile can be supplied without fuze*

**PERFORMANCES**

- **Muzzle velocity at 32°C (nominal)**: 808m/s
- **Maximum range**: 20,750m
- **Operational temperature**: from -31°C to +55°C

**PACKAGING**

- 24 projectiles per pallet/crate
- UN Classification: 1.1D UN 0168
**FB7 PROGRAMMER**

**MISSION**
The FB7 Programmer is the programming
device for FB769 fuze.
The FB769 is a programmable multimode fuze
for 40mm L70 HE and PFF ammunition
Programming the fuze just before firing
guarantees the best performances with regards
to the encountered operational scenarios.

**DESCRIPTION**
To ensure optimum performance of FB769
against all targets, the fuze has to be
programmed inside the gun, during normal
feeding cycle of the ammunition just before
the fire.
The Programmer receives data to program
the fuze from Fire Control System by a
dedicated interface, on base of the received
data, FB7 generates the data packets for the
fuze and starts to send them continuously and
wirelessly up to the fire.

The FB7 Programmer can be customized
for every 40mm L70 gun system.

**STATUS**
Under qualification

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**FB769**

**MISSION**
The FB769 is a programmable multimode fuze for 40mm L70 HE and PFF ammunition.
It is designed to defeat aircrafts, missiles and
land/surface targets.
Programming the fuze just before firing
guarantees the best performances with regards
to the encountered operational scenarios.

**DESCRIPTION**
The FB769 fuze has been designed in
accordance with STANAG 4187 and developed
and tested in accordance with the criteria
of MIL-STD-331. This fuze ensures optimum
performance against all target both Land and Naval. It can be set wirelessly at firing.
Four operating modes are selectable: Proximity, Gated proximity, Airburst, Point detonating

**STATUS**
Under qualification

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**TECHNICAL DATA**

- **Programming medium**: Wireless
- **Programming type**: Real time
- **Programming rate / allowed rate of fire**: 300 rounds per min
- **Test capability**: Built-In Test Equipment
- **Operating temperature**: -32°C to +63°C
- **Storage temperature**: -46°C to +71°C
- **Dimensions**: Gun system dependent
- **Max power**: 100W
- **Voltage**: 28V (MIL-STD-1275A)
- **Communication**: RS-422 (TIA/EIA+-422) full duplex

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**TECHNICAL DATA**

- **Type**: Electronic fuze
- **Caliber**: 40mm L70
- **Fuze mass (nominal)**: 128g
- **Fuze length (nominal)**: 83.2mm (overall 98,1mm)
- **Booster charge mass (nominal)**: 1.43g of T4
- **Power supply**: Lead Battery

**TECHNICAL DATA**

- **Functions**: Proximity, Gated proximity, Airburst, Point detonating
- **Mechanical safety distance**: 50m
- **Minimum operating distance 400m**: 400m
- **Electrical safety distance for proximity**: 500m max
- **Setback acceleration**: 40,000g (392,400m/s²)
- **Rotating spin**: 40,000rpm (4.190rad/s)
- **Self-destruction time (nominal)**: 9s
- **Activation distance from target (nominal)**: <3m
- **Operating temperature**: -25°C to +51°C
PYROTECHNIC COMPONENTS

Mission
Nexter Ammunitions develops and manufactures pyrotechnic components, subsystems and actuators. The pyrotechnic components belong to the key elements which must combine high levels of safety and reliability whatever the extreme and various environments they have to deal with. In addition to the conventional pyrotechnic components, Nexter Ammunitions is currently developing advanced pyrotechnic technologies such as:

- Microsprotechnics: Pyro-MEMS®,
- Optopyrotechnics (Optopyrotechnic igniters and detonators),
- Low-energy EFI,
- "Lead free" components.

Technical Data

Firing
- Electric: From low-energy to EBW
- Mechanical: From 10 to 300mJ
- Optical: From 10 to 20mJ, laser diode initiation

Dimensions
- From Ø 3.7 to Ø 7mm

Applications
- Missiles equipments (thermal battery, actuators, pyrotechnic train...)
- Medium and large caliber ammunition
- Pyrotechnic ammunition
- Aeronautic and space systems
- Pyromechanisms

Status
Mass production
The XFOIL-Init® electronic fuze system is a secure priming device incorporating an ITAR FREE low-voltage slapper. This fuze system is generic for a wide range of applications including gun-fired ammunitions (from 90 to 155mm), rockets, missiles, torpedoes, bombs and aerospace applications. This device is compliant with the priming of warhead and for the propellant application.

**STATUS**
Qualified

+ **MISSION**
The XFOIL-Init® electronic fuze system is a secure priming device incorporating an ITAR FREE low-voltage slapper. This fuze system is generic for a wide range of applications including gun-fired ammunitions (from 90 to 155mm), rockets, missiles, torpedoes, bombs and aerospace applications. This device is compliant with the priming of warhead and for the propellant application.

+ **TECHNICAL DATA**
- Secure priming without primary explosive
- Initiator qualified according the Stanag 4580
- Device compliant with the Stanag 4187 (ed.4) and 4368 (ed.3)
- ITAR and EAR FREE (made in France)
- Firest technology compliant with :
  - mechanical robustness: gun-fired environments and penetration of hard targets
  - small volume and low weight
  - cost reduction
  - 100% testable
  - Electromagnetic insensitivity
  - Response time under 1µs
  - Versatility: initiation of warhead, ignition of propellant or pyrotechnic mechanism
  - Ideal for multi-priming : optimized terminal effect and reduction of collateral effects

Optopyrotechnic igniters and detonators are initiated by light energy supplied by a laser diode and transmitted by an optical fibre. This advanced technology is particularly suited to extreme environments including severe electromagnetic environments. The optopyrotechnic applications encompass missiles, aeronautics and space domains. The European Space Agency chose the Nexter technology to equip its Ariane 6.

**STATUS**
Under development

+ **MISSION**
Optopyrotechnic igniters and detonators are initiated by light energy supplied by a laser diode and transmitted by an optical fibre. This advanced technology is particularly suited to extreme environments including severe electromagnetic environments. The optopyrotechnic applications encompass missiles, aeronautics and space domains. The European Space Agency chose the Nexter technology to equip its Ariane 6.

+ **TECHNICAL DATA**
- Insensitive to electromagnetic disturbances and electrostatic discharges
- Reduced dimension
- Temperature range from -120 to +110°C
**MISSION**
The Pyro-MEMS In-it® electronic fuze system is a secure priming device incorporating a MEMS electron mechanical microsystem providing the ammunition’s safety function. The fuze system is generic for a wide range of applications: gun-fired ammunitions (from 90 to 155mm), missiles, rockets, torpedoes, bombs and aerospace applications.

Nexter Ammunitions offers this innovative electronic fuze system to miniaturize the secured priming devices (possibility to create a network of secured priming devices...). The Pyro-MEMS In-it® provide an increased level of safety while meeting stringent requirements in terms of reliability and performance.

**STATUS**
Under development

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**TECHNICAL DATA**
- Compliant with the Stanag 4187 et 4368
- ITAR and EAR FREE (made in France)
- Significant reduction in volume and weight
- Possible integration of all types of environmental sensors for weapons
- Increased safety and reliability
- Electromagnetic insensitivity
- Mechanical robustness: gun fired environments
- Versatility: initiation of warheads, priming of boosters or pyrotechnic mechanisms
- Ideal for multi-priming, optimized terminal effect and reduction of collateral effects

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**XF**

**MISSION**
Nexter Ammunitions has developed a very low vulnerability melt/cast explosive composition called XF.

Already used in the 155mm LU 211 shell, the XF compositions are perfectly suitable for other applications, like the filling of shells for artillery, mortar and tank ammunition.

**STATUS**
XF 13333: Qualified and in service
XF 11585: Qualified

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**TECHNICAL DATA**

**XF 13333 explosive composition**
- Detonation velocity: 6,976m/s
- Detonation pressure: >210kbar (theorical value)
- Critical diameter: ~60mm
- Impact sensitivity: ISI NFT 75-500
  - 30% Go at 50 joules
- Friction sensitivity: ISF NFT 70-503
  - 0% Go at 353N

**XF 11585 explosive composition**
- Detonation velocity: 7,468m/s
- Detonation pressure: 242kbar (theorical value)
- Unconfined critical diameter: ~10mm
- Impact sensitivity: ISI NFT 70-500
  - 30% Go at 50 joules
- Friction sensitivity: ISF NFT 70-503
  - 0% Go at 353N
**XP**

**PRESSED EXPLOSIVE FOR INSENSITIVE AMMUNITION**

**MISSION**
Nexter Ammunitions has developed a very low vulnerability pressed explosive composition called XP.
The XP explosive compressed at ambient temperature high detonic and low vulnerability, performances. This explosive is dedicated for applications ranging from the filling of medium-caliber shells to warheads including detonating relays.

**STATUS**
Qualified

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP explosive composition</td>
<td></td>
</tr>
<tr>
<td>Detonation velocity</td>
<td>7,921 m/s</td>
</tr>
<tr>
<td>Detonation pressure</td>
<td>285 bars (theoretical value)</td>
</tr>
<tr>
<td>Critical diameter</td>
<td>between 5 and 10 mm</td>
</tr>
<tr>
<td>Impact sensitivity</td>
<td>ISI NFT 710-S00 SNAP 4489</td>
</tr>
<tr>
<td>Friction sensitivity</td>
<td>ISI NFT 710-S00 SNAP 4489</td>
</tr>
</tbody>
</table>

**PROPELLANTS**

**MISSION**
Propellants are chemicals used in the production of energy for the propulsion of a projectile. The propellant is burned or otherwise decomposed to produce the propellant gas with the requested ballistic performances. Propellants fill the interior of an ammunition cartridge or the chamber of a gun or cannon, leading to the expulsion of the projectile. The Simmel know-how about the propellants allows to design and customize new propellants when requested.

**STATUS**
In service

**SINGLE BASE**

<table>
<thead>
<tr>
<th>Conventional</th>
<th>DNT Free</th>
<th>REACH Compliant</th>
<th>DNT Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 1 + 1</td>
<td>SIL 1</td>
<td>7 perforations</td>
<td>for caliber 40/60</td>
</tr>
<tr>
<td>M 1 + 1</td>
<td>SIL 1</td>
<td>19 perforations</td>
<td>for caliber 40/70</td>
</tr>
<tr>
<td>M 10</td>
<td>M 10</td>
<td>1 perforation</td>
<td>for caliber 57</td>
</tr>
<tr>
<td>M 6 + 2</td>
<td>SIL 6 + 2</td>
<td>7 perforations</td>
<td>for caliber 76/62</td>
</tr>
<tr>
<td>M 6 + 2</td>
<td>SIL 6 + 2</td>
<td>19 perforations</td>
<td>for caliber 76/62</td>
</tr>
<tr>
<td>M 10</td>
<td>M 10</td>
<td>3 perforations</td>
<td>for caliber 76/62</td>
</tr>
<tr>
<td>M 6 + 2</td>
<td>SIL 6 + 2</td>
<td>7 perforations</td>
<td>for caliber 3&quot;x50</td>
</tr>
<tr>
<td>M 1</td>
<td>SIL 1</td>
<td>7 perforations</td>
<td>for caliber 105/14</td>
</tr>
<tr>
<td>M 1</td>
<td>SIL 1</td>
<td>1 perforation</td>
<td>for caliber 105/14</td>
</tr>
<tr>
<td>M 1</td>
<td>SIL 1</td>
<td>7 perforations</td>
<td>for caliber 105/51 HEP-T</td>
</tr>
<tr>
<td>SPDF</td>
<td>SPDF</td>
<td>7 perforations</td>
<td>for caliber 127/64</td>
</tr>
<tr>
<td>M 1</td>
<td>SIL 1</td>
<td>1 and 7 perforations</td>
<td>for caliber 155</td>
</tr>
</tbody>
</table>

**PROPELLING POWDERS**
Grains 1, 7 & 19 holes for calibers 40mm up to 155mm.
Composition:
- Single Base,
- Double Base,
- Triple Base,
- Multi Base for Special Application (Modular Charge System).
**PROPELLANTS**

Next generation – Single base reduced toxicity propellants (DBP & DPA free - patented)
- SIL RTP1 - 19 perforations for caliber 40/70
- SIL RTP6 - 7 perforations for caliber 76/62
- SIL RTP3 - 7 perforations for caliber 100mm
- SIL RTP2 - 7 perforations for caliber 155mm

**BOTTOM modular charges**

**DOUBLE TRIPLE & MULTIBASE**

- Double Base M 26 - 7 perforations for caliber 105 DM33
- Double Base M 26 - 7 perforations for caliber 105 DM63
- Double Base M 26 - 7 perforations for caliber 106
- Triple Base M 30 - 7 perforations for caliber 105
- Triple Base M 30 - 7 perforations for caliber 120
- Triple Base M 30 - 7 perforations for TOP modular charges caliber 155
- Multi Base BPD 5 - 19 perforations for modular charges caliber 155

**MISSILE EQUIPMENT**

**WARHEADS AND SAFETY DEVICES**

**MISSION**

NEXTER is a leading partner for the European missile in areas such as warhead, safety devices (SAU and MSIU), pyrotechnic components. Our experience and know-how allow us to meet the new needs of our customers : in the areas of high efficiency explosives, insensitivity materials, and new generation of initiators (miniaturization and safety).

**STATUS**

In service

**TECHNICAL DATA**

Applications include missiles (anti-bunker, anti-tank, anti-aircraft, anti-ship, anti-site), torpedoes, bombs, rockets, countermeasures and space equipments. These components are particularly integrated into :

- Ammunition from medium to large calibers produced by Nexter Ammunition Business Groupe
- Most of the European programs on tactical missiles (Eryx, Scalp EG-SS, Mistral, Executive, Mica, Iris, Marte, Aster, Aspide...)
- Strategic missiles (ASMP-A, M51)
- Torpedos, underwater drone warheads (MU 90, K-STER)
- Pyrotechnic actuation and safety devices
GALIX
SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

+ PROPELLANTS
The GALIX system treats all known threats, and therefore offers optimum defensive action to enhance the survivability of armored vehicles:
- if identified by the enemy, by avoiding engagement (broad band IR-visible smoke grenade),
- if engaged by an IR-guided missile, by avoiding being hit (IR decoy ammunition),
- if approached by enemy troops, by preventing an attack (self-defense ammunition),
- if engaged in a peacekeeping operation (crowd dispersal ammunition).

The GALIX system is modular and the nature of the ammunition, the number of launcher tubes and their positioning can therefore be determined as a function of vehicle geometry and mission.

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>MUNITION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GALIX 13 - Broad band IR-visible smoke grenade</td>
<td>In service</td>
</tr>
<tr>
<td>GALIX 16 - P-tester</td>
<td>In service</td>
</tr>
<tr>
<td>GALIX 17 - Training smoke grenade</td>
<td>In service</td>
</tr>
<tr>
<td>GALIX 19 - Warning grenade</td>
<td>In service</td>
</tr>
<tr>
<td>GALIX 46 - Crowd dispersal grenade</td>
<td>In service</td>
</tr>
<tr>
<td>Launch Tube</td>
<td>In service</td>
</tr>
<tr>
<td>Firing control unit</td>
<td>In service</td>
</tr>
</tbody>
</table>

+ STATUS
In service

SYDEX®
NEW GENERATION OF SOFT KILL SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

+ MISSION
Compared to the current softkill systems, SYDEX® offers additional capabilities thanks to an embedded Smart Firing Control System (SFCS). This new generation of softkill system increases the performance and survivability of the armored vehicles thanks to its improved digital data link with the vehicle aiming at the optimization of the response to any threats to be dealt with. Furthermore, SYDEX® is able to fire a future generation of programmable ammunition, especially fitted for the "less than lethal" purpose.

+ TECHNICAL DATA

- Compatibility with current GALIX softkill standard ammunition
- Smart Firing Control System (SFCS) optimizing the response to any threat
- Ammunition type and status electronic recognition
- Programmable ammunition setter
- Launch tube and vehicle interconnection by a digital bus
- Compatibility with "less than lethal" ammunition meeting advanced operational use control requirements

+ STATUS
Under development
BRENUS PROTECTION SOLUTIONS FOR LIGHT AND HEAVY ARMORED VEHICLES

+ MISSION
The BRENUS add-on Explosive Reactive Armour (ERA) enables to improve the combat survivability of armored vehicles against attack from missiles, anti-tank rockets and top attack grenades. BRENUS provides protection against HEAT and kinetic energy attack with a weight nine times lighter than its steel equivalent. It is remarkably insensitive to accidental battlefield incidents and attacks.

+ TECHNICAL DATA
BRENUS reactive modules provide protection equivalent to 400 mm of RHA steel against anti-tank guided missiles and unguided rockets. BSG0 bricks and U12 boxes provide protection against HE shells, while increasing resistance against attack by medium caliber weapons. BSG0 bricks provide protection against top attack grenades.

+ STATUS
Qualified

40MM EOD CHARGE

+ USE
For safe and contact free disabling and disposal of visible mines and UXOs. Can also be used for those covered with soil, or underwater.

+ DESCRIPTION
The charge consists of a plastic body mounted on a disposal non-ferrous spike. A copper liner with a composition A3 explosive charge is assembled in the body. The charge is initiated, using all types of standard ignition devices, such as flash, electrical or shock tube detonators, (not supplied), via the mounting hole on the rear of the body. A non-ferrous tripod is available as an option.

+ PACKAGING
8 charges and spikes per plastic box
10 plastic boxes per plywood box
2 plywood boxes per pallet

Non-ferrous tripods are available as an option. Alternative packaging available on request. Markings according to NATO standards.

+ TRAINING
Didactic materials, such as cutaways and inert training models, are available.

+ STATUS
In service

+ TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>EOD Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total weight (without tripod)</td>
<td>105g</td>
</tr>
<tr>
<td>Length</td>
<td>105mm</td>
</tr>
<tr>
<td>Cone diameter</td>
<td>40mm</td>
</tr>
<tr>
<td>Explosive</td>
<td>Composition A3</td>
</tr>
<tr>
<td>Explosive mass</td>
<td>80g</td>
</tr>
<tr>
<td>Liner</td>
<td>Copper</td>
</tr>
<tr>
<td>Body</td>
<td>Plastic</td>
</tr>
</tbody>
</table>

+ PACKAGING
8 charges and spikes per plastic box
10 plastic boxes per plywood box
2 plywood boxes per pallet
**80MM EOD CHARGE**

**USE**
For safe and contact free disabling and disposal of visible mines and UXOs. Can also be used for those covered with soil, or underwater.

**DESCRIPTION**
The charge consists of an aluminium body mounted on a non-ferrous tripod. A copper liner with a composition A3 explosive charge is assembled in the body. The charge is initiated, using all types of standard ignition devices, such as flash, electrical or shock tube detonators (not supplied), via the mounting hole on the rear of the body. The body has an aiming device which is used to ensure that the charge is correctly aimed at the target.

**TRAINING**
Didactic materials, such as cutaways and inert training models, are available.

**STATUS**
In service

**TECHNICAL DATA**
- **Type**: EOD Charge
- **Total weight (without tripod)**: 1.7kg
- **Length**: 190mm
- **Cone diameter**: 80mm
- **Explosive**: Composition A3
- **Explosive mass**: 700g
- **Liner**: Copper
- **Body**: Aluminium

**PACKAGING**
- 2 charges and tripods per plastic box
- 10 plastic boxes per plywood box
- 2 plywood boxes per pallet

Non-ferrous tripods are available as an option. Alternative packaging available on request. Markings according to NATO standards.

**DEMILITARIZATION**

The Ammunition Business Group also offers dismantling engineering support compliant with pyrotechnic and environmental regulations, in accordance with the particular nature of the stocks of pyrotechnic components and/or conventional ammunition to be destroyed or recycled.

If necessary, these services are provided with technical assistance as well as training.

Simmel Difesa, leader in producing Ammunition and Propellants, with the aim to complete the range of activities make available the Demilitarization Plant located in Anagni, near to Simmel Difesa Ammunition Plant.

The Plant is able to process a huge amount of ammunition and explosives materials, starting from small calibers (8 mm, 5.56 mm, 7.62 mm, 12.7mm) to the biggest (203 mm artillery projectile), as well as hand grenades, air-drop and mortar bombs, land- and underwater mines, complete rockets and missiles, rockets and missiles components, sub-munitions.

The Plant is able to dispose the resulting by-products.

**OPERATIONS PHASES**

Demilitarization Plant located in Anagni, near to Simmel Difesa Ammunition Plant.

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The Plant is able to dispose the resulting by-products.
DEMITILARIZATION

**OPERATIONS PHASES**
- Ammunition Unpacking
- Disassembling and Primers Removal and Inertization
- Projectiles, Bombs, Grenades Defusing
- Supplementary Charge Disassembling
- Ammunition Cut by Submerged Saws
- Ammunition Unloading of large calibers up to 203 mm
- Ammunition Inertization by Rotative Oven
- Ammunition and explosive Inertization by Tunnel

**POINTS OF STRENGTH**
- Experience in the demil technique
- Knowledge of ammunition
- Plant with the most advanced security system and the most modern machines and equipment
- Synergy between demil and manufacturing of explosives for civil use recovering explosives coming out of ammunition
- Sensitivity to the environment and safety

**SMALL, MEDIUM AND LARGE CALIBER CUTTING MACHINE**

SERVICES

In addition to its comprehensive product catalogue, the Ammunition Business Group offers an extended range of services able to meet a large customer demand through the whole life cycle of its products.

**TECHNOLOGY TRANSFERS**
The Ammunition Business Group can propose transfer of skills, engineering knowledge, technologies, methods of manufacturing and facilities to provide manufacturing capabilities from the component up to the ammunition. If necessary, these transfers are provided with a technical support related to the design of infrastructures and equipment as well as training.

**DEMITILARIZATION**
The Ammunition Business Group also offers dismantle engineering support compliant with pyrotechnic and environmental regulations, in accordance with the particular nature of the stocks of pyrotechnic components and/or conventional ammunition to be destroyed or recycled. If necessary, these services are provided with technical assistance as well as training.

**AMMUNITION STORAGE FACILITIES**
Storage of ammunition must satisfy strict rules. Failure to observe these rules can lead to dramatic accidents with many consequences (loss of life, legal prosecution, loss of operational capacity, etc.). The Ammunition Business Group can support the engineering tasks related to any ammunition storage facility while guaranteeing the best practice and full compliance with safety and environmental standards.

**MONITORING OF AMMUNITION STOCKPILES**
Most of the conventional ammunition life cycle is spent in the storage phase. The ammunition surveillance is one of the key points to insure the operational readiness of armed forces. The Ammunition Business Group as designer of any type of ammunition is able to support its customers for the monitoring of the ammunition stockpiles from the inspection to the dedicated facilities.