nexter MUNITIONS MECAR SIMMEL DIFESA

AMMUNITION

NEXTER CATALOGUE
2018

Creating new references in defense

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SUMMARY

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PART 1

FIELD ARTILLERY AMMUNITION

155mm BONUS MKII

TARGET DETECTION ANTI-ARMORED VEHICLE SHELL

BAE SYSTEMS

TECHNICAL DATA

SHELL	
Weight without fuze	44.6kg
Length with fuze	898mm
Maximum range	NATO 39 caliber artillery: 27km NATO 52 caliber artillery: 35km

WARHEAD (TWO PER SHELL)	
Weight	6.5kg
Descent rate	45m/s
Spin rate	15 revolutions/s
Search area	32,000m² per warhead (64,000m² per shell)

MISSION

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.

STATUS

In service

155-105mm SPACIDO

COURSE CORRECTION SYSTEM

▲Compliant with STANAG 2916 or MIL STD 333

+ TECHNICAL DATA

Compatible with current Muzzle-velocity radar suited to any current or future gun
Suitable for use on all NATO-standard in-service 105mm and 155mm 39 to 52 caliber ammunition
GPS independant, no crypted components to manage, easy to use
Improvement of accuracy of a factor going up to 4 at long ranges

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

JUNGHANS Defence

+ 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.

+ STATUS

Qualified

155mm LU 211

INSENSITIVE OR CONVENTIONAL VERSION

+ 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.

+ 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/39 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 13 333 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.

155mm LU 211

INSENSITIVE OR CONVENTIONAL VERSION

+ TECHNICAL DATA

	LU 211 IM-HB	LU 211 IM-BB	LU 211 B-HB	LU 211 B-BB
Type	Insensitive High Explosive Hollow Base	Insensitive High Explosive Base Bleed	Conventional High Explosive Hollow Base	Conventional High Explosive Base Bleed
Caliber	155mm	155mm	155mm	155mm
Projectile mass	42.5kg without fuze	43,9kg without fuze	42.5kg without fuze	43,9kg without fuze
Projectile length	865mm with fuze	867mm with fuze	865mm with fuze	867mm with fuze
Projectile filling	~8.8kg XF ®13333	~8.8kg XF ®13333	~8.8kg Composition B	~8.8kg Composition B
Fuze	NATO Interoperability standard 2" thread fuze	NATO Interoperability standard 2" thread fuze	NATO Interoperability standard 2" thread fuze	NATO Interoperability standard 2" thread fuze

+ PERFORMANCES WITH CAESAR® 52 CAL/TCM

	LU 211 IM-HB	LU 211 IM-BB	LU 211 B-HB	LU 211 B-BB
Muzzle velocity	939m/s	946m/s	939m/s	946m/s
Maximum range	30km	40km	30km	40km

+ PACKAGING

12 projectiles per pallet

+ STATUS

In service

155mm LU 214 SMK-WP

+ TECHNICAL DATA

	LU 214 WP HB	LU 214 WP BB
Type	White phosphorus smoke	White phosphorus smoke
Caliber	155mm	155mm
Projectile mass	43.25kg without fuze	44.65kg without fuze
Projectile length	865mm with fuze	867mm with fuze
Projectile filling	≈8.4kg White Phosphorus	≈8.4kg White Phosphorus

+ PERFORMANCES

	LU 214 WP HB	LU 214 WP BB
Muzzle velocity	939m/s	946m/s
Maximum range	30km	40km
Dispersion in range	<0.4% mean range	<0.4% mean range
Smoke duration (s)	More than one minute	More than one minute

+ PACKAGING

12 projectiles per pallet

+ MISSION

The LU 214 is a smoke shell belonging to the 52 caliber shell familly. It offers the same ballistic of the LU 211 shell.
The functionning 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.
The white phosphorus produces spontaneously, upon contact with air, dense white smoke.

+ 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

155mm LU 215 ILLUM

TECHNICAL DATA

Type	Illuminating with Base Bleed (US M864 profile)
Caliber	155mm
Weight without fuze	43.7kg
Projectile length	898mm 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	

PACKAGING

12 projectiles per pallet

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 induding 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.

STATUS

Qualified

155mm LU 216 ILLUM IR

TECHNICAL DATA

Type	IR Illuminating with Base Bleed (US M864 profile)
Caliber	155mm
Projectile mass	43,7kg without fuze
Projectile length	898mm 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	≤2,500 candelas
IR illuminating target area during 80 seconds	

PACKAGING

12 projectiles per pallet

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 induding 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.

STATUS

Under qualification

155mm LU 217 MS SMK

TECHNICAL DATA

Type	MS Smoke with Base Bleed (US M864 profile)
Caliber	155mm
Round length	898mm with fuze
Projectile mass	44,6kg without fuze
Projectile filling	Multispectral smoke compound
Body material	Steel
Filler and weight	~5kg smoke compound
Fuze	NATO interoperability standard 2" - thread time fuze

PERFORMANCES

Maximum range	Compatible with modular charge system up to Z6
Payload delivery range	~90% of the maximum ballistic range
Smoke efficiency : in visible spectrum and IR bandwidth 0.7 to 12µm	
Smoke emission	Up to 210 seconds

PACKAGING

12 projectiles per pallet

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 induding 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. Fuze functionning causes ejection and ignition of the smoke canisters. An effective smoke cloud is produced within a few seconds and smoke emission occurs for 2 to 3 minutes.

STATUS

Under qualification

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.

TECHNICAL DATA

Type	High Explosive (HE)
Caliber	155mm
Round length	~700mm with fuze
Projectile mass	42.10kg without fuze
Payload	~7kg Composition B
Compliant	with M203 and MCS propelling charges
STANAG	4224 - 4518 - 4439 for LU 107 version filled with explosive (TNT or IM)

PERFORMANCES

Typical value	**MV**	**Max range**
39 cal. M119A2	686m/s	18,100m
39 cal. TCM Z5	808m/s	22,000m
39 cal. M203	830m/s	22,500m
Secured sealing for conventional explosive version		

PACKAGING

Standard wood pallet (20, 12 or 8 projectiles in tactical complete ground packs)

TEMPERATURE LIMITS

Firing	-40°C to +63°C
Storage	-46°C to +71°C

STATUS

In service

155mm LU 110 SMK-WP

TECHNICAL DATA

Type	Smoke White Phosphorus (SMK WP)
Caliber	155mm
Round length with fuze	~700mm
Projectile mass	42,10kg without fuze
Fuze	NATO interoperability standard 2" - thread fuze
Body material	Steel
Filler and weight	7kg White Phosphorus

PERFORMANCES

Smoke duration	More than one minute
Maximum range in 39 caliber gun	22,500m with M203

PACKAGING

12 projectiles per pallet

MISSION

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

155mm HE L15A1

TECHNICAL DATA

Type	High Explosive (HE)
Caliber	155mm
Complete projectile mass (with fuze)	43.5kg
Projectile length (without fuze)	778.5mm
Projectile filling (nominal)	11.3kg TNT or Comp B
Fuze	Proximity, PD or MTSQ

PERFORMANCES

Maximum range in 39 caliber gun	24,000m
Operational temperature	-54°C to +63°C

PACKAGING

8 projectiles per pallet

UN Classification: 1.1 D UN 0168

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

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 0168

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.

STATUS

In service

155mm MODULAR CHARGE SYSTEM

TECHNICAL DATA

Type	Bottom	Top
Caliber	155mm	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

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.

STATUS

In service

155mm MODULAR CHARGE SYSTEMS

TECHNICAL DATA

Type	Bottom	Top
Caliber	155mm	155mm

PERFORMANCES

Operational temperature	-46°C to +63°C
Storage temperature	-46°C to +71°C

PACKAGING

Bottom : 4 per container, 12 containers per pallet

Top : 6 per container, 12 containers per pallet

UN Classification: 1.3 C UN 0242

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.

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

TECHNICAL DATA

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

PERFORMANCES

Maximum range (155 LU211 BB)	Up to 30km
Operational temperature range	-33°/ to +63°C (firing)
Storage temperature range	-33°/ to +71°C

PACKAGING

1 charge per container, 16 containers per pallet

MISSION

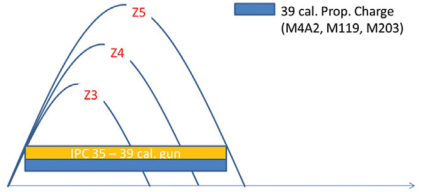
The 155mm IPC35 propelling charge is dedicated to the 155mm/39 cal. artillery systems. It consists of a combustible case containing three bags of propellant covering the zones 3 to 5. This propelling charge is an all-in-one solution as an alternative to the set of US charges such as M4A2, M119, M203.
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.

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

TECHNICAL DATA

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

PERFORMANCES

Maximum range (155 LU 211 BB)	>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

MISSION

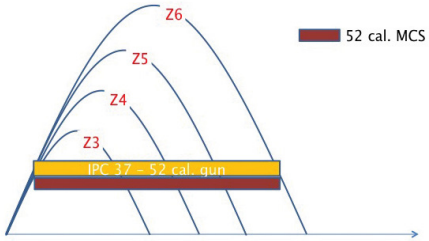
The 155mm IPC36 propelling charge is dedicated to the 155mm/52 cal artillery systems. It consists of a combustible case containing five bags of propellant covering the zones 3 to 6. This propelling charge offers a longer range firing capability while featuring similar ballistic characteristics with the 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.

DESCRIPTION

The 155mm IPC36 propelling charge meets the ballistic requirements of the Joint Ballistic Memorandum of Understanding (JBMoU) as far as the zones 3 to 6 are concerned. This propelling charge can also be used in 39 caliber guns (limited to zone 5) & 45 caliber guns (limited to zone 6). In addition, a dedicated version for 39 caliber guns is also proposed, i.e the 155mm IPC35 propelling charge (Zone 3 to zone 5).

STATUS

Under development



105mm HE HB ER G3

105mm NATO ARTILLERY AMMUNITION

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

PERFORMANCES

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

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.

STATUS

Qualified

105mm HE BB ER G3

NATO ARTILLERY AMMUNITION

TECHNICAL DATA

Type	HE BB
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

PERFORMANCES

Muzzle velocity	685m/s (in LG1 gun)
Maximum range	17km (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

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.

STATUS

In service

105mm L14 HE M1

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 SB (nominal)	1.4kg (total increments 1-7)
Fuze	PD
Primer	Percussion

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	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

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.

STATUS

In service

105mm SMK BB ER G3

105mm NATO ARTILLERY AMMUNITION

TECHNICAL DATA

Type	SMK BB
Caliber	105mm
Cartridge mass	18kg with fuze
Cartridge length	850mm with fuze
Projectile weight	13,1kg
Projectile length with fuze	568mm
Payload	White Phosphorous Payload (approx 2.3kg)
Base	Gas generator
Fuze	All NATO standard (2 inches)
Propelling charge Priming	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

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.

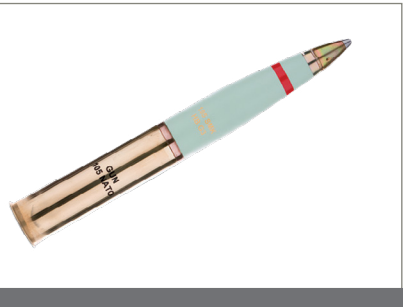
(1) The semi-fixed cartridge can be delivered without fuze.

STATUS

Qualified

105mm SMK HB ER G3

105mm NATO ARTILLERY AMMUNITION



TECHNICAL DATA

Type	SMK BB
Caliber	105mm
Cartridge mass	18kg with fuze
Cartridge length	850mm with fuze
Projectile weight	13,1kg
Projectile length with fuze	568mm
Payload	White Phosphorous Payload (approx 2.3kg)
Base	Hollow Base
Fuze	All NATO standard (2 inches)
Propelling charge Priming	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 woodenbox.
12 wooden boxes by pallet

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, 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.

STATUS

Qualified

XF®

MELT-CAST EXPLOSIVE COMPOSITIONS FOR INSENSITIVE AMMUNITION

+ TECHNICAL DATA

XF 13333 EXPLOSIVE COMPOSITION	
Detonation velocity	6,976m/s
Detonation pressure	>210kbar (theorical value)
Critical diameter	<60mm
Impact sensitivity - ISI NFT 70-500	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

+ MISSION

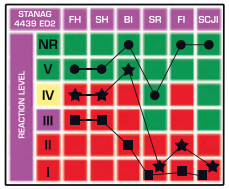
Nexter Ammunitions has developed several very low vulnerability melt-cast explosive compositions known as XF.
These compositions:

- 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

LU 211 IM SIGNATURE



TOLERATED
FORBIDDEN
● Melt-cast XF
★ Cast-cured PBX
■ Melt-cast TNT

PDM 728 IM

MECHANICAL PD FUZE FOR ARTILLERY SHELLS

+ TECHNICAL DATA

Application	Artillery PD fuze
Caliber	120 - 105 - 155mm rifle barrels
Muzzle velocity	Up to 1,100m/s
Safety and non-armed distance	>200m (with 155mm)
Arming distance	<500m (with 155mm)
Fully compliant with the latest safety standards	STANAG 4187 STANAG 4157
IM performances	STANAG 4439 MURAT in both configurations: bare fuze and bare mounted on IM shell
Reability	>98%
Compliant with European Chimical Regulation (REACH)	
ITAR free solution	

+ PACKAGING

Metal box M2 A1 containing 8 fuzes Wooden box containing 84 metal boxes	
Pallet dimensions (mm)	1,000x1,200x820mm
Weight	1,000kg
Volume	1m³

DIXI microtechniques

+ MISSION

This artillery fuze has been designed in order to provide Nexter Ammunitions customers with an optimal and improved confidence for firings in rifled artillery barrels, including latest L52 barrel generation: compatibility with the firing constraints, compatibility with the ammunition (including IM ammunition), and full compliance with the highest and latest applicable civil & military standards.

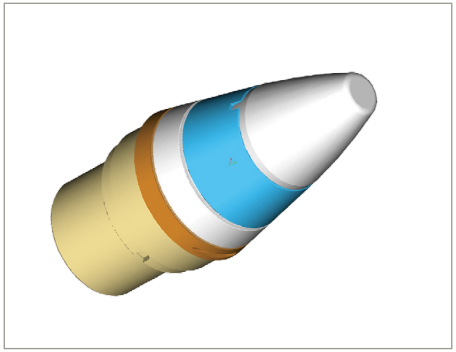
+ DESCRIPTION

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 functionning modes are available, super-quick mode which corresponds to immediate functionning 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.

FB375



+ 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

+ 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
Mechanical safety distance	5 seconds
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

FB557

+ 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

+ 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

FB739A1

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

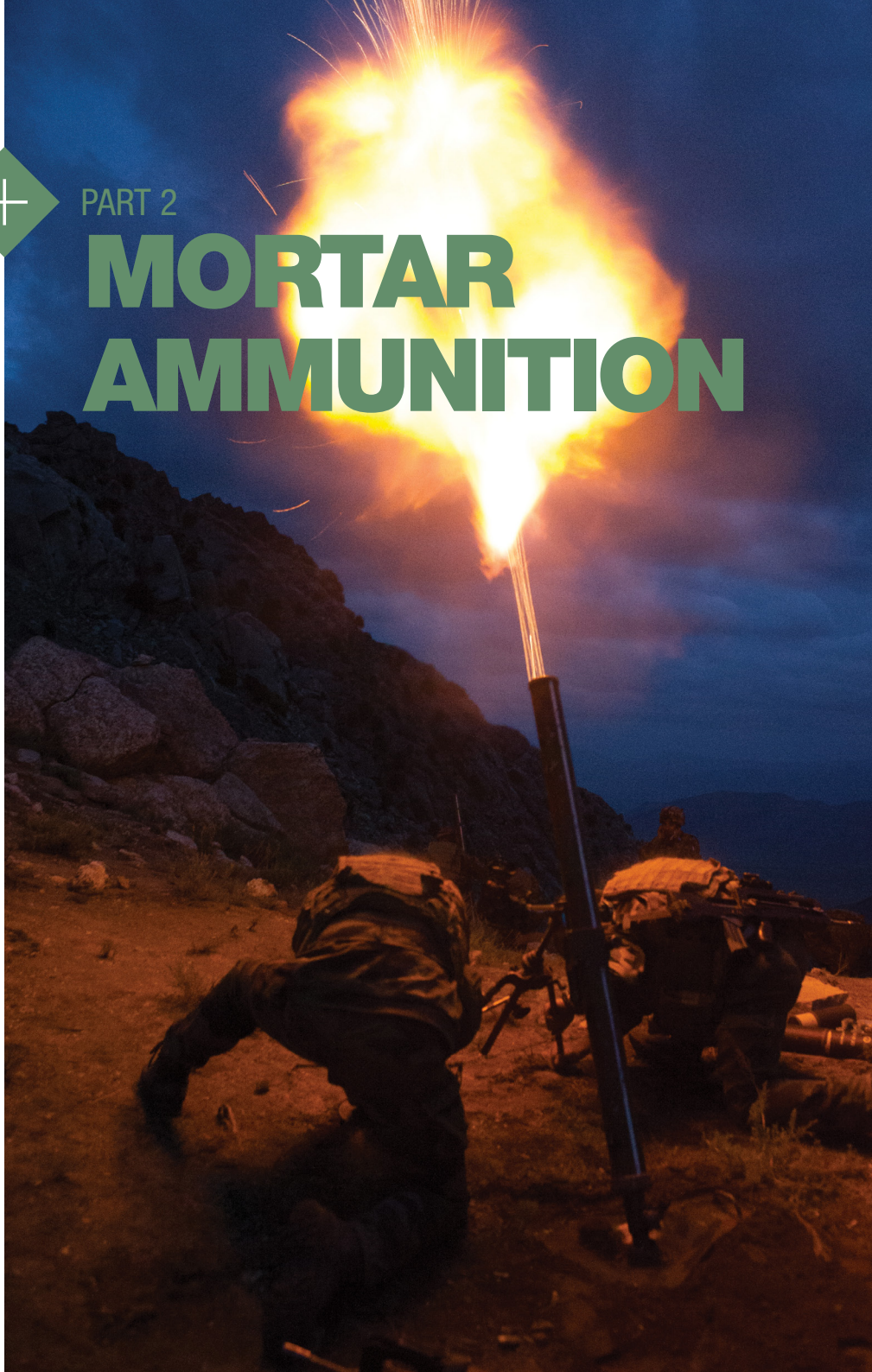
Type	Mechanical fuze
Compatible with 76mm up to 155mm ammunition	
Fuze mass (nominal)	643g
Fuze length (nominal)	96mm (overall 152mm)
Booster charge mass (nominal)	22g of A5
Power supply	Firing force

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
Setback acceleration	30,000g max (294,300m/s2)
Rotating spin	30,000rpm max (3.141rad/s)
Operating temperature	-40°C to +52°C

PACKAGING

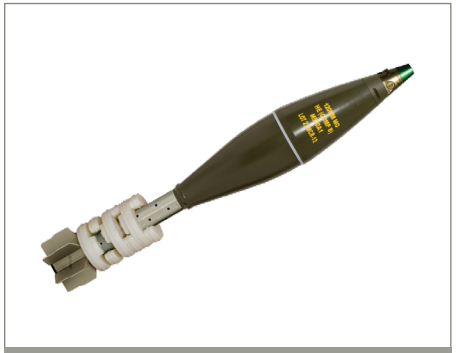
20 fuzes per wooden container
24 wooden containers per pallet
UN Classification: 1.2D UN 0409



PART 2

MORTAR AMMUNITION

120mm MORTAR HE
M530A1



TECHNICAL DATA

Type	HE
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	Max 780mm
Projectile filling (Comp. B)	2.5kg
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	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

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

120mm MORTAR HE
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

Type	HE
Caliber	120mm
Round mass (nominal)	15.5kg
Round length	800mm
Projectile filling (Comp. B)	2.5kg
Fuze	PD (Delay or Superquick)
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Supplementary charge 7S	M553

PERFORMANCES

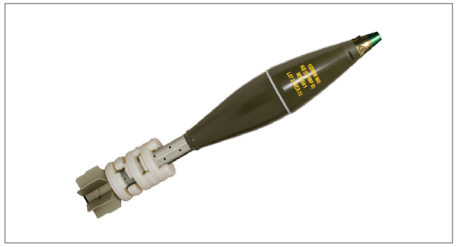
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C

PACKAGING

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

UN Classification: 1.1 E UN 0006

120mm MORTAR HE-IM
M530B1



+ 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

+ TECHNICAL DATA

Type	HE-IM
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	Max 780mm
Projectile filling (Comp. B)	2.5kg
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	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)	970x400x185mm
Gross weight (complete pallet)	650kg
Dimension ext (complete pallet)	1,200x1,000x1,070mm
UN Classification: under qualification	

120mm MORTAR HE-IM
M590B2

+ 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

+ TECHNICAL DATA

Type	HE-IM
Caliber	120mm
Round mass (nominal)	15.5kg
Round length	800mm
Projectile filling (XF®11585)	2.5kg
Fuze	PD (Delay or Superquick)
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Supplementary charge 7s (For NEMO)	M553

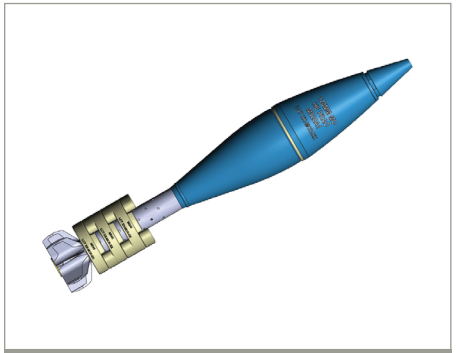
+ PERFORMANCES

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)	21kg
Dimension ext (container)	980x180x180mm
Gross weight (complete pallet)	590kg
Dimension ext (complete pallet)	1,200x1,000x1,020mm
UN Classification: under qualification	

120mm MORTAR HE PRAC
M528A1



TECHNICAL DATA

Type	HE PRAC
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling	XF 11585
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

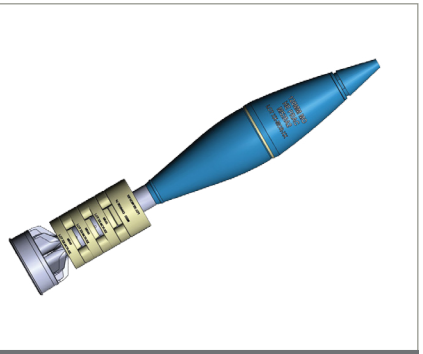
UN Classification: 1.2 C UN 0328

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

120mm MORTAR HE PRAC
M528A2



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

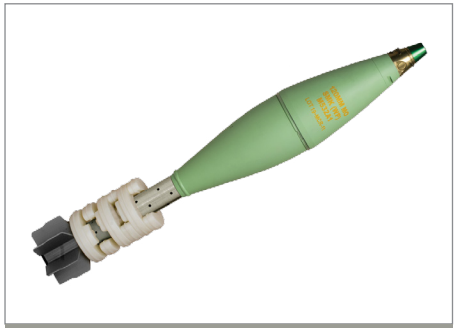
MISSION
The 120mm HE PRAC bomb is a fin stabilized round complete with propellant increment charges and a dummy fuze. It is designed to be used for training mortar crews and forward observers.

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

120mm MORTAR SMK(WP)

M532A1



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

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

120mm MORTAR SMK(WP)

M532A2

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 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

120mm MORTAR ILL
M533A1

+ 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

+ TECHNICAL DATA

Type	ILL
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Illuminating Comp.)	1.2kg
Fuze	MTSQ
Primary ignition cartridge	M547
Increment charge 1 to 6	M546

+ PERFORMANCES

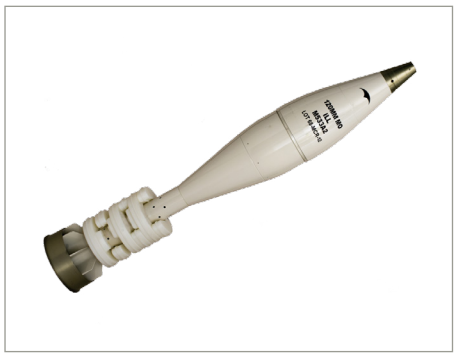
Maximum chamber pressure (at 21°C)	95MPa
Muzzle velocity	331m/s
Range	>7km
Descent rate	4m/s
Illuminated rate - period	Approx 50s
Illuminated rate - intensity	1.0Mcd
Operational temperature	-46°C to +62°C

+ PACKAGING

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

UN Classification: 1.2 G UN 0171

120mm MORTAR ILL
M533A2



+ MISSION
The 120mm 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.

+ 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

+ TECHNICAL DATA

Type	ILL
Caliber	120mm
Round mass (nominal)	15.5kg
Round length	800mm
Projectile filling (Illuminating Comp.)	1.2kg
Fuze	MTSQ
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Supplementary charge 7S (for NEMO)	M553

+ PERFORMANCES

Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Descent rate	+/-4m/sec
Illuminated rate - period	Approx 50s
Illuminated rate - intensity	1.0Mcd
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 G UN 0171

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.

+ STATUS

Qualified

+ TECHNICAL DATA

Type	IR-ILL
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Illuminating Comp.)	1.2kg
Fuze	TSQ
Primary ignition cartridge	M547
Increment charge 1 to 6	M546

+ 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
Alternative packaging available on request

Gross weight (container)	40kg
Dimension ext (container)	970x400x185mm
Gross weight (complete pallet)	635kg
Dimension ext (complete pallet)	1,200x1,000x1,070mm

UN Classification: 1.2 G UN 0171

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.

+ STATUS

Qualified

+ TECHNICAL DATA

Type	IR-ILL
Caliber	120mm
Round mass (nominal)	15.5kg
Round length	800mm
Projectile filling (Illuminating Comp.)	1.2kg
Fuze	TSQ
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Supplementary charge 7S (for NEMO)	M553

+ 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)	21kg
Dimension ext (container)	980x180x180mm
Gross weight (complete pallet)	590kg
Dimension ext (complete pallet)	1,200x1,000x1,020mm

UN Classification: 1.2 G UN 0171

120mm MORTAR BOMB HE-PD

TECHNICAL DATA

Type	HE
Caliber	120mm
Bomb mass (nominal)	13kg
Bomb length (nominal)	658mm
Fuze mass (nominal)	0.208kg
Bomb length without fuze (nominal)	598mm
Bomb filling (nominal)	2.5kg TNT
Fuze	Point detonating
Propellant	Max 7 propellant increments

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

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.

STATUS

In service

120mm MORTAR BOMB TP

TECHNICAL DATA

Type	TP
Caliber	120mm
Bomb mass (nominal)	13kg
Bomb length (nominal)	658mm
Bomb length without fuze (nominal)	598mm
Fuze	Dummy fuze
Propellant	Max 7 propellant increments

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

MISSION

This mortar bomb is designed to be used for training. It has the same balistic, 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.
Horse-shoe increments fitted around the tail.
The maximum number of propellant increments depends on the mortar model.

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

+ TECHNICAL DATA

Type	HE
Caliber	81mm
Round mass (nominal)	4.2kg
Round length	510mm
Projectile filling (Comp. B)	0.8kg
Fuze	PD
Primary ignition cartridge	M563
Charge increments *	2 or 4 increments type – M565
Supercharge **	1 increment type – M565

*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
Lethal radius	>22m
Operational temperature	-32°C to +62°C

+ PACKAGING

3 rounds per container, 36 containers per pallet
UN Classification: 1.1 E UN 0006

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

+ TECHNICAL DATA

Type	HE-IM
Caliber	81mm
Round mass (nominal)	4.2kg
Round length	510mm
Projectile filling (Comp. B)	0.8kg
Fuze	PD
Primary ignition cartridge	M563
Charge increments *	2 or 4 increments type – M565
Supercharge **	1 increment type – M565

*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
Lethal radius	>22m
Operational temperature	-32°C to +62°C

+ PACKAGING

2 rounds per reusable waterproof polymer container 3 containers per transit wooden box 8 wooden boxes per pallet	
Gross weight (container)	46kg
Dimension ext (container)	780x400x300mm
Gross weight (complete pallet)	410kg
Dimension ext (complete pallet)	1,550x800x720mm
UN Classification: Under qualification	

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).

+ STATUS

In service

+ TECHNICAL DATA

Type	SMK(WP)
Caliber	81mm
Round mass (nominal)	4.3kg
Round length	510mm
Projectile filling (White Phosphorus)	650g
Fuze	PD
Primary ignition cartridge	M563
Charge increments *	2 or 4 increments type – M565
Supercharge **	1 increment type – M565

*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 H UN 0243

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).

+ STATUS

In service

+ TECHNICAL DATA

Type	Illuminating
Caliber	81mm
Round mass (nominal)	4.4kg
Round length	630mm
Projectile filling (Illuminating Comp)	700g
Fuze	TSQ
Primary ignition cartridge	M564
Charge increments *	2 or 4 increments type – M566
Supercharge **	1 increment type – M566

*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 4,050m
Brust height	600m
Descent rate	4m/s
Illuminated rate	Period: approx. 55s Intensity: 600000cd
Operational temperature	-32˚C to +62˚C

+ PACKAGING

3 rounds per container, 36 containers per pallet

Gross weight (container)	18kg
Dimension ext (container)	710x330x120mm
Gross weight (complete pallet)	675kg
Dimension ext (complete pallet)	1,400x1,000x840mm
UN Classification: 1.3 G UN 0254	

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.

+ STATUS

In development

+ TECHNICAL DATA

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

*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 4,050m
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

Gross weight (container)	18kg
Dimension ext (container)	710x330x120mm
Gross weight (complete pallet)	675kg
Dimension ext (complete pallet)	1,400x1,000x840mm
UN Classification: 1.3 G UN 0254	

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.

+ STATUS

In service

+ TECHNICAL DATA

Type	HE-TP
Caliber	81mm
Round mass (nominal)	4.2kg
Round length	513mm
Projectile filling	Inert
Fuze	PD
Primary ignition cartridge	M564
Charge increments *	2 or 4 increments type – M565
Supercharge **	1 increment type – M565

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

+ PERFORMANCES

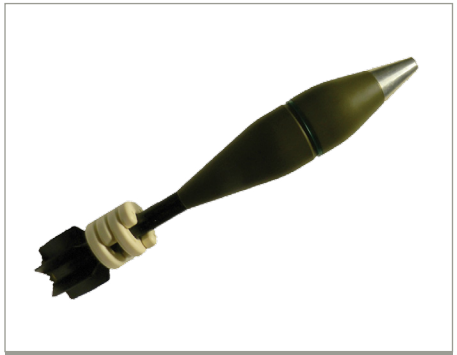
Range (low pressure mortar)	100 to 2,500m
Range (medium pressure mortar)	100 to 4,500m
Range (high pressure mortar)	100 to 5,500m
Operational temperature	-32°C to +62°C

+ PACKAGING

3 rounds per container, 36 containers per pallet

UN Classification: 1.2 C UN 0328

81mm MORTAR BOMB HE



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

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

81mm MORTAR BOMB ILL

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

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

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

81mm MORTAR BOMB ILL SIL447

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 G UN 0171

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

81mm MORTAR BOMB IR-ILL

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 G UN 0171

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

60mm MORTAR HE LR

M710

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

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

60mm MORTAR SMK(WP)

M711

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

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

60mm MORTAR ILL
M712

TECHNICAL DATA

Type	ILL
Caliber	60mm
Round mass (nominal)	1.9kg
Round length	390mm
Projectile filling	Parachute, illuminating flare
Fuze	MTSQ
Primary ignition cartridge	M705
Charge increments	2 or 4 horseshoes - M706

PERFORMANCES

Muzzle safety	>40m
Range (Charge 0-4 in M224)	70 to 3,500m
Range (Charge 0-2 in M19)	70 to 2,150m
Burst height	500m
Descent rate	4m/sec
Illuminated rate - period	30s
Illuminated rate - intensity	400,000cd
Operational temperature	-32°C to +62°C

PACKAGING

1 round per container, 2 containers per wooden box

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

FB652

TECHNICAL DATA

Type	Mechanical fuze
Caliber	60mm, 81mm, 120mm ILL Mortar Bombs
Fuze mass (nominal)	210g
Fuze length (nominal)	120mm (overall 248mm)
Booster charge mass (nominal)	3g of black powder
Power supply	Mechanical energy

PERFORMANCES

Functions	Time
Mechanical safety distance	1s
Minimum operating distance	6s
Operational temperature	-46°C to +63°C

PACKAGING

50 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

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 higly accurate clockwork mechanism, which can be setted 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 armament.
The fuze features a standard 1.5” thread in accordance to the figure 5 of Mil-Std-333.

STATUS
In service

120mm HE F1

120mm AMMUNITION FOR NATO GUNS

+ TECHNICAL DATA

Type	High explosive ammunition
Caliber	120mm
Round mass	27kg
Round length	945mm
Projectile mass	16.8kg
Propellant	Single Base
Cartridge case	Combustible
Fuze	Point detonating Super Quick, 2 independentsafety devices compliant with STANAG 4187
Primer	Semi-combustible, Electrical primer
Projectile type	HE SQ
Explosive mass	3kg
Type of explosive	Compo B

+ PERFORMANCES

Range	4,000m
Muzzle velocity (+21°C)	1,050m/s (52 cal.)
Precision/Dispersion	<0,35mil @ 2,500m
Operational temperature	-31°C to +51°C

+ PACKAGING

Box	Plastic container

+ MISSION

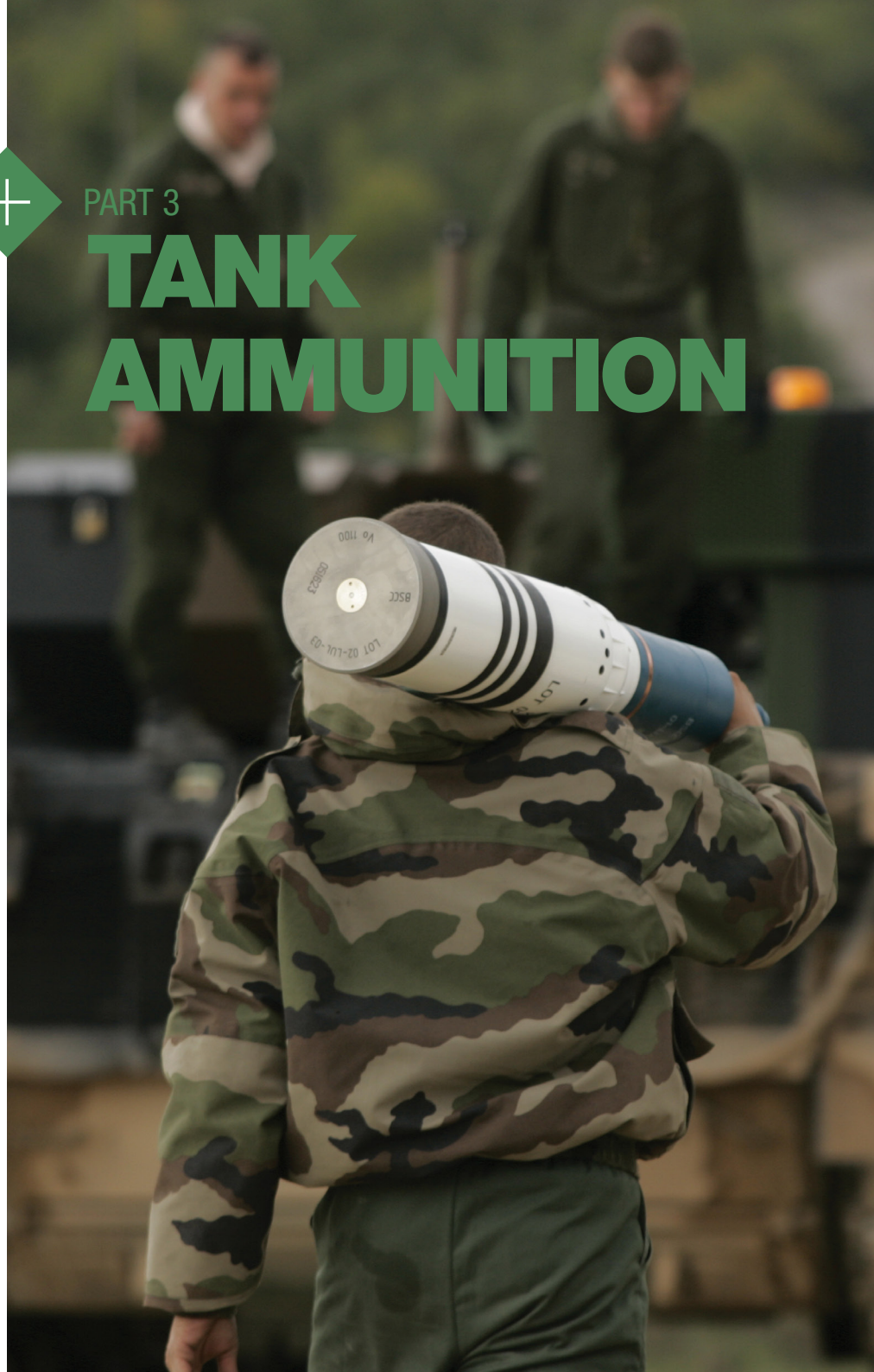
The 120mm HE F1 belongs to an ammunition family complying with STANAG 4385 and Mopi AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other MBTs fitted a 120mm smoothbore gun. The 120mm HE F1 is designed to defeat reinforced concrete structures, 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.

+ STATUS

In service



FB650

TECHNICAL DATA

Type	Mechanical time fuze
Caliber	60mm, 81mm, 120mm ILL Mortar Bombs
Fuze mass (nominal)	210g
Fuze length (nominal)	120mm (overall 248mm)
Booster charge mass (nominal)	3g of black powder
Power supply	Mechanical energy

PERFORMANCES

Functions	Time
Mechanical safety distance	1s
Minimum operating distance	6s
Operational temperature	-46°C to +63°C

PACKAGING

50 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

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 higly accurate clockwork mechanism, which can be setted 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 to the figure 5 of Mil-Std-333.

STATUS

In service

120mm HE IM3M

120mm AMMUNITION FOR NATO GUNS

TECHNICAL DATA

Type	High explosive ammunition, Multimode ammunition
Caliber	120mm
Round mass	28kg
Round length	945mm
Projectile mass	18kg
Propellant	Insensitive (LOVA)
Cartridge case	Combustible
Fuze	Multimode Base Detonating and Programmable
Fuze modes	Super Quick - Delay - Airburst, Compliant with STANAG 4187
Primer	Semi-combustible, Electrical primer
Projectile filling	HE IM
Projectile type	IM HE, SQ/AB/Delay
Type of explosive	Insensitive HE, composition "XF

PERFORMANCES

Range	4,000m
Muzzle velocity (+21°C)	1,050m/s (52 cal.)
Precision/Dispersion	<0,35mil @ 2,500m
Operational temperature	-31°C to +51°C

PACKAGING

Box	Plastic container

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 120mmHE 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

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

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 vehicules 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

120mm CAN

120mm AMMUNITION FOR NATO GUNS

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

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

120mm HEAT-TP F1A

120mm AMMUNITION FOR NATO GUNS

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

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.

STATUS

In service

120mm APFSDS-TP

120mm AMMUNITION FOR NATO GUNS

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

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 MBT's 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.

STATUS

In service

115mm TK APFSDS-T

M1150

+ 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.

+ STATUS

In service

+ TECHNICAL DATA

Type	Fixed round APFSDS-T
Caliber	115mm
Round mass (nominal)	25kg
Round length	1,110mm
Projectile mass (nominal)	6.5kg
Penetrator	Tungsten alloy
Tracer	M21
Anti-wear additive	Titanium dioxide
Cartridge case	Brass
Primer	Percussion cap M61
Propellant (nominal)	8.5kg

+ 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 wooden box

12 wooden boxes per pallet

UN Classification: 1.2 C UN 0328

105mm TK SMK (WP)-T

M416A1

+ 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.

+ STATUS

In service

+ TECHNICAL DATA

Type	Fixed round SMK(WP)-T
Caliber	105mm
Round mass (nominal)	20.9kg
Round length	940mm
Projectile mass (nominal)	11.6kg
Projectile filling (White Phosphorus)	2.6kg
Fuze - BD	M10504
Tracer	M12
Cartridge case	Brass
Primer	Electric cap M120
Propellant SB (nominal)	3.3kg
NSN	1315-00-901-4921

+ 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

105mm TK HESH-TP-T

M467A1-E

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)	2.9kg

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

MISSION

For use with 105mm US M68, UK L7 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 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 multiperforated bagged type propelling charge. This round is based on the MECAR M467A1 round, that was type classified by the US Army.

STATUS

In service

105mm TK HE

M1010

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

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

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

Type	Fixed round, HEP-IM-T (HESH-IM-T)
Caliber	105mm
Round mass (nominal)	20.9kg
Round length	940mm
Projectile mass (nominal)	11.5kg
Projectile filling (P16945)	3.3kg
Fuze - BD	M10503
Tracer	M12
Cartridge case	Brass
Primer	Electric cap M120
Propellan (SB) (nominal)	2.9kg

+ 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

2 rounds per twin container, 12 containers per pallet	
Gross weight (twin container)	53kg
Dimension ext (twin container)	1,100x410x200mm
Gross weight (complete pallet)	710kg
Dimension ext (complete pallet)	1,220x1,095x910mm
UN Classification: Under qualification	

+ 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.

+ STATUS

In service

+ TECHNICAL DATA

Type	Fixed round HESH-T(HEP-T)
Caliber	105mm
Round mass (nominal)	20.6kg
Round length	940mm
Projectile mass (nominal)	11.2kg
Projectile filling (Comp B)	3.0kg
Fuze - BD	M10503
Tracer	M12
Cartridge case	Brass
Primer	Electric cap M120
Propellant SB (nominal)	2.9kg
NSN	1315-00-728-0704

+ 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

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

105mm TK HEAT-TP-T

M490A1

TECHNICAL DATA

Type	Fixed round HEAT-TP-T
Caliber	105mm
Round mass (nominal)	22.2kg
Round length	995mm
Projectile mass (nominal)	10.5kg
Projectile	Inert
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
Operational temperature	-32°C to +52°C

PACKAGING

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

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

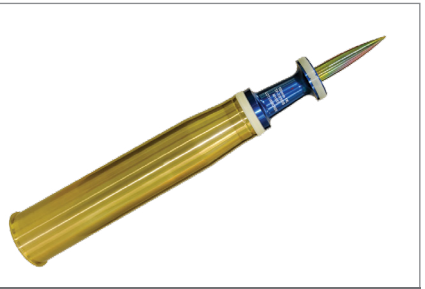
This round is similar in appearance and ballistically to the MECAR M1061A1 and to the US M456 Series service rounds. The inert, steel bodied projectile is fitted with a polymer obturating band, a steel standoff spike, a tail fin assembly and a tracer. The projectile is assembled to a brass cartridge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

STATUS

In service

105mm TK TPFSDS-T

M1056



TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	105mm
Round mass (nominal)	17.5kg
Round length	962mm
Projectile mass (nominal)	5.2kg
Projectile	Steel
Tracer	M13
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Electric cap M120
Propellant (nominal)	5.6kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,505m/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

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

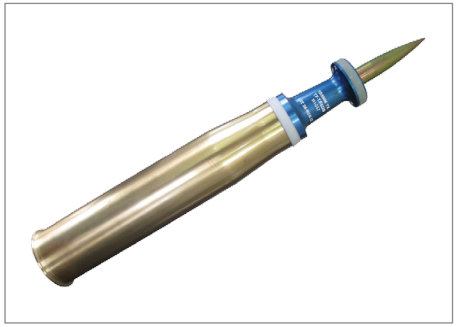
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a fin stabilized steel rod and a tracer assembled in the fin assembly.
The sub-projectile is contained in a 3-piece aluminium Discarding Sabot, held in place with a polymer band at the forward end and a polymer obturating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

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 anelectric 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

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

+ PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,475m/s*
Dispersion	0.3 mil
Maximum range	<10km
Operational temperature	-32°C to +52°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

Type	Fixed round APFSDS-T
Caliber	105mm
Round mass (nominal)	18.5kg
Round length	990mm
Projectile mass (nominal)	6.2kg
Penetrator	Tungsten alloy
Tracer	M21
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Electric cap M83
Propellant (nominal)	5.9kg

+ 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 +52°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.

+ STATUS

In service

+ 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

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 filled 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.

+ STATUS

In service

+ 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

105mm TK CANISTER

M1204

TECHNICAL DATA

Type	Fixed round Canister
Caliber	105mm
Round mass (nominal)	19.5kg
Round length	880mm
Projectile mass (nominal)	8.3kg
Fragments (Ø11mm steel spheres)	+/- 1,130 spheres
Fragments weight	6.3kg
Anti-wear additive	Titanium dioxide
Primer	Electric cap M120
Propellant TB (nominal)	5.1kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,173m/s
Effective range	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

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)	5.45kg

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	-40°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)

TECHNICAL DATA

Type	Fixed round HEP-T (HESH-T)
Caliber	105mm
Round mass (nominal)	20.5kg
Round length	938mm
Projectile mass (nominal)	11.35kg
Projectile filling (Comp A3)	3.0kg
Fuze	BD
Tracer	M12
Cartridge case	Brass
Primer	Electric
Propellant SB (nominal)	2.7kg

PERFORMANCES

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

PACKAGING

1 round per fiber container, 2 containers per wooden box

UN Classification: 1.1E UN 0006

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

105mm L51 TP-T

TECHNICAL DATA

Type	Fixed round TP-T
Caliber	105mm
Round mass (nominal)	21.5kg
Round length	999mm
Projectile mass (nominal)	10.25kg
Projectile filling	Inert
Tracer	M13
Cartridge case	Brass
Primer	Electric
Propellant TB (nominal)	5.44kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,125m/s
Dispersion	0.3 mil
Maximum range	8,200m
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

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

105mm HE F3B

105mm AMMUNITION FOR AMX-10 RC GUN

TECHNICAL DATA

Type	Combat
Caliber	105mm
Round mass	14.2kg
Round length	892mm
Projectile mass	7.2kg
Projectile filling	High Explosive
Projectile type	HE
Explosive mass	1.7kg
Type of explosive	HT
Cartridge case	Brass
Propellant	Double base
Type of fuze	Point detonating, Super Quick
Primer	Electrical primer

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	800m/s
Range	>3,000m
Precision/dispersion	<0.40mil
Safety distance	12m
Operational temperature	-31°C to 51°C

PACKAGING

Box	Plastic container

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.

STATUS

In service

105mm HEAT F3B

105mm AMMUNITION FOR AMX-10 RC GUN

TECHNICAL DATA

Type	Combat
Caliber	105mm
Round mass	13.7kg
Round length	842mm
Projectile mass	5.7kg
Projectile filling	Shaped charge
Projectile type	HEAT
Explosive mass	0.9kg
Type of explosive	HT
Cartridge case	Brass
Propellant	Single base
Type of fuze	Point detonating, base fuze
Primer	Electrical primer

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

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.

STATUS

In service

105mm APFSDS F3

105mm AMMUNITION FOR AMX-10 RC GUN

+ TECHNICAL DATA

Type	Combat
Caliber	105mm
Round mass	13kg
Round length	884mm
Projectile mass	3.8kg
Projectile type	Tungsten penetrator
Cartridge case	Steel
Propellant	Single base
Prime	Electrical primer

+ PERFORMANCES

Muzzle velocity (at + 21°C) (nominal)	1,400m/s
Range	>2,000m
Precision/dispersion	<0,25mil
Operational temperature	-31°C to + 51°C

+ PACKAGING

Box	Plastic container

+ 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

105mm HEAT-TP F3A

105mm AMMUNITION FOR AMX-10 RC GUN

+ TECHNICAL DATA

Type	Combat
Caliber	105mm
Round mass	13.7kg
Round length	842mm
Projectile mass	5.7kg
Projectile filling	Inert
Projectile type	HEAT-TP
Cartridge case	Brass
Propellant	Single base
Primer	Electrical primer

+ PERFORMANCES

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

+ PACKAGING

Box	Plastic container

+ 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

100mm TK APFSDS-T

M1000A1

TECHNICAL DATA

Type	Fixed round APFSDS-T
Caliber	100mm
Round mass (nominal)	21kg
Round length	1064mm
Projectile mass (nominal)	5.0kg
Penetrator	Tungsten alloy
Tracer	M21
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Percussion cap
Propellant tb (nominal)	8kg

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

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 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 mechanical primer and a wear reducing liner.

STATUS

Qualified

90mm MK8 APFSDS-T

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 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 a wear reducing liner.
The round has been US Army Safety Certified in December 2002.

STATUS

In service

TECHNICAL DATA

Type	Fixed round APFSDS-T
Caliber	90mm
Round mass (nominal)	12.5kg
Round length	977mm
Projectile mass (nominal)	3.6kg
Penetrator	Tungsten alloy
Tracer	M21
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Percussion cap M61
Propellant (nominal)	3.4kg

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

90mm MK8 HESH-IM-T

M691B2

+ 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).

+ STATUS

Qualified

+ TECHNICAL DATA

Type	Fixed round, HESH-IM-T
Caliber	90mm
Round mass (nominal)	14.7kg
Round length	948mm
Projectile mass (nominal)	8.0kg
Projectile filling (P16945)	2.2kg
Fuze	BD/Graze
Tracer	M12
Cartridge case	Brass
Primer	Percussion cap M61
Propellan (SB) (nominal)	1.8kg

+ 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	
Gross weight (twin container)	40kg
Dimension ext (twin container)	1100x410x200mm
Gross weight (complete pallet)	520kg
Dimension ext (complete pallet)	1220x1100x910mm
UN Classification: Under qualification	

90mm MK8 HESH-T

M691A2

+ 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.

+ STATUS

In service

+ TECHNICAL DATA

Type	Fixed round HESH-T
Caliber	90mm
Round mass (nominal)	14.4kg
Round length	948mm
Projectile mass (nominal)	7.7kg
Projectile filling (comp A3)	1.9kg
Fuze	BD/Graze
Tracer	M12
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.8kg

+ 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

90mm MK8 HESH-TP-T

M692A2

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

MISSION

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

DESCRIPTION

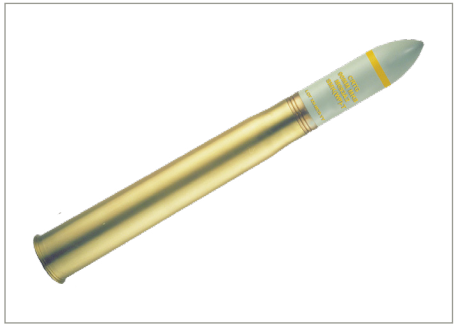
This round is similar in appearance and ballistically similar to the HESH-T M691A2 service round. The projectile comprises a steel cylindrical body fitted with a driving band, and a base plug to which is secured a tracer. The projectile is assembled to a brass cartridge case loaded with a cool burning,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

STATUS

In service

90mm MK8 SMK(WP)-T

M693A2



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

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.

STATUS

In service

90mm MK8 TPFSDS-T

M697A1

TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	90mm
Round mass (nominal)	11.5kg
Round length	956mm
Projectile mass (nominal)	3.2kg
Penetrator	Steel
Tracer	M24
Cartridge case	Brass
Wear reducing liner	Titanium dioxide
Primer	Percussion cap M61
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

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.

STATUS

In service

90mm MK3 HE-T

M616

TECHNICAL DATA

Type	Fixed round HE-T
Caliber	90mm
Round mass (nominal)	9.0kg
Round length	611mm
Projectile mass (nominal)	5.1kg
Projectile filling (Comp B)	1.1kg
Fuze	PDM
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	800mm
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

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.

STATUS

In service

90mm MK3 HE-T

M616A1

TECHNICAL DATA

Type	Fixed round HE-T
Caliber	90mm
Round mass (nominal)	9.0kg
Round length	611mm
Projectile mass (nominal)	5.1kg
Projectile filling (Comp B)	1.1kg
Fuze	EPD
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: 1.1 E UN 0006

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 mechamisms 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.

STATUS

In service

90mm MK3 SMK(WP)-T

M618A1

TECHNICAL DATA

Type	Fixed round SMK(WP)-T
Caliber	90mm
Round mass (nominal)	9.1kg
Round length	623mm
Projectile mass (nominal)	5.3kg
Projectile filling (White Phosphorus)	0.9kg
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
12 containers per pallet
UN Classification: 1.2 H UN 0243

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.

STATUS

In service

90mm MK3 HEAT-T

M620A1

TECHNICAL DATA

Type	Fixed round HEAT-T
Caliber	90mm
Round mass (nominal)	8.4kg
Round length	685mm
Projectile mass (nominal)	4.1kg
Projectile filling (Octol)	560g
Fuze	Electronic PIBD
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.4kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	890m/s
Dispersion	0.5 mil
Effective range	1,500m
Penetration	250mm RHA
Operational temperature	-32°C to +52°C

PACKAGING

2 rounds per twin container

18 containers per pallet

UN Classification: 1.1 E UN 0006

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.

STATUS

In service

90mm MK3 HEAT-TP-T

M623A2

TECHNICAL DATA

Type	Fixed round HEAT-TP-T
Caliber	90mm
Round mass (nominal)	8.4kg
Round length	667mm
Projectile mass (nominal)	4.1kg
Projectile	Inert
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.4kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	890m/s
Dispersion	0.5 mil
Effective range	1,500m
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 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.

STATUS

In service

90mm MK3 HESH-T

M625A1

+ 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

+ 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

90mm MK3 HE-TP-T

M637A1

+ TECHNICAL DATA

Type	Fixed round HE-TP-T
Caliber	90mm
Round mass (nominal)	9.0kg
Round length	611mm
Projectile mass (nominal)	5.1kg
Projectile	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

+ 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 inservice HE-T M616A1 round.

+ STATUS

In service

TD 20-90
M640 SERIES

▲ Technical data

+ 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

+ 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 mount 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

90mm MK3 APFSDS-T
M652A1

+ MISSION
For use with current in-service 90mm Cockerill MKIII MA1 guns and similarly equipped ENGESA 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

+ TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	90mm
Round mass (nominal)	7.2kg
Round length	650mm
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 mil
Penetration (60° obliquity)	100mm RHA
Operational range	>1,500m
Operational temperature	-32°C to +52°C

+ PACKAGING

2 rounds per twin container

18 containers per pallet

UN Classification: 1.2 C UN 0328

90mm MK3 HESH-TP-T

M655

TECHNICAL DATA

Type	Fixed round HESH-TP-T
Caliber	90mm
Round mass (nominal)	8.2kg
Round length	600mm
Projectile mass (nominal)	4.3kg
Projectile filling	Inert
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.2kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	800m/s
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

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

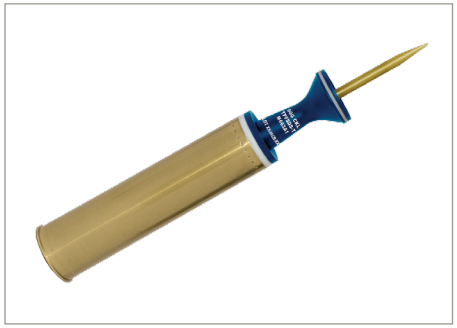
This round is similar in appearance and ballistically similar to the HESH-T M625A1 service round. The projectile consists of an inert body with a driving band, a relatively short ogive and a base plug to which is secured the tracer. The projectile is assembled to a brass cartridge case which is loaded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

STATUS

In service

90mm MK3 TPFSDS-T

M663A1



TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	90mm
Round mass (nominal)	7.1kg
Round length	665mm
Projectile mass (nominal)	2.4kg
Penetrator	Steel
Tracer	M21
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Percussion cap M61
Propellant (nominal)	1.7kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,210m/s
Dispersion	0.3 mil
Operational range	>1,500m
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 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

90mm F3/F4 SMK(WP)-T

M667

TECHNICAL DATA

Type	Fixed round SMK(WP)-T
Caliber	90mm
Round mass (nominal)	10.7kg
Round length	857mm
Projective filling (White Phosphorus)	0.9kg
Projectile mass (nominal)	5.2kg
Tracer	M22
Cartridge case	Brass
Primer	Percussion cap M61
Propellant DB (nominal)	1.6kg

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

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 fitte with a mechanical primer. Ballistically similar to the HE-T M678 round.

STATUS

In service

90mm F4 APFSDS-T

M669A1

TECHNICAL DATA

Type	Fixed round APFSDS-T
Caliber	90mm
Round mass (nominal)	10.5kg
Round length	947mm
Projectile mass (nominal)	3.7kg
Penetrator	Tungsten Alloy
Tracer	M21
Cartridge case	Brass
Primer	Percussion cap M61
Propellant (nominal)	2.8kg

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

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 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

In service

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

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	766m/s
Dispersion	0.5 mil
Operational range	910m
Effective range	2,000m
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 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.

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.

STATUS

In service

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
Projectile filling (Octol)	600g
Fuze	PIBD
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.1kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	962m/s
Dispersion	0.5 mil
Effective range	2,000m
Penetration (RHA at 0°obliquity)	250mm
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 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 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 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.

STATUS

In service

90mm F4 TPFSDS-T

M698

TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	90mm
Round mass (nominal)	10.3kg
Round length	944mm
Projectile 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

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.

STATUS

In service

90mm F3/F4 HEAT-TP-T

M699

TECHNICAL DATA

Type	Fixed round HEAT-TP-T
Caliber	90mm
Round mass (nominal)	9.8kg
Round length	902mm
Projectile mass (nominal)	4.1kg
Projectile	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

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.

STATUS

In service

90mm F1 HEAT-T
M630

TECHNICAL DATA

Type	Fixed round HEAT-T
Caliber	90mm
Round mass (nominal)	8.4kg
Round length	690mm
Projectile mass (nominal)	4.2kg
Projective filling (Octol)	0.6kg
Fuze	PIBD
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant (nominal)	1.3kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	750m/s
Dispersion	0.5 mil
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

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.

STATUS
In service

90mm F1 HE-T
M631

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	PDM
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 mil
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

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.

STATUS
In service

90mm F1 HE-T

M631A1

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 mil
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

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.

STATUS

In service

90mm F1 SMK (WP)-T

M632A1

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 mil
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

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.

STATUS

In service

90mm F1 HEAT-TP-T

M653

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

MISSION

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

DESCRIPTION

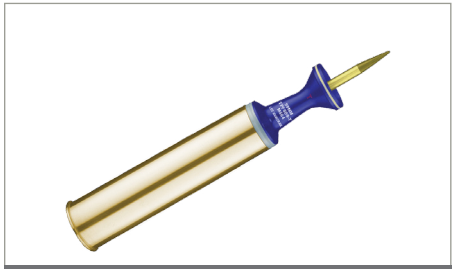
A High Explosive Anti-Tank Training Practice round, with an inert warhead, and fitted with a tail fin assembly and tracer. It is mounted on a brass cartridge case, uses single base propellant and is fitted with a mechanical primer. The round is designed to match the ballistics of the in-service HEAT-T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

STATUS

In service

90mm F1 TPFSDS-T

M664



TECHNICAL DATA

Type	Fixed round TPFSDS-T
Caliber	90mm
Round mass (nominal)	6.8kg
Round length	665m
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

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

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.

+ STATUS

In service

+ 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 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: 1.1 E UN 0006

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.

+ STATUS

In service

+ 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 mil
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

76mm HESH-TP-T

M331

TECHNICAL DATA

Type	Fixed round, HESH-TP-T
Caliber	76mm
Round mass (nominal)	7.7kg
Round length	540mm
Projectile mass (nominal)	5.6kg
Projectile	Inert
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 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

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

76mm CANISTER

M333

TECHNICAL DATA

Type	Fixed round, Canister
Caliber	76mm
Round mass (nominal)	7.7kg
Round length	530mm
Projectile mass (nominal)	5.6kg
Fragments (Ø 13/32'steel spheres)	+/- 800 spheres
Fragments weight	4kg
Cartridge case	Brass
Primer	Percussion cap
Propellant SB (nominal)	0.7kg

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

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 propellant and is fitted with a mechanical primer.

STATUS

In service

76mm BLANK
M335

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

PERFORMANCES

Operational temperature	-32°C to +62°C

PACKAGING

5 rounds per twin container

35 containers per pallet

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.

STATUS

In service

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 signalling.

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.

STATUS

Qualified

TECHNICAL DATA

Type	Fixed round, SMK (WP)-T
Caliber	76mm
Round mass (nominal)	7.7kg
Round length	535mm
Projectile mass (nominal)	5.6kg
Projective 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 mil
Range, Direct Fire	2,400m
Range, Indirect Fire	6,000m
Operational temperature	-32°C to +62°C

PACKAGING

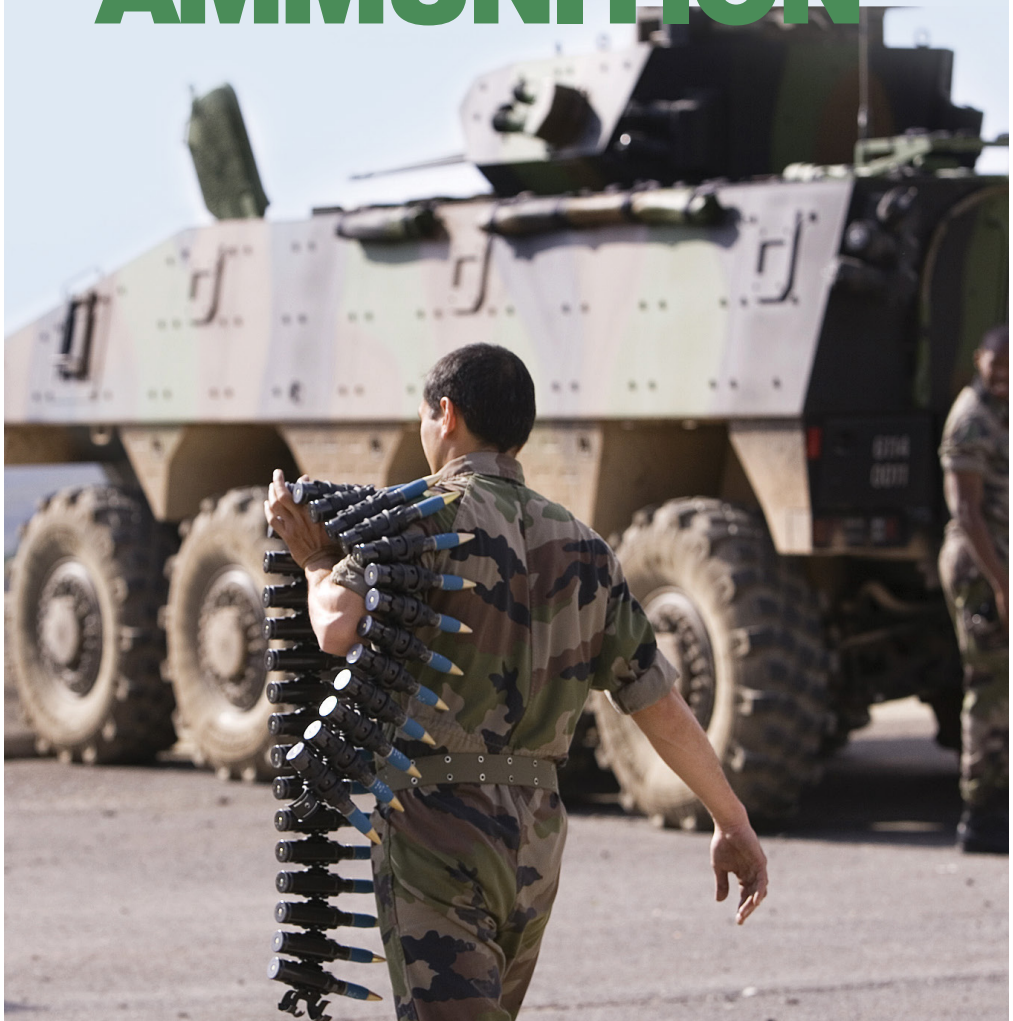
2 rounds per twin container

36 containers per pallet

UN Classification: 1.2 H UN 0245

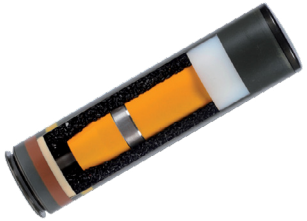
PART 4

MEDIUM CALIBER AMMUNITION



40mm GPR-PD-T

40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)



TECHNICAL DATA

Type	General Purpose Round - Point Detonating - Tracer (GPR-PD-T)
Caliber	40mm
Cartridge weight	~2,400g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	980g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Fuze	MR4015 Muzzle safety ≥ 15m
Explosive IM XP	~115g (insensitive high explosive)
Propellant	single base ~340 g

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)	≥ 3.4s

PACKAGING

Box	Metallic box M548

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 surpression 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.

STATUS

Under qualification

40mm APFSDS-T

40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)

TECHNICAL DATA

Type	Armor Piercing Fin Stabilised Discarding Sabot-Tracer (GPR-PD-T)
Caliber	40mm
Cartridge weight	~1,900g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	550g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~525g IM propellant

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 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 :

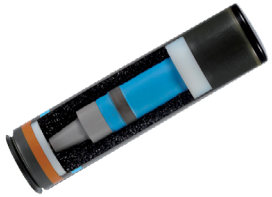
- a steel cartridge case,
- a mechanical primer,
- a propellant load,
- an inert penetrator in tungsten alloy,
- a discarding sabot,
- a day/night tracer.

STATUS

Qualified

40mm GPR-AB-T

40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)



TECHNICAL DATA

Type	General Purpose Round Airburst -Tracer (GPR-AB-T)
Caliber	40mm
Cartridge weight	~2,400g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	980g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Fuze	40 GPR AB (dual mode point detonating and airburst) Muzzle safety ≥ 15m
Explosive IM XP	~115g (insensitive high explosive) IM Stanag 4439 compliant
Propellant	~350g

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

MISSION

The 40mm ammunition is intended for use in the 40mm CTAS weapon.
The General Purpose Round - Airburst - Tracer (GPRAB-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 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

40mm TP-T OR 40mm BOAT

40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)

TECHNICAL DATA

Type	Target Practice – Tracer (TP-T)
Caliber	40mm
Cartridge weight	~2,400g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	980g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~350g

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

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 GPRAB-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

40mm TPRR-T

40mm CASED TELESCOPED ARMAMENT SYSTEM (CTAS)

TECHNICAL DATA

Type	Target Practice Reduced Range Tracer (TPRR-T)
Caliber	40mm
Cartridge weight	~1,900g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	730g
Cartridge case	Plastic
Primer	Mechanical
Propellant	~250g

PERFORMANCES

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

PACKAGING

Box	Metallic box M548

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

30mm X 173 APFSDS-T

M928

MISSION

This ammunition is intended for use against armored targets and can defeat multi plate spaced armour 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

Type	Fixed round, APFSDS-T
Caliber	30mm
Round mass (nominal)	530g*- 695g**
Round length	290mm
Projectile mass (nominal)	220g
Penetrator	Tungsten Alloy Cobalt Free
Tracer	2.5s
Cartridge case	Aluminium*/Steel**
Primer	Percussion cap
Propellant ECL (nominal)	165g

PERFORMANCES

Muzzle velocity at 21° (nominal)	1,430m/s
Penetration at 1,000m	>60mm RHA steel at 60° obliquity
Dispersion	<0.44 mil
Operational temperature	-32°C to +62°C

*Bushmaster II MK 44 gun & GI-30 gun
**MK 30-2 gun

PACKAGING

As per customer requirements

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 1000 metres. It has a maximum range of less than 3700 metres.

CHARACTERISTICS

Type	Fixed round, TPFSDS-T
Caliber	30mm
Round mass (nominal)	500g*- 660g**
Round length	290mm
Projectile mass (nominal)	195g
Penetrator	Steel
Tracer	1s
Cartridge case	Aluminium*/Steel**
Primer	Percussion cap
Propellant (ECL) (nominal)	155g

*Bushmaster II MK 44 gun & GI-30 gun
**MK 30-2 gun

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1470m/s
Maximum range	≈ 3700m
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)	470x220x355mm
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.

Gross weight (metal container)	35kg
Dimension ext (metal container)	470x220x355mm
Gross weight (complete pallet)	635kg
Dimension ext (complete pallet)	1100x1000x900mm
UN Classification : 1.2 C UN 0328	

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.

+ STATUS

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

+ 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

30mm X 150 SAPHEI

30M791 WEAPON AMMUNITION

+ MISSION

The 30mm x 150 ammunition is intended for use in the 30M791 automatic weapon fitted to Rafale aircraft.
This ammunition have 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

+ TECHNICAL DATA

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

+ 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 870°C fire for 3mn without any pyrotechnical reaction. It ensures the non-transmission through influence in case of an unexpected detonation.

30mm X 150 TP

30M791 WEAPON AMMUNITION

+ MISSION

The 30mm x 150 ammunition is intended for use in the 30M791 automatic weapon fitted to Rafale aircraft.
This ammunition have 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,
- an inert shell fitted with a sintered-iron driving band.

+ STATUS

In service

+ TECHNICAL DATA

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

+ PERFORMANCES

Initial velocity	1,025 m/s
Operationnal 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

+ TECHNICAL DATA

Type	Semi Armour Piercing High Explosive Incendiary (SAPHEI) F7670 type
Caliber	30mm
Cartridge weight	~490g
Cartridge length	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - type 52N92
Propellant	~50g
Explosive	~16g
Fuze	MR3005 Safety distance: ≥20m Self-destruction: 6 to 15s
Link	F51

+ PERFORMANCES

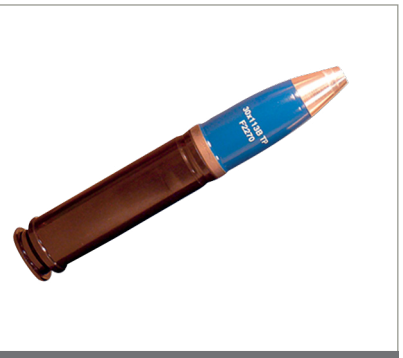
Initial velocity	775m/s
Operationnal use	Up to 2,000m
Accuracy	H + L ≤ 50cm at 100m
Perforation RHA (thickness/angle/distance)	15mm/45°/200m

+ PACKAGING

Box	CMC300 or CMC30 Metallic box

30mm X 113B TP

DEFA 30mm WEAPON AMMUNITION



+ TECHNICAL DATA

Type	Target Practice (TP) - F2270 type
Caliber	30mm
Cartridge weight	~490g
Cartridge length	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - type 52N92
Propellant	~50g
Link	F51

+ PERFORMANCES

Initial velocity	775m/s
Operationnal use	Up to 2,000m
Accuracy	H + L ≤ 50cm at 100m

+ PACKAGING

Box	02D101 Wooden box or CMC300 or CMC30 Metallic box

+ 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

30mm X 113B TP-T

DEFA 30mm WEAPON AMMUNITION

TECHNICAL DATA

Type	Target Practice with Tracer (TP-T) F3170 type
Caliber	30mm
Cartridge weight	~455g
Cartridge length	≤ 200mm
Projectile weight	245g
Cartridge case	Steel (lacquering protection)
Primer	Electric - type 52R92
Propellant	~50g
Link	F51

PERFORMANCES

Initial velocity 795m/s	795m/s
Operationnal use	Up to 2,000m
Accuracy	H + L ≤ 50cm at 100m
Tracing duration	≥ 3s

PACKAGING

Box	02D101 Wooden box or CMC300 or CMC30 Metallic box

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

Type	Semi Armour Piercing High Explosive Incendiary (SAPHEI) F7671 type
Caliber	30mm
Cartridge weight	~490g
Cartridge length	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - M650 1A/1W
Propellant	~50g
Explosive	16g
Fuze	MR3005 Safety distance: ≥20m Self-destruction: 6 to 15s
Link	F51

PERFORMANCES

Initial velocity	775m/s
Operationnal 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 1A/1W SAPHEI-SSF

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 SSF (Super SaFe) cartridge is composed of:

- a steel cartridge case,
- an electric primer 1A/1W,
- a propellant load with LOVA characteristics,
- an shell loaded with IM explosive,
- a SD base fuze (MR3005S) equipped with two safety systems compliant with the STANAG 4187 requirements.

+ STATUS

Under development

+ TECHNICAL DATA

Type	Semi Armour Piercing High Explosive Incendiary – Super Safe (SAPHEI-SSF)
Caliber	30mm
Cartridge weight	~490g
Cartridge length	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - M650 1A/1W
LOVA Propellant	~50g
Explosive IM	16g
Fuze	MR3005S Safety distance: ≥20m Self-destruction: 6 to 15s
Link	F51

+ PERFORMANCES

Initial velocity	775m/s
Operationnal 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 1A/1W TP

MUNITION FOR DEFA F2B AND 30M781 WEAPONS

+ TECHNICAL DATA

Type	Target practice (TP) F2271 type
Caliber	30mm
Cartridge weight	~490g
Cartridge sength	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - M650 1A/1W
Propellant	~50g
Link	F51

+ PERFORMANCES

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

+ PACKAGING

Box	CMC300 or CMC30 Metallic box

+ 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 on DEFA weapon family by the French DGA, DASSAULT and AIRBUS HELICOPTERS.

+ DESCRIPTION

The 30 x 113 1A/1W 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 band.

+ STATUS

In service

30mm X 113B-ADEN HEI

MUNITION FOR ADEN 30mm WEAPONS

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 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.

STATUS

In service

30mm X 113B-ADEN TP

MUNITION FOR ADEN 30mm WEAPONS

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

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.

STATUS

In service

30mm X 113B 1A/1W HEI

30mm DEFA F2B AND 30M781 WEAPONS AMMUNITION

TECHNICAL DATA

Type	High Explosive Incendiary (HEI)
Caliber	30mm
Cartridge weight	~490g
Cartridge length	≤ 200mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric - M650 1A/1W
Propellant	~50G
Link	F51

PERFORMANCES

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

PACKAGING

Box	CMC300 or CMC30 Metallic box

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

30mm X 173 HEI-T

30mm BUSHMASTER II MK 44 AND GI-30 WEAPONS

TECHNICAL DATA

Type	High Explosive Incendiary with Tracer (HEI-T)
Caliber	30mm
Cartridge weight	~670g
Cartridge length	≤ 290mm
Projectile weight	363g
Cartridge case	Aluminum with protection
Fuze	MR 30 – Safety distance ≥ 15M
Explosive	36g
Primer	Mechanical primer
Propellant	~155g
Link	MK15

PERFORMANCES

Initial velocity	1070m/s
Maximum range	Up to 2,500m
Accuracy	S_H AND S_V ≤ 0,5 mil
Tracing duration	≥3s

PACKAGING

Box	Metallic box M548

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

+ TECHNICAL DATA

Type	Target Pratice with Tracer (TP-T)
Caliber	30mm
Cartridge weight	~670g
Cartridge length	≤ 290mm
Projectile weight	363g
Cartridge case	Aluminum with protection
Primer	Mechanical primer
Propellant	~155g
Link	MK15

+ PERFORMANCES

Initial velocity	1,070m/s
Maximum range	Up to 2,500m
Accuracy	S_H AND S_V ≤ 0,5 mil
Tracing duration	≥3s

+ PACKAGING

Box	Metallic box M548

+ 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

25mm X 137 HEI-T

25mm AUTOMATIC WEAPONS

+ TECHNICAL DATA

Type	High-Explosive Incendiary with Tracer(HEI-T)
Caliber	25mm
Cartridge weight	~500g
Cartridge length	≤220mm
Projectile weight	183g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~90g
Explosive	~27g
Fuze	MR251 Safety distance: ≥15m Self-destruction: ≥4,5 s
Link	M28

+ PERFORMANCES

Initial velocity	1,100m/s
Operational use	Up to 2,500m
Dispersion	σH and σV≤0,8 mil
Tracer duration	≥ 2,5m

+ PACKAGING

Box	Metallic box CMC30 H200

+ 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

25mm X 137 HEI-AB

25mm AUTOMATIC WEAPONS

TECHNICAL DATA

Type	High-Explosive Incendiary with Airburst (HEI-AB)
Caliber	25mm
Cartridge weight	~500g
Cartridge length	≤ 220mm
Projectile weight	183g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~90g
Explosive	~27g
Fuze	25 AB (dual mode point detonating and airburst) Safety distance: ≥15m Self-destruction: ≥4,5s
Link	M28

PERFORMANCES

Initial velocity	1,100m/s
Operational use	Up to 2,500m
Dispersion	σH and σV≤0,8 mil

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 137ammunition).
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

25mm X 137 APFSDS-T

M935A2

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

TECHNICAL DATA

Caliber	25x137mm
Round mass (nominal)	450g
Round length	223mm
Projectile mass (nominal)	130g
Penetrator	Tungsten Alloy Cobalt Free
Tracer	Min 2.4s
Cartridge Case	Steel
Propellant (nominal)	100g

PERFORMANCES

Muzzle velocity at 21° (nominal)	1,440m/s
Penetration at 1,000m (V50)	>40mm RHA at 60° obliquity
Penetration at 2,000m (V50)	>30mm RHA at 60° obliquity
Dispersion	max. 0.6 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

25mm X 137 TP-T

25mm AUTOMATIC WEAPONS

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
Operational use	Up to 2,500m
Dispersion	σH and σV ≤0.8 mil
Tracer duration	≥1,8 /S

PACKAGING

Box	Metallic box CMC30 H200

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.

STATUS

In service

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.

STATUS

In service

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	

25mm X 137 TPRR-T

25mm AMMUNITION

TECHNICAL DATA

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

PERFORMANCES

Initial velocity	1,100m/s
Operational use	1,000m
Dispersion	σH and σV≤0.8 mil
Tracer duration	≥ 1.8s

PACKAGING

Metallic box CMC30 H200

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.

STATUS

In service

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.

STATUS

In service

TECHNICAL DATA

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

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

20mm X 139 HEI

20mm AMMUNITION

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 8 s 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

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 HEI 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.

STATUS

In service

20mm X 139 HEI-T

20mm AMMUNITION

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

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 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.

STATUS

In service

20mm X 139 AP-T

20mm AMMUNITION

TECHNICAL DATA

Type	Armour Piercing with Tracer (AP-T)
Caliber	20mm
Cartridge weight	~ 305g
Cartridge length	≤ 213mm
Projectile weight	111g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~ 55g
Link	24K711

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

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

20mm X 139 TP

20mm AMMUNITION

TECHNICAL DATA

Type	Target Practice (TP)
Caliber	20mm
Cartridge weight	~ 315g
Cartridge length	≤ 213mm
Projectile weight	120g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~ 55g
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

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

20mm X 139 TP-T

20mm AMMUNITION

TECHNICAL DATA

Type	Target Practice with Tracer (TP-T)
Caliber	20mm
Cartridge weight	~ 315g
Cartridge length	≤ 213mm
Projectile weight	120g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Propellant	~ 55g
Link	24K711

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

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-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

20mm X 102 HEI

20mm AMMUNITION

TECHNICAL DATA

Type	High-Explosive Incendiary (HEI)
Caliber	20mm
Cartridge weight	~ 260g
Cartridge length	≤ 168mm
Projectile weight	102g
Cartridge case	Brass
Fuze	MR 221 Safety distance: ≥ 15m Self-destruction: 3.5s to 9s
Primer	Electric M52A3B1
Explosive	9g
Propellant	~ 36g
Link	23TE711

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

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

20mm X 102 AP-T

20mm AMMUNITION

TECHNICAL DATA

Type	Armour Piercing withTracer (AP-T)
Caliber	20mm
Cartridge weight	~272g
Cartridge length	≤ 168mm
Projectile weight	~106g
Cartridge case	Brass
Primer	Electric M52A3B1
Propellant	~36g
Link	23TE711

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

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.

STATUS

In service

20mm X 102 TP

20mm AMMUNITION

TECHNICAL DATA

Type	Target Practice (TP)
Caliber	20mm
Cartridge weight	~260g
Cartridge length	~168g
Projectile weight	102g
Cartridge case	Brass
Primer	Electric M52A3B1
Propellant	~36g
Link	23TE711

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

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.

STATUS

In service

20mm X 102 TP-T

20mm AMMUNITION

TECHNICAL DATA

Type	Target Practice with Tracer (TP-T)
Caliber	20mm
Cartridge weight	~260g
Cartridge length	~168g
Projectile weight	102g
Cartridge case	Brass
Primer	Electric M52A3B1
Propellant	~36g
Link	23TE711

PERFORMANCES

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

PACKAGING

Box	Wooden box 02D101 or Metallic box M548

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

PART 5

INFANTRY AMMUNITION

106mm RCL HEAT-TP-T
M1071

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

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

PERFORMANCES

Muzzle velocity (at 21°) (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	

106mm RCL HEAT-T
M1070

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

TECHNICAL DATA

Type	Fixed round HEAT-T
Caliber	106mm
Round mass (nominal)	16.4kg
Round length	999mm
Projectile mass (nominal)	8.3kg
Projectile filling (Comp B)	1.0kg
Fuze	PIBD
Tracer	M84
Cartridge case	Perforated steel
Primer	Percussion cap M61
Propellant DB (nominal)	3.7kg

PERFORMANCES

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

106mm RCL HESH-T

M1072

TECHNICAL DATA

Type	Fixed round HESH-T
Caliber	106mm
Round mass (nominal)	17kg
Round length	960mm
Projectile mass (nominal)	8.0kg
Projectile filling (Comp A3)	3.5kg
Fuze	BD7602
Tracer	M87
Cartridge case	Perforated steel
Primer	Percussion cap M61
Propellant DB (nominal)	3.8kg

PERFORMANCES

Muzzle velocity (at 21° C) (nominal)	500m/s
Dispersion	0.8 mil
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

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

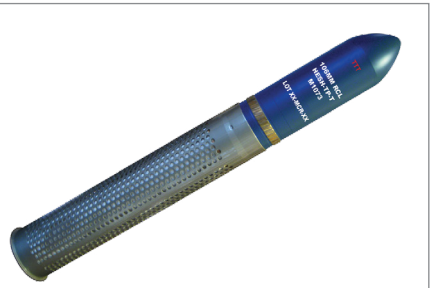
The HESH-T (HEP-T) projectile comprises a thin walled steel cylindrical body with a premachined driving band, a relatively short ogive and a flat base to which is secured the base detonating fuze and a tracer. It is loaded with Composition A3 explosive. The projectile is assembled to a steel cartridge 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-1316D.

STATUS

In service

106mm RCL HESH-TP-T

M1073



TECHNICAL DATA

Type	Fixed round HESH-TP-T
Caliber	106mm
Round mass (nominal)	16.4kg
Round length	960mm
Projectile mass (nominal)	8.1kg
Tracer	M87
Cartridge case	Perforated steel
Primer	M57
Propellant DB (nominal)	3.7kg

PERFORMANCES

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

PACKAGING

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

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

SUB-CALIBER ADAPTER

M1076

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

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 subcaliber 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

84mm SUB-CALIBER TRAINING DEVICE

M525

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

PERFORMANCES

Ballistic match with HEAT round	To 300m

PACKAGING

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

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

84mm HE
M540

+ 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.

+ STATUS
In service

+ 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

84mm SMK (TTC)
M541

+ 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 blowout disc. The cartridge case is loaded with a double base strip propellant.

+ STATUS
In service

+ 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

84mm ILL

M542

+ 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

+ 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	600m
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

84mm HEAT

M543

+ 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

+ 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° (nominal)	255m/s
Maximum velocity	+/-340m/s
Muzzle safety	15m
Arming distance	30m
Dispersion	1 mil
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

84mm HEAT-TP

M552

TECHNICAL DATA

Type	Fixed round HEAT-TP
Caliber	84mm
Round mass (nominal)	3.3kg
Round length	610mm
Projectile mass (nominal)	2.4kg
Projective filling	Inert
Rocket motor	0.3kg
Cartridge case	Aluminium
Primer	Percussion cap
Propellant SB (nominal)	0.4kg

PERFORMANCES

Muzzle velocity at 21° (nominal)	255m/s
Maximum velocity	+/-340m/s
Dispersion	1 mil
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

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 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. This round is ballistically matched to the HEAT M543.

STATUS

In service

84mm CANISTER

M587

TECHNICAL DATA

Type	Fixed round Canister
Caliber	84mm
Round mass (nominal)	3.6kg
Round length	350mm
Projectile mass (nominal)	2.2kg
Fragments (Ø13mm steel spheres)	+/- 190 spheres
Fragments weight	1.6kg
Cartridge case	Aluminium
Primer	Percussion cap
Propellant DB (nominal)	0.4kg

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

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.
The projectile is fixed on an aluminium cartridge case, which contains a double base multiperforated propellant and is fitted with a mechanical primer.

STATUS

In service

40X46mm LV HE-FRAG-SD IM

TECHNICAL DATA

Type	Fixed round HE-FRAG-SD IM
Caliber	40mm
Round mass (nominal)	280g
Round length (nominal)	123mm
Projectile mass (nominal)	210g
Projectile filling (nominal)	44g – PBX based
Fuze	PD with SD
Fragments	Steel
Cartridge case	Aluminum
Primer	Percussion
Propellant SB (nominal)	Double base

PERFORMANCES

Muzzle velocity at 21°	78m/s
Fragmentation effect	Lethal up to 10m
Effective 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: 1.1 E UN0006

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

40X46mm LV EB-SD IM

TECHNICAL DATA

Type	Fixed round EB-SD IM
Caliber	40mm
Round mass (nominal)	280g
Round length (nominal)	123mm
Projectile mass (nominal)	210g
Projectile filling (nominal)	68g
Fuze	PD with SD
Cartridge case	Aluminum
Primer	Percussion
Propellant	Double base

PERFORMANCES

Muzzle velocity at 21°	78m/s
Fragmentation effect	Lethal up to 5m
Effective 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: 1.1 E UN 0006

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

40X46mm LV HE-DP-SD IM

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

TECHNICAL DATA

Type	Fixed round HEDP-SD IM
Caliber	40mm
Round mass (nominal)	280g
Round length (nominal)	123mm
Projectile mass (nominal)	210g
Projectile filling (nominal)	32g – PBX based
Fuze	PD with SD
Fragments	Steel
Cartridge case	Aluminum
Primer	Percussion
Propellant	Double base

PERFORMANCES

Muzzle velocity (at 21°C)	78m/s
Penetration capability	up to 80mm of steel
Fragmentation effect	Lethal up to 10m
Effective 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: 1.1 E UN 0006

40X46mm LV TPM

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

TECHNICAL DATA

Type	Fixed round TPM
Caliber	40mm
Round mass (nominal)	280g
Round length (nominal)	123mm
Projectile mass (nominal)	210g
Projectile	Inert
Marker	Orange Dye
Cartridge case	Aluminum
Primer	Percussion
Propellant	Double base

PERFORMANCES

Muzzle velocity (at 21°C)	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

40X46mm LV TP

TECHNICAL DATA

Type	Fixed round TP
Caliber	40mm
Round mass (nominal)	280g
Round length (nominal)	123mm
Projectile mass (nominal)	210g
Projectile	Inert
Cartridge case	Aluminum
Primer	Percussion
Propellant	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

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

SIMMEL DIFESA

35mm RFL GREN 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)	460x340x360mm
Gross weight (complete pallet)	325kg
Dimension ext (complete pallet)	1,020x1,000 x870mm
UN Classification: 1.1 D UN 0284	

MECAR

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 wellproven 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

Caliber	35mm
Round mass (nominal)	440g
Round length	343mm
Projectile filling	Flash & bang composition
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**
Dispersion	0.25m
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)	25kg
Dimension ext (wooden box)	460x340x360mm
Gross weight (complete pallet)	325kg
Dimension ext (complete pallet)	1,020x1,000 x870mm
UN Classification: 1.3 G UN 0318	

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

Caliber	40mm
Round mass (nominal)	490g
Round length	360mm
Ignition	At impact
Red phosphorus charge	160g
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)	175m
Maximum range (indirect fire)	250m
Launch velocity*	55m/s
Smoke duration	40s
Typical dimension of smoke screen with one grenade (good weather conditions)	20mx10m
Operational temperature	-32°C to +52°C

*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: 1.4 G UN 0303	

40mm RFL GREN PFL

M259A1

+ MISSION

The Parachute Flare rifle grenade is designed for use with 5.56 and 7.62 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 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 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

+ TECHNICAL DATA

Type	Illuminating
Caliber	40mm
Round mass (nominal)	460g
Round length	360mm
Illuminating compound	70g
Ignition	4s delay
Aiming grid	Provided with grenade for specific rifle
Bullet trap	Universal for all types of 5.56 & 7.62 ammunition

+ PERFORMANCES

Range	35 to 150m* 50 to 200m**
Burst height	70 to 130m* 120 to 200m**
Descent rate	1.5m/s
Illuminating rate - period	30s
Illuminating rate - intensity	75000cd
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)	22kg
Dimension ext (wooden box)	485x345x365mm
Gross weight (complete pallet)	290kg
Dimension ext (complete pallet)	1,035x1,000 x875mm
UN Classification: 1.3 G UN 0254	

40mm RFL GREN CS

M294A1

+ 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 alunched, using ball or ballistite cartridges, from 5.56 or 7.62mm 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

+ 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 & 7.62 ammunition

+ PERFORMANCES

Effective range	75 to 175m* 125 to 250m**
Ejection time	2s
Duration of gas emissions	30s
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)	21kg
Dimension ext (wooden box)	485x345x365mm
Gross weight (complete pallet)	320kg
Dimension ext (complete pallet)	1,035x1,000 x870mm
UN Classification: 1.1 D UN 0284	

40 mm RFL GREN PIR

M253A1

+ MISSION

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.

+ DESCRIPTION

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.

+ STATUS

Qualified

+ TECHNICAL DATA

Type	Infrared
Caliber	40mm
Round mass (nominal)	460g
Round length	360mm
Illuminating compound	70g
Ignition	4s delay
Aiming grid	Provided with grenade for specific rifle
Bullet trap	Universal for all types of 5.56 & 7.62 ammunition

+ PERFORMANCES

Range	35 to 150m* 50 to 200m**
Burst height	70 to 130m* 120 to 200m**
Descent rate	1.5m/s
Illuminating rate	Period: 30s Intensity: 50w.sr^{-1} Residual light intensity: 750cd maxi
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)	22kg
Dimension ext (wooden box)	485x345x365mm
Gross weight (complete pallet)	290kg
Dimension ext (complete pallet)	1,035x1,000 x875mm
UN Classification: 1.3 G UN 0254	

UPGRADE FOR GREN BTU M2XX-FI/FS

M1076

+ CHARACTERISTICS

Type	FI	FS
Caliber	For 35mm and 40mm	
Aiming grid		Provided with grenade for specific rifle

+ PERFORMANCES

Type	FI	FS
Minimum - Maximum range (accurate indirect fire)	No influence on performance	30m*- 100m*

*nominal 5.56mm

+ MISSION

The rifle grenades can be upgraded with different options:

- A firing indicator (FI) which shows if a grenade has been fired or not. This information can be very helpful for bomb disposal units (UXO identification).
- A firing selector (FS) which allows the shooter to perform indirect firing at short distance with higher accuracy. This capacity can be very helpful to reach targets hidden behind a wall or in an adjacent street. These options are integrated in the tail tube.

+ DESCRIPTION

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.

HAND GRENADE FRAG
M72

GRENADE CHARACTERISTICS

Type	Hand grenade - FRAG
Diameter	52mm
Height	85mm
Mass	180g
Explosive Charge (Comp B)	60g
NSN	1330-13-113-7278

FUZE CHARACTERISTICS

Mass	52g
Net Explosive Quantity	2.5g
Delay	4s

PERFORMANCES

Number of fragments	+/-900
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

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

HAND GRENADE
NR8A2

GRENADE CHARACTERISTICS

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

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

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

HAND GRENADE PRAC

NR8A2 PRAC

GRENADE CHARACTERISTICS

Type	Hand grenade - PRAC
Diameter	50mm
Height	112mm
Mass	446g

FUZE CHARACTERISTICS

Mass	55g
Security distance	10m
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

MISSION

The hand grenade NR8A2 (PRAC) is used for training, specifically the care, handling and throwing of fragmentation hand grenades NR8A2.

DESCRIPTION

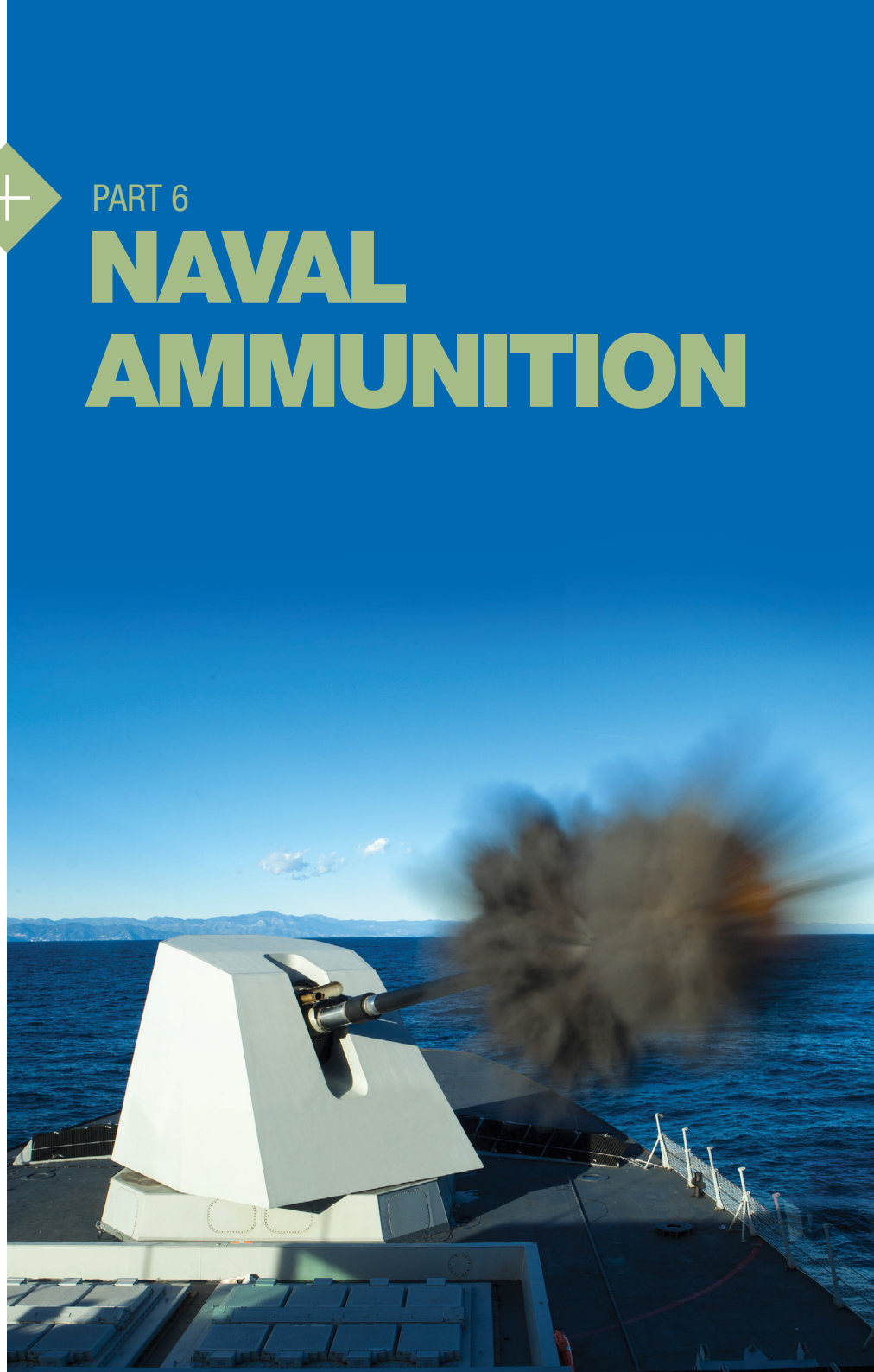
The Mecar hand grenade NR8A2 (PRAC) is composed of an aluminium case and a fragmentation sleeve. This fragmentation sleeve is a steel wire of square section, which is pre-notched, spirally wound and removable. The PRAC Grenade must be used with the fuze PRAC NR2178A1.

STATUS

In service

PART 6

NAVAL AMMUNITION



127mm L54 HE

TECHNICAL DATA

Type	HE
Caliber	127mm
Projectile mass	32kg
Projectile length	661mm
Projectile filling (Comp. B)	3.7kg
Fuze*	VTPA FBO 127 (Proximity fuze) or PD (Point detonating 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

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

127mm L54 PFFC

TECHNICAL DATA

Type	PFFC
Caliber	127mm
Projectile mass	32kg
Projectile length	661mm
Projectile filling (Comp. B)	4.1kg
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

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

127mm L54 TP

TECHNICAL DATA

Type	TP
Caliber	127mm
Projectile mass	32kg
Projectile length	661mm
Projectile filling	3.7 kg of Inert compound
Fuze*	Dummy fuze

*The projectile can be supplied without 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

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

127mm L54 FNF

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

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

127mm PROPELLING
CHARGE FULL CHARGE

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

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.

STATUS

In service

127mm PROPELLING
CHARGE REDUCED AND CLEARING

TECHNICAL DATA

Type	Reduced Charge	Clearing Charge
Caliber	127mm	127mm
Charge mass	13.0kg	9.0kg
Charge length	889mm	559mm
Charge filling SB (SPDF)	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

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 L64 OTO Melara Lightweight gun.

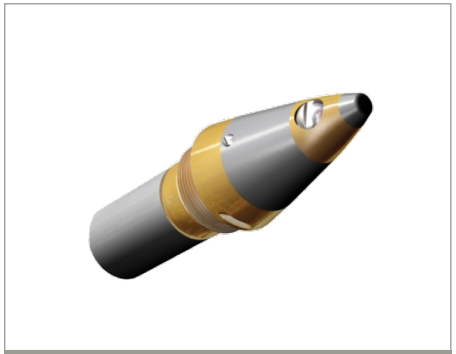
DESCRIPTION

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.

STATUS

In service

FB340



TECHNICAL DATA

Type	Mechanical fuze
Caliber	127mm L54
Fuze mass (nominal)	2,12kg
Fuze length (nominal)	119mm (overall 248mm)
Booster charge mass (nominal)	118g of A5
Power supply	Firing forces

PERFORMANCES

Functions	PD super quick and PD super quick graze
Mechanical safety distance	100m
Minimum operating distance	350m
Operational temperature	-40°C +60°C

PACKAGING

15 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2 D UN 0409

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.

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.

STATUS

In service

TECHNICAL DATA

Type	Electronic fuze
Caliber	127mm L 54
Projectile mass (nominal)	2,12kg
Projectile length (nominal)	120mm (overall 248mm)
Booster charge mass (nominal)	118g of A5
Power supply	Lithium Battery

PERFORMANCES

Functions	Proximity, Self-destruction, Point detonating
Mechanical safety distance	100m
Minimum operating distance	300m
Electrical safety distance	300m min - 600m max
Setback acceleration	18,000g (176,580 m/s2)
Rotating spin	18,000rpm (1,885 rad/s)
Self-destruction time (nominal)	35s
Miss distance	10m
Operational temperature	-21°C to +50°C

PACKAGING

20 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

100mm HE F1

100MM AMMUNITION FOR NAVAL GUNS

TECHNICAL DATA

Type	Multi-purpose high-explosive ammunition
Caliber	100mm
Weight of shell	13.5kg with fuze
Weight of cartridge	23.450kg without fuze
Length of shell	450mm with fuze
Length of cartridge	1,085mm with fuze
Cartridge	~4,5 kg of single base propellant
Fuze	Dual mode fuze or proximity fuze
Loading	1.050kg of TNT

PERFORMANCES

Maximum range surface targets	17.400m
Muzzle velocity (new barrel)	867m/s
Standard deviation angle (mrad)	0.3up to 5,000m
Terminal effectiveness	Blast and splinters

PACKAGING

Light alloy, watertight and fireproof individual containers

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 aluminium 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

100MM AMMUNITION FOR NAVAL GUNS

TECHNICAL DATA

Type	Prefragmented shell cartridge
Caliber	100mm
Round length	1.085mm with fuze
Length of shell	450mm with fuze
Round mass	23.5kg without fuze
Projectile mass	13.5 kg
Weight of propellant	~4.500kg
Fuze	Proximity fuze
Warhead/payload	Prefragmented shell body 1.2kg of TNT

PERFORMANCES

Maximum range surface targets	17,400m
Muzzle velocity	867m/s (new barrel)
Maximum range air targets	6,000m
Standard deviation angle (mrad)	0.3up to 5,000m
Terminal effectiveness	Perforates 10mm steel or 21mm light alloy at 35m

PACKAGING

Light alloy, watertight and fireproof individual containers

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 aluminium waterproof container and consists of:

- a 100 HE PFF F4 shell filled with explosive,
- a Mod 1953 100mm steel case,
- a Mod 1961 (60g) tube ignition system (TIS),
- a Mod 1992 11 mm percussion primer,
- a single base propelling charge,
- a shell sealing plug for storage.

STATUS

In service

100mm TP

100MM AMMUNITION FOR NAVAL GUNS

TECHNICAL DATA

Type	Practice
Caliber	100mm
Round length	1.085mm with fuze
Round mass	23.5kg without fuze
Projectile mass	13.5 kg
Fuze	Dummy fuze
Warhead/payload	Ballast
Weight of propellant	~4,500 kg

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

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.

STATUS

In service

76mm L62 HE-PD

TECHNICAL DATA

Type	Fixed round HE
Caliber	76mm
Round mass (nominal)	12.5kg
Round length	907mm
Projectile mass (nominal)	6.3kg
Projectile filling (Comp. A3)	0.56kg
Fuze	PD
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

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

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.

STATUS

In service

76mm L62 HE-PROX

TECHNICAL DATA

Type	Fixed round HE
Caliber	76mm
Round mass	12.5kg
Round length	907mm
Projectile mass	6.3kg
Projectile filling (Comp. A3)	0.56kg
Fuze	VTPA FBO 76 (proximity)
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

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

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

76mm L62 HE-PF-IM6-OES

TECHNICAL DATA

Type	Fixed round HE
Caliber	76mm
Round mass (nominal)	12.5kg
Round length	907mm
Projectile mass (nominal)	6.3kg
Projectile filling (B2263A)	0.73kg
Fuze	3AP
Fragments	Tungsten cubes
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

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

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

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

Type	Fixed HE Semi-Armour Piercing round
Caliber	76mm
Round mass (nominal)	12.5kg
Round length (nominal)	907mm
Projectile mass (nominal)	6.3kg
Projectile filling (HEXAL or COMP A3)	0.53kg
Fuze	Base Detonating with Delay (i.a.w Client's requirements)
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

+ 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

+ TECHNICAL DATA

Type	Fixed round TP	Fixed round TP-T
Caliber	76mm	
Round mass	12.5kg	
Round length	907mm	
Projectile mass	6.3kg	
Projectile filling	Inert mixture	
Fuze	Dummy	
Tracer	Absent	Red effect (5 sec)
Cartridge case	Brass	
Primer	Percussion	
Propellant SB (nominal)	2.45kg	

+ 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: 1.2 C UN 0328

+ 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.

+ STATUS

In service

76mm L62 FNF

TECHNICAL DATA

Type	Fixed round FNF
Caliber	76mm
Round mass (nominal)	12.5kg
Round length	907mm
Projectile mass (nominal)	6.3kg
Projectile filling inert (nominal)	0,45kg
Fuze *	Without
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

*The round can be supplied with fuze

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: 1.2 C UN 0488

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

76mm L62 CLEARING CHARGE

TECHNICAL DATA

Type	Clearing Charge
Caliber	76mm
Charge mass (nominal)	6.35kg
Charge length	608mm
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2,45kg

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

MISSION

The 76mm L62 Clearing Charge is compatible with all configuration of 76mm L62 OTO Melara weapon systems. The Cleaning 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

3AP MOD 2 MICROWAVE FUZE

OTO Melara
A Finmeccanica Company

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 (235,440m/s2),
Rotating spin	24,000rpm (2.513rad/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

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.

STATUS

In service

VTPA – FB76

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

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

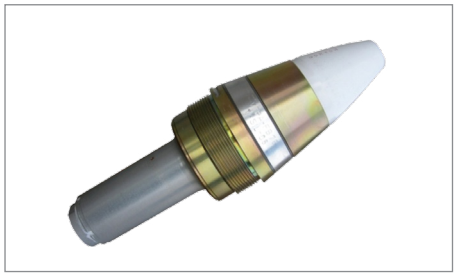
The VTPA FB76 fuze is fully compliant with the requirements of STANAG 4187 and was designed, developed and tested in accordance with the criteria of MIL-STD-331. The fuze is a self-powered radio transmitting and receiving unit, operating on the base of the Doppler effect. Two operating modes are selectable 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.

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 FB 76 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. 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.
- Shore bombardment - Point detonating. In this mode the fuze activates detonation at a given height above the ground.

+ 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, Point detonating, Self-destruction / Shore bombardment
Mechanical safety distance	50m
Minimum operating distance	300m
Electrical safety distance for proximity	500m max
Setback acceleration	24,000g (235,440m/s2),
Rotating spin	24,000rpm (2.513rad/s)
Self-destruction time (nominal)	25s
Operational temperature	-20°C to +50°C

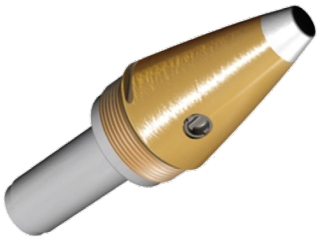
+ PACKAGING

20 fuzes per wooden container 24 wooden containers per pallet
UN Classification: 1.2D UN 0409

+ STATUS

In service

FB 518A



+ TECHNICAL DATA

Type	Mechanical fuze
Caliber	76mm L62
Fuze mass (nominal)	930g
Fuze length (nominal)	95mm (overall 203mm)
Booster charge mass (nominal)	15g of A5
Power supply	n/a

+ PERFORMANCES

Functions	Point detonating and PD Delay
Mechanical safety distance	50m
Minimum operating distance	300m
Setback acceleration	24,000g (235,440 m/s2)
Rotating spin	24.000rpm (2.513 rad/s)
Operational temperature	-40°C to +50°C

+ PACKAGING

20 fuzes per wooden container 24 wooden containers per pallet
UN Classification: 1.2D UN 0409

+ 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.

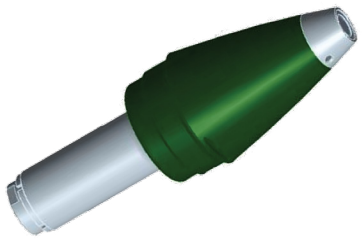
+ DESCRIPTION

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).

+ STATUS

In service

FB 518B



TECHNICAL DATA

Type	Mechanical fuze
Caliber	76mm L62
Fuze mass (nominal)	930g
Fuze length (nominal)	95mm (overall 203mm)
Booster charge mass (nominal)	15g of A5
Power supply	Firing force

PERFORMANCES

Functions	Point detonating and PD Delay
Mechanical safety distance	50m
Minimum operating distance	300m
Setback acceleration	24,000g (235,440 m/s2)
Rotating spin	24.000rpm (2.513 rad/s)
Operational temperature	-40°C to +50°C

PACKAGING

20 fuzes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

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 76mmL62.

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

40mm L70 HE-PD

TECHNICAL DATA

Type	Fixed round HE
Caliber	40mm
Round mass (nominal)	2.5kg
Round length	535mm
Projectile mass (nominal)	0.96kg
Projectile filling (nominal)	0,095kg
Fuze	Point Detonating Delay-Self-destruction, Point Detonating Super Quick
Cartridge case	Brass
Primer	Percussion
Propellant SB	0.480kg

PERFORMANCES

Muzzle velocity (at 21°C)	1,005m/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

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

40mm L70 HE-PFF

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

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

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.

STATUS

In service

40mm L70 HE-T AND HEI-T

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	1,1800m
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 E UN 0006

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.

STATUS

In service

40mm L70 AP-T

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

PACKAGING

1 round per container, 20 containers per wooden box or 8 rounds per metal box
UN Classification: 1.2 C UN 0328

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.

STATUS

In service

40mm L70 TP AND TP-T

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	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	1,1800m
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

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.

STATUS

In service

FB40

+ MISSION

The FB40 is a proximity fuze for 40mm L70 HE and PFF ammunition. It was designed to defeat aircrafts, 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

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

+ PERFORMANCES

Functions	Proximity, Self-destruction, Point detonating
Mechanical safety distance	50m
Minimum operating distance	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
Miss distance	3m
Operational temperature	-21°C to +51°C

+ PACKAGING

20 fuzes per metallic box
2 metallic boxes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

+ STATUS

In service

SIL M5

+ TECHNICAL DATA

Type	Pyrotechnical fuze
Caliber	40mm L70
Fuze mass (nominal)	62g
Fuze length (nominal)	42mm (overall 74mm)
Booster charge mass (nominal)	1,5g of A5
Power supply	Firing force

+ PERFORMANCES

Functions	PD Delay and SD
Mechanical safety distance	50m
Minimum operating distance	300m
Setback acceleration	40,000g max (392,400m/s2)
Rotating spin	40,000rpm max (4.189rad/s)
Operational temperature	-40°C to +60°C

+ PACKAGING

20 fuzes per metallic box
2 metallic boxes per wooden container
24 wooden containers per pallet

UN Classification: 1.2D UN 0409

+ 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

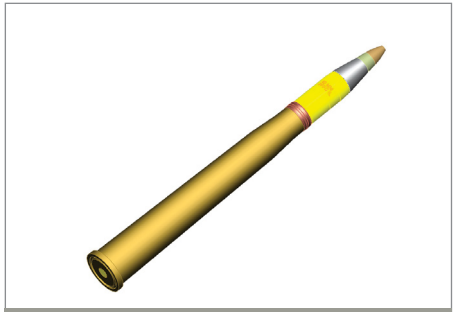
SIL M5 fuze is a pyrotechnical fuze with PD DLY and Self-destruction functions (after 7s of flight). The delay PD function activates the fuze 1.5ms after the impact. The fuze is waterproof, and fully compliant with the STANAG 4187.

+ STATUS

In service

40mm L70 HE-PFF

IMPROVED LETHALITY



TECHNICAL DATA

Type	Fixed round HE-PFF IL
Caliber	40mm
Round mass (nominal)	2.5kg
Round length (nominal)	535mm
Projectile mass (nominal)	0.96kg
Projectile filling (Comp. B)	0.130kg
Fuze	PDSQ, SD, PROX
Fragments	Tungsten
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	0.480kg

PERFORMANCES

Muzzle velocity (at 21°C) (nominal)	1,005m/s
Maximum range	11,800m
Operational temperature	-40°C to +60°C

PACKAGING

1 round per container, 20 container per wooden box or 16 rounds in metal box or 8 rounds in metal box
UN Classification: 1.1E UN 0006

MISSION

Simmel Difesa has a long and in-depth experience in 40mm L70 ammunition design and production.
This 40mm L70 ammunition can be fired by all types of 40mm L70 gun systems.
The HE-PFF IL (High Explosive with Pre-Formed Fragments Improved Lethality) incorporates tungsten pre-formed fragments (20% more than standard projectile PFF) 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 (15% more than standard projectile PFF) upon target impact or in close proximity of 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 a brass cartridge case filled with a multi-perforated single base propellant and fitted with a percussion primer.

STATUS

In service

76mm L62 HE-PFF IM84

TECHNICAL DATA

Type	Fixed round HE-PFF
Caliber	76mm
Round mass (nominal)	12.5kg
Round length (nominal)	907mm
Projectile mass (nominal)	6.3kg
Projectile filling (Comp. B)	0.76kg
Fuze	Proximity VTPA
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg

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

PACKAGING

Two complete rounds in a plastic shock absorber container in a wooden box or i.a.w. Client's requirements
UN Classification: 1.1E UN 0006

MISSION

The 76mm L62 HE-PFF IM84 ammunition is designed and manufactured by Simmel Difesa to be fired by all version of 76mm Oto Melara gun systems and equivalent.
This ammunition was developed to increase and to optimize the effectiveness in anti-missile role as well as against aircraft threats.

DESCRIPTION

The HE-PFF IM84 round is the latest version of the Pre-Fragmented Ammunition filled with explosive Compound B. The HE-PFF IM84 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 VTPA proximity 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

127mm L54 HE-IM

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

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

127mm L54 HE-PFFC-IM

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

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.

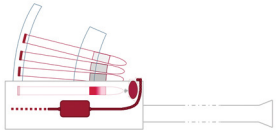
DESCRIPTION

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

FB7 PROGRAMMER



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

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

FB769

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 g (392,400m/s2)
Rotating spin	40,000rpm g (4.190rad/s)
Self-destruction time (nominal)	9s
Activation distance from target (nominal)	<3m
Operating temperature	-25°C to +51°C

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

PART 9

OTHER PRODUCTS AND SERVICES

PYROTECHNIC 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

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:

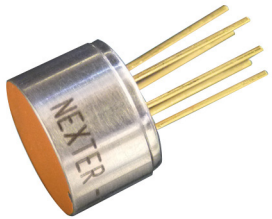
- Micropyrotechnics: Pyro-MEMS®,
- Optopyrotechnics (Optopyrotechnic igniters and detonators),
- Low-energy EFI,
- “Lead free” components.

STATUS

Mass production

FUZE SYSTEM – XFOIL-INIT®

WITH A LOW ENERGY EXPLOIDING FOIL INITIATOR



+ TECHNICAL DATA

- Secure priming without primary explosive
- Initiator qualified according the Stanag 4560
- Device compliant with the Stanag 4187 (ed.4) and 4368 (ed.3)
- ITAR and EAR FREE (made in France)
- **Fireset 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
- Versatibility: initiation of warhead, ignition of propellant or pyrotechnic mechanism
- Ideal for multi-priming : optimized terminal effect and reduction of collateral effects

+ MISSION

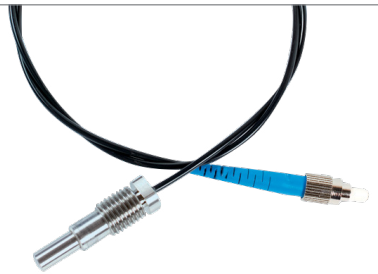
The XFOIL-Init® electronic fuze system is a secure priming device incorprating an ITAR FREE low-voltage slapper. This fuze system is generic for a wide range of applications including gun-fired ammunitions (from 90 to 155mm), rockets, missiles, torpedoes, bombs and aerospace applications.
This device is compliant with the priming of warhead and for the propellant application.

+ STATUS

Qualifed

OPTOPYROTECHNIC COMPONENTS

PYROTECHNIC COMPONENTS



+ TECHNICAL DATA

- Insensitive to electromagnetic disturbances and electrostatic discharges
- Reduced dimension
- Temperature range from -120 to +110°C

+ MISSION

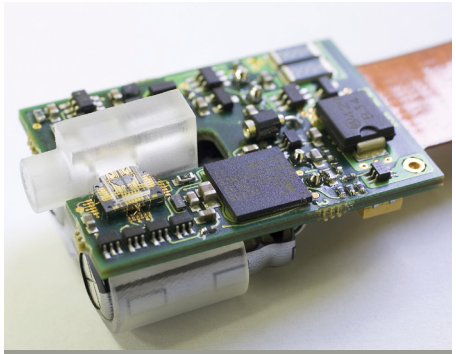
Optopyrotechnic igniters and detonators are initiated by light energy supplied by a laser diode and transmitted by an optical fibre.
This advanced technology is particularly suited to extreme environments including severe electromagnetic environments.
The optopyrotechnic applications encompass missiles, aeronautics and space domains.
The European Space Agency chose the Nexter technology to equip its Ariane 6.

+ STATUS

Under development

PYRO-MEMS®

FUZING SYSTEMS



+ 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

+ 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

XF

MELT/CAST EXPLOSIVE FOR INSENSITIVE AMMUNITION

+ TECHNICAL DATA

XF 13333 explosive composition	
Detonation velocity	6,976m/s
Detonation pressure	>210kbar (theorical value)
Critical diameter	<60mm
Impact sensitivity ISI NFT 70-500	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

+ 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

XP

PRESSED EXPLOSIVE FOR INSENSITIVE AMMUNITION

+ TECHNICAL DATA

XP explosive composition	
Detonation velocity	7,921m/s
Detonation pressure	285kbars (theoretical value)
Critical diameter	between 5 and 10mm
Impact sensitivity ISI NFT 70-500 STANAG 4489	30% Go at 50 joules
Friction sensitivity ISI NFT 70-503 STANAG 4487	0% Go at 353N

+ 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

Qualifed

PROPELLANTS

+ SINGLE BASE

Conventional	DNT Free	REACH Compliant (DNT Free)
M 1 + 1	SIL 1	7 perforations for caliber 40/60
M 1 + 1	SIL 1	19 perforations for caliber 40/70
M 10	M 10	1 perforation for caliber 57
M 6 + 2	SIL 6 + 2	7 perforations for caliber 76/62
M 6 + 2	SIL 6 + 2	19 perforations for caliber 76/62
M 10	M 10	19 perforations for caliber 76/62
M 6 + 2	SIL 6 + 2	7 perforations for caliber 3"/50
M 1	SIL 1	7 perforations for caliber 105/14
M 1	SIL 1	1 perforation for caliber 105/14
M 1	SIL 1	7 perforations for caliber 105/51 HEP-T
SPDF	SPDF	7 perforations for caliber 127/54
M 1	SIL 1	1 and 7 perforations for bags propelling charge for caliber 155

+ PROPELLANTS

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.

+ 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).

+ STATUS

In service

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

+ 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 particulary integrated into :

- Ammunition from medium to large calibers produced by Nexter Ammunition Business Group
- Most of the European programs on tactical missiles (Eryx, Scalp EG-SS, MdCN, Aster, Mistral, Exocet, Mica, Iris, Marte, Aster, Aspide...)
- Strategic missiles (ASMP-A, M51)
- Torpedo, underwater drone warheads (MU 90, K-STER)
- Pyrotechnic actuation 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 efficency explosives, insensitivity materials, and new generation of initiators (miniaturization and safety).

+ STATUS

In service

GALIX

SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

+ TECHNICAL DATA

MUNITION	STATUS
GALIX 13 - Broad band IR-visible smoke grenade	In service
GALIX 16 - P tester	In service
GALIX 17 - Training smoke grenade	In service
GALIX 19 - Warning grenade	In service
GALIX 46 - Crowd dispersal grenade	In service
Launch Tube	In service
Firing control unit	In service

+ 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.

+ STATUS

In service

SYDEX®

NEW GENERATION OF SOFT KILL SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

+ 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

+ 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.

+ STATUS

Under development

BRENUS

PROTECTION SOLUTIONS FOR LIGHT AND HEAVY ARMORED VEHICLES

+ TECHNICAL DATA

BRENUS reactive modules provide a protection equivalent to 400 mm of RHA steel against anti-tank guided missiles and unguided rockets.
BSG2 bricks and U12 boxes provide protection against HE shells, while increasing resistance against attack by medium caliber weapons.
BSG3 bricks provide protection against top attack grenades.
The BRENUS explosive reactive modules do not explode when subjected to accidental battlefield attack such as fire, bullet impact (14.5 mm and 20 mm armour piercing) or a Molotov cocktail.
There is no sympathetic detonation when one explosive reactive module is hit, thus providing excellent residual protection. STANAG 4439 IM assessment is in progress.
The BRENUS explosive reactive modules are labelled MURAT*(according to French IM policy) by the French Ministry of Defense.
The installation and removal of the BRENUS modules is easy and does not require any special tools.
Its modular design facilitates installation on all vehicles, as a function of mission requirements.
Added protection kits have been developed for the AMX-30B2, M48, M60 and T-72 MBTs and for the M113, BMP-3 and CV90 light armored vehicles.

+ MISSION

EURENCO

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.

+ STATUS

Qualified

40MM EOD CHARGE

M1157

+ TECHNICAL DATA

Type	EOD Charge
Total weight (without tripod)	105g
Length	105mm
Cone diameter	40mm
Explosive	Composition A3
Explosive mass	80g
Liner	Copper
Body	Plastic

+ 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.

+ 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.

+ TRAINING

Didactic materials, such as cutaways and inert training models, are available.

+ STATUS

In service

80MM EOD CHARGE

M1158

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.

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

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 (9 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

Equipment \ Ammunition	Small Ammo up to 20 mm	Grenades	Mortar Bombs	Rocket Launcher	Pyrotechnic & Generator	Tank from 30 mm to 125 mm	Artillery from 75/24 to 155 mm	Mines all types	White Phosphorus PWP-Smokes Ammunition
Tools, vices, tables, pneumatic handling machine	x	x	x	x	x	x	x	x	x
Disassembly machine				x		x	x		
Defusing machine		x	x	x		x	x	x	
Saws		x	x	x	x	x	x	x	x
Waterjet		x	x	x	x	x	x	x	x
Wash out		x	x	x		x	x	x	
Rotary oven	x	x	x	x	x	x	x	x	x
Tunnel Oven		x	x	x		x	x	x	
Flash oven	x	x	x	x	x	x	x	x	x
Static Oven					x				x
Smoke treatment Facility	x	x	x	x	x	x	x	x	x

DEMILITARIZATION

+ SMALL, MEDIUM AND LARGE CALIBER CUTTING MACHINE

+ 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
- Sinergy between demil and manufacturing of explosives for civil use recovering explosives coming out of ammunition
- Sensitivity to the environment and safety

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.

+ 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.

+ 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.

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