KNDS

Ammunition

KNDS CATALOGUE 2024/2025

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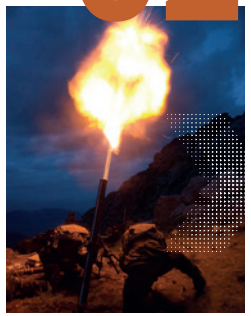

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01 ARTILLERY AMMUNITION

155MM KATANA®

PRECISION GUIDED AMMUNITION

MISSION

KATANA® is a 155 fire and forget ammunition designed to enable point firings in complex operational scenarios, including in urban areas. By combining its high efficiency warhead and its accuracy, it has a large effect on target with a contained collateral damage area.
As a fully interoperable shell, KATANA® will be able to 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.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

Weight in combat order	45.6kg
Total lenght	<1,000mm
Maximum range	NATO 52 cal. systems/with Base-Bleed: >45km
Guidance type	Combined GNSS/Inertial

155MM BONUS MKII

TARGET DETECTION ANTI-ARMORED VEHICLE 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 combat proven in operation by the French Army and demonstrated during numerous production acceptance firings, together with French and Swedish Army's firings.

STATUS

In service.

BAE SYSTEMS

TECHNICAL CHARACTERISTICS

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)

155-105MM SPACIDO

COURSE CORRECTION SYSTEM

MISSION

SPACIDO (System with Accuracy Improved by Doppler Cinemometer) is a course correction system in range that operates by comparing the actual trajectory with the theoretical trajectory.
This course correction system, consisting of a Muzzle Velocity Radar (MVR) integrated into the gun and a NATO-standard fuze with 2-inches thread, can be used with all in-service or under development 105mm 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.

JUNGHANS Defence

TECHNICAL CHARACTERISTICS

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 up to 4 at long ranges

EXTENDED RANGE ROUND

155MM NATO ARTILLERY AMMUNITION

MISSION

In the context of engagement at a short range of friendly troops in contact, the extended range round is able to destroy a target at a minimal range of 200m from friendly troops without inflicting casualties. Likewise, the Rules of Engagement in high intensity urban warfare imply a minimization of collateral damages.
Thus, the extended range round is able to destroy enemy ground-platforms at a minimal range of 50m desirable of civilian people and facilities. In both cases, the terminal efficiency of the projectile is adapted. Besides, terminal effects multiple targets are controlled by airburst detonation of the warhead.
Surface area targets is engaged with this kind of ammunition at a maximal range of 45km.

DESCRIPTION

The Extended Range Round is dedicated to the 155mm/52cal artillery systems.
It consists of a fuze, a shell, a combustible case containing propellant.
This ammunition offers a longer range firing capability with higher terminal effectiveness and with better accurrancy. It provides a reduced cost solution and ensure all artillery tactical effects up to such extended range.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

Type	Complete artillery round
Caliber	155mm
Maximum range (155 LU 211 BB)	≤ 45km
Operational temperature range	-33° to +63°C (firing)
Storage temperature range	-33° to +71°C

155MM LU 211

INSENSITIVE OR CONVENTIONAL VERSION

MISSION

The 155mm LU 211 HE shell provides a long-range fire capability. It can be equipped with a hollow base or a Base Bleed. It can engage targets at a range of 30km with NATO standard 155mm/39 caliber guns (M109, M198...) and up to 40km with 155mm/52 caliber guns (CAESAR®, PzH 2000...) 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 with the same ballistic performances for training are offered.

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

	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	Interoperability standard A2 thread fuze and standard B2 long intrusion fuze			
	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	Up to 30km	Up to 40km	Up to 30km	Up to 40km

155MM LU 214 SMK-WP

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.

TECHNICAL CHARACTERISTICS

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

155MM LU 217 MS SMK

MISSION

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

DESCRIPTION

The projectile consists of a carrier shell 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 with in a few seconds and smoke emission occurs for 2 to 3 minutes.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

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
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

155MM LU 215 ILLUM

MISSION

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

DESCRIPTION

The projectile consists of a carrier shell 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 5m/s and producing approximately 1,200,000 candelas. A more than 600m diameter is effectively illuminated (≥3.4 Lux) during 80 seconds.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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

155MM LU 216 ILLUM IR

MISSION

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

DESCRIPTION

The projectile consists of a carrier shell 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.

TECHNICAL CHARACTERISTICS

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
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	

155MM LU 107

MISSION

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

- Conventional explosive version,
- Insensitive ammunition version (IM),
- Reduced range version for training.

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

155MM LU 110 SMK-WP

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.

TECHNICAL CHARACTERISTICS

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

155MM HE M107

MISSION

This projectile is fired from 155mm howitzers and is used for blast effect and fragmentation. KNDS 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.

TECHNICAL CHARACTERISTICS

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
Maximum range in 39 caliber gun	18,100m
Operational temperature	-54°C to +63°C
8 projectiles per pallet	
UN Classification	1.1 D UN 0168

155MM HE L15A1

MISSION

This projectile is fired from 155mm howitzers and has own blast effect and fragmentation. KNDS 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.

TECHNICAL CHARACTERISTICS

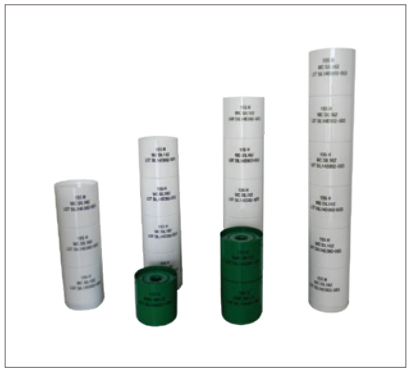
Type	High Explosive (HE)
Caliber	155mm
Complete projectile mass (with fuze)	43.5kg
Projectile length (without fuze)	778.5mm
Projectile filling (nominal)	11.3kg TNT or Comp B
Fuze	Proximity, PD or MTSQ
Maximum range in 39 caliber gun	24.100m
Operational temperature	-54°C to +63°C
8 projectiles per pallet	
UN Classification	1.1 D UN 0168

155MM MODULAR CHARGE SYSTEM

MISSION

The Modular propelling Charge System (MCS), replaces conventional propellant charges. Developed to comply with the Joint Ballistic Memorandum of Understanding (JBMoU) Annex D requirements, Modular Charge System is suitable for use on all the 155mm L39, L45 and L52 NATO standard guns (including CAESAR® and PzH 2000), 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.

TECHNICAL CHARACTERISTICS

Type	Bottom	Top
Caliber	155mm	155mm
Operational temperature	-33°C/+63°C* -46°C/+33°C**	
Storage temperature	-33°C/+71°C* -52°C/+71°C**	
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	

*Design France
**Design Italy

FB557

MULTIPURPOSE FUZE

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.

TECHNICAL CHARACTERISTICS

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

FB739A1

MULTIPURPOSE FUZE

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 modes, 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 CHARACTERISTICS

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

105MM HE HB ER G3

105MM NATO ARTILLERY AMMUNITION

MISSION

The HE HB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness.
This cartridge can be fired especially by the KNDS 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.

TECHNICAL CHARACTERISTICS

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

105MM HE BB ER G3

105MM NATO ARTILLERY AMMUNITION

MISSION

The HE BB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the KNDS 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.

TECHNICAL CHARACTERISTICS

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

105MM SMK HB ER G3

105MM NATO ARTILLERY AMMUNITION

MISSION

The SMK HB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the KNDS 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.

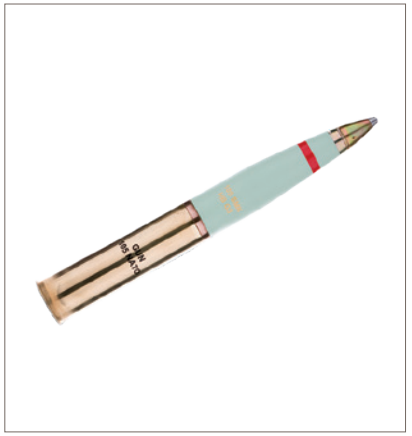
DESCRIPTION

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*,
- A cartridge case made of brass,
- A percussion type primer assembly,
- 2 zones of propelling charge in order to fire at different muzzle velocities.

STATUS

Qualified.



TECHNICAL CHARACTERISTICS

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

*The semi-fixed cartridge can be delivered without fuze

105MM SMK BB ER G3

105MM NATO ARTILLERY AMMUNITION

MISSION

The SMK BB ER G3 belongs to the 105mm NATO standard shell family offering proven reliability and high terminal effectiveness. This cartridge can be fired especially by the KNDS 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 1mn30s 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*,
- A cartridge case made of brass,
- A percussion type primer assembly,
- 2 zones of propelling charge in order to fire at different muzzle velocities.

STATUS

Qualified.

TECHNICAL CHARACTERISTICS

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

*The semi-fixed cartridge can be delivered without fuze.

105MM L14 HE M1

105MM NATO ARTILLERY AMMUNITION

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	420m/s
Maximum range	10,200m
Operational temperature	-40°C to +52°C
1 round per fiber container, 2 containers per wooden box	
UN Classification	1.2 E UN 0321

105MM L14 BLANK

105MM NATO ARTILLERY AMMUNITION

MISSION

The 105mm L14 Blank ammunition is designed and manufactured by KNDS to be fired by all version of 105mm M101, M101A1 (M2A1), M102, M56 howitzers and equivalent systems.
This ammunition was developed to provide battlefield sound effects for training purpose. It may also be used during ceremonies for saluting purposes.

DESCRIPTION

The 105mm Blank Cartridge is mainly composed by a standard percussion primer and a cartridge case. It is filled with a charge, which provides an audible sound when ignited by the primer. The bagged charge is held in place by a closure plug.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round
Caliber	105mm
Cartridge mass	2.9kg
Cartridge length	330mm
Cartridge case	Brass
Primer	Percussion
Propellant (nominal)	0.68kg
Operational temperature	from -40°C to
One round per fiber container, two container in a wooden box or i.a.w. Client's requirements	
UN Classification	1.1C UN 0326

Artillery Ammunition

PDM 728® IM

MECHANICAL PD FUZE FOR ARTILLERY SHELLS

MISSION

This artillery fuze has been designed in order to provide KNDS 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.

DIXI microtechniques

TECHNICAL CHARACTERISTICS

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
Compliant with European Chimical Regulation (REACH)	
ITAR free solution	
Metal box M2 A1 containing 8 fuzes Wooden box containing metal boxes	
Pallet dimensions (mm)	1,000x1,200x820mm
Weight	1,000kg
Volume	1m³

FB375

PROXIMITY FUZE

MISSION

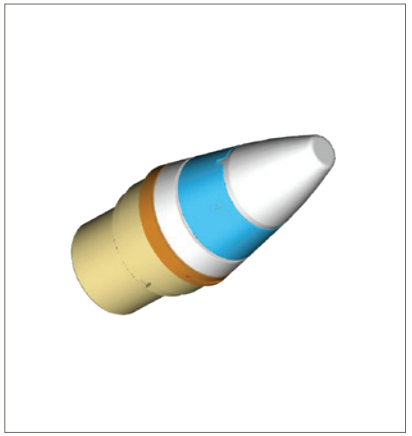
Proximity fuze with Height of burst function with impact back-up, impact only selectable.

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.

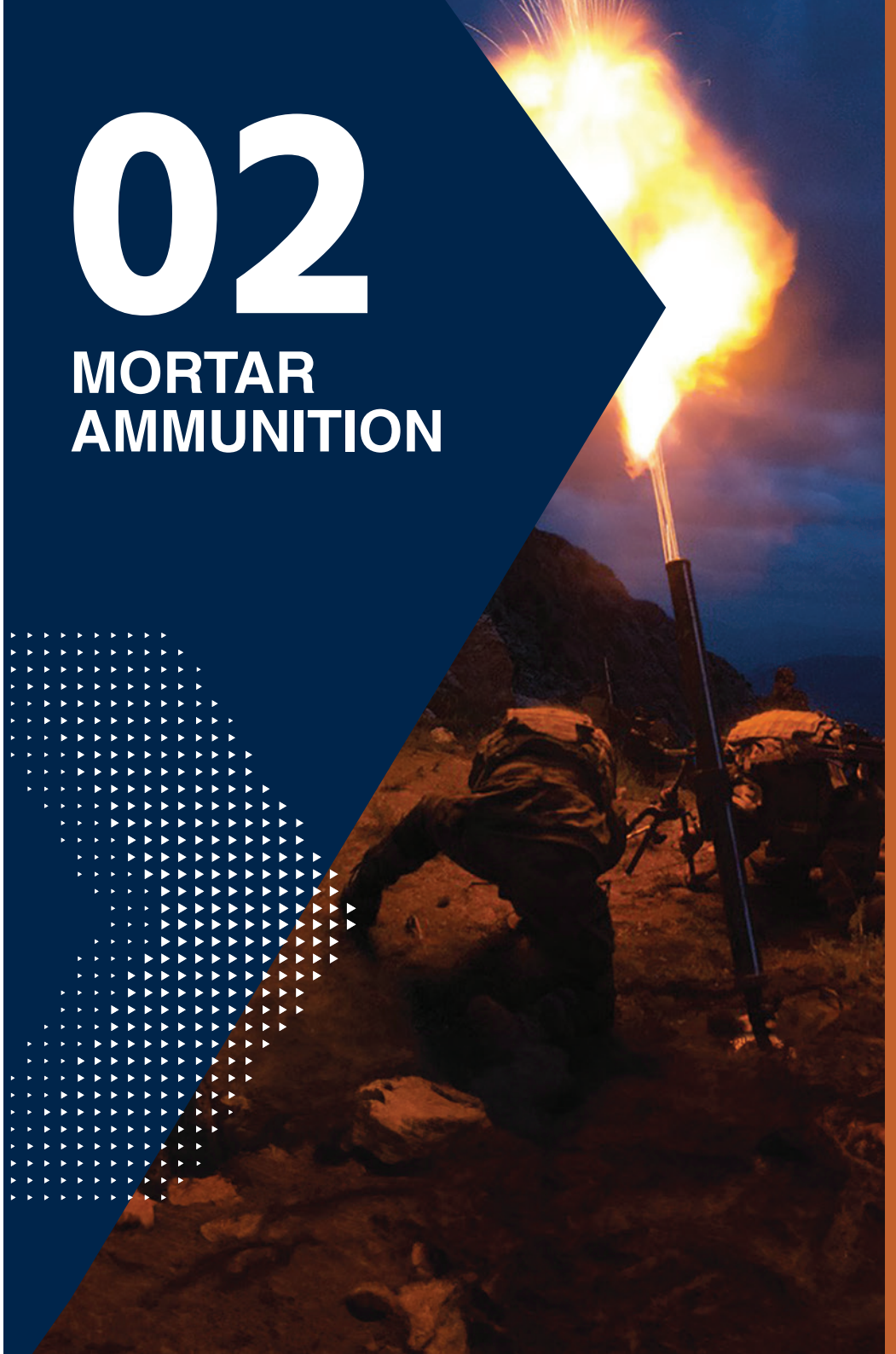


TECHNICAL CHARACTERISTICS

Type	Electronic fuze
Compatible with 155mm L52 ammunition	
Fuze mass (nominal)	~885g
Fuze length (nominal)	i.a.w MILSTD-333
Booster charge mass (nominal)	~9.3g of A5
Power supply	Lithium Battery
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
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	

02

MORTAR AMMUNITION



120MM MORTAR HE

M530A1

MISSION

The 120mm HE bomb is designed for use in 120mm smooth bore COBRA 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 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.

TECHNICAL CHARACTERISTICS

Type	HE
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	Max 780mm
Projectile filling (Comp. B)	2.5kg
Fuze	PD (Superquick)
Primary ignition cartridge	M547
Increment charge 1 to 6	M548
Increment charge 6 to 9	M549
Maximum chamber pressure (at 21°C)	160MPa
Muzzle velocity	428m/s
Range	8.5km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet/Alternative packaging available on request	
UN Classification	1.1 E UN 0006

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 CHARACTERISTICS

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
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet/Alternative packaging available on request	
UN Classification	1.1 E UN 0006

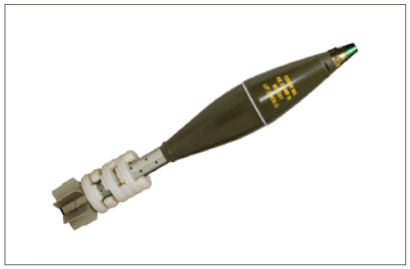
120MM MORTAR HE-IM

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 CHARACTERISTICS

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

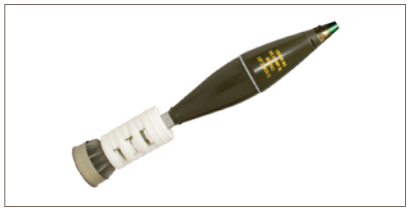
120MM MORTAR HE-IM

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 CHARACTERISTICS

Type	HE-IM
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 (For NEMO)	M553
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
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-IM

M580A2

MISSION

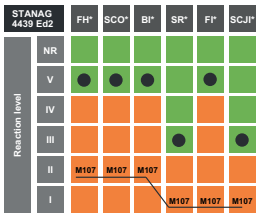
The 120mm HE bomb is designed for use in the 120mm AMS smooth bore mortar, fitted with the electric firing mechanism. The round is used against structures, material and personnel targets.

DESCRIPTION

The body is made of high fragmentation cast iron and is loaded with 2.5kg of insensitive melt cast explosive (XF® 11585) and is compliant with STANAG 4439. The fuze is a Point Detonating type that can be set in superquick mode. The standard propelling charge set consists of an electric primary cartridge, 6 equal charge increments, and a 7th supplementary charge. The round has a range in excess of 9km when fired from the AMS. The 120mm M580A2 is an upgrade of the 120mm M580A1 -safety certified by the US Army for use in the 120mm AMS turreted mortar 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).

STATUS

Under qualification.



TECHNICAL CHARACTERISTICS

Type	HE-IM
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Comp. B)	2.5kg
Fuze	PD (Super-quick)
Electric primary ignition charge	M568
Increment charge 1 to 6	M546
Increment charge 6 to 9	M553
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	

120MM MORTAR HE PRAC

M528A1

MISSION

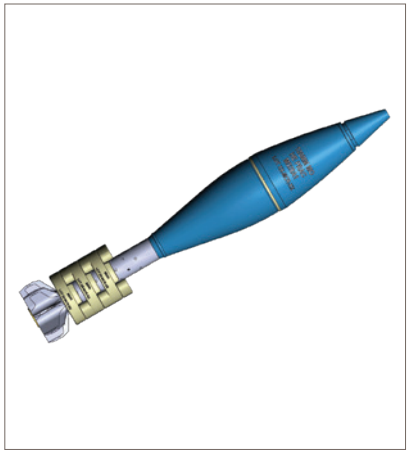
The 120mm HE PRAC bomb is a fin stabilized round complete with propellant increment charges and a dummy fuze. It is designed to be used for training mortar crews and forward observers.

DESCRIPTION

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

STATUS

In service.



TECHNICAL CHARACTERISTICS

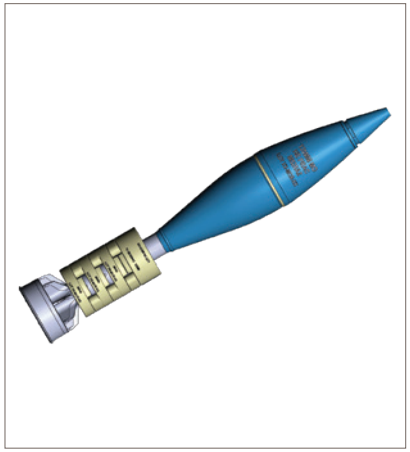
Type	HE PRAC
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling	XF® 11585
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Maximum chamber pressure (at 21°C)	95MPa
Muzzle velocity	311m/s
Range	>7km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 C UN 0328

120MM MORTAR HE PRAC

M528A2

MISSION

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



DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 C UN 0328

120MM MORTAR SMK (MULTI-SPECTRAL)

M532B1

MISSION

The 120mm SMK Multi-Spectral bomb is designed for use in 120mm smooth bore COBRA mortars. This round is used to produce instantaneous smoke for spotting, signaling or screening purposes.

DESCRIPTION

The bomb consists of a two-piece projectile.
The projectile houses the smoke canister.
The bomb is fitted with a time fuze.
The standard propelling charge set consists of a primary cartridge and 9 charge increments.
The round has a range in excess of 8.5km.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	SMK
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Comp. B)	2.1kg
Fuze	TSQ
Primary ignition cartridge	M547
Increment charge 1 to 6	M548
Increment charge 6 to 9	M549
Maximum chamber pressure (at 21°C)	160MPa
Muzzle velocity	428m/s
Range	8.5km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 C UN 0328

120MM MORTAR SMK (WP)

M532A1

MISSION

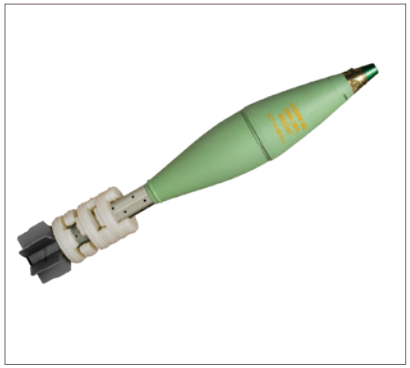
The 120mm SMK (WP) bomb is designed for use in 120mm smooth bore towed mortars. This round is used to produce instantaneous smoke for spotting, signalling or screening purposes, and to create an incendiary effect against material targets.

DESCRIPTION

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

STATUS

In service.



TECHNICAL CHARACTERISTICS

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
Maximum chamber pressure (at 21°C)	95MPa
Muzzle velocity	331m/s
Range	>7km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 H UN 0245

120MM MORTAR SMK (WP)

M532A2

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Maximum chamber pressure at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 H UN 0245

120MM MORTAR SMK (WP)

M582A1

MISSION

The 120mm SMK (WP) bomb is designed for use in the 120mm AMS smooth bore mortar, fitted with the electric firing mechanism.
This round is used to produce instantaneous smoke for spotting, signaling 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 superquick mode.
The standard propelling charge set consists of an electric primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km when fired from the AMS.
The 120mm M532A1 round, which is the mechanically live version of the M582A1 round, was safety certified by the US Army for use in the 120mm AMS turreted mortar, in 1999.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	SMK(WP)
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Comp. B)	2.1kg
Fuze	PD (Superquick)
Electric Primary ignition cartridge	M568
Increment charge 1 to 6	M546
Supplementary charge 7S	M553
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 H UN 0245

120MM MORTAR SMK (WP)

M592A2

MISSION

The 120mm SMK (WP) bomb is designed for use in 120mm smooth bore NEMO mortar.
This round is used to produce instantaneous smoke for spotting, signaling 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 M592A2 is obtained by adding a stub case on the 120mm M532A1 which has been safety certified by the US Army for use in the 120mm AMS turreted mortar, in 1999.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	SMK(WP)
Caliber	120mm
Round mass (nominal)	15.7kg
Round length	800mm
Projectile filling (Comp. B)	2.1kg
Fuze	PD (Delay or Superquick)
Primary ignition cartridge	M547
Increment charge 1 to 6	M546
Supplmentary charge 7S (for AMS)	M553
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Operational temperature	-46°C to +62°C
2 rounds per twin container, 15 containers per pallet Alternative packaging available on request	
UN Classification	1.2 H UN 0245

Mortar Ammunition

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 CHARACTERISTICS

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
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
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 CHARACTERISTICS

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
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
2 rounds per twin container, 15 containers per pallet/Alternative packaging available on request	
UN Classification	1.2 G UN 0171

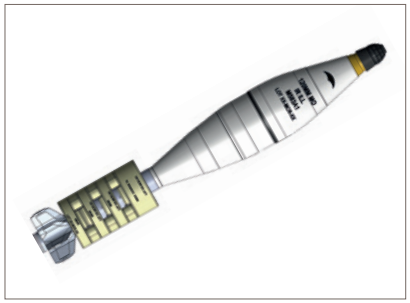
120MM MORTAR ILL

M583A1

MISSION
The 120mm illuminating bomb is designed for use in the 120mm AMS smooth bore mortar, fitted with the electric firing mechanism. The round is used to produce illumination of a specific point or area of operations.

DESCRIPTION
The 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 or electronic time fuze. The standard propelling charge set consists of an electric primary cartridge, 6 equal charge increments and a 7th supplementary charge. The round has a range in excess of 9km when fired from the AMS.
The 120mm M533A1 round, which is the mechanically live version of the M583A1 round, was safety certified by the US Army for use in the 120mm AMS turreted mortar, in 1999.

STATUS
In service.



TECHNICAL CHARACTERISTICS

Type	ILL
Caliber	120mm
Round mass (nominal)	15.2kg
Round length	780mm
Projectile filling (Illuminating Comp.)	1.2kg
Fuze	MTSQ/ETSQ
Electric primary ignition cartridge	M568
Increment charge 1 to 6	M546
Increment charge 6 to 9	M553
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Descent rate	+/-4m/s
Illuminated rate period	Approx. 50s
Illuminated rate intensity	1.0Mcd
Operational temperature	-46°C to +62°C
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 COBRA 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 8.5km. 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 CHARACTERISTICS

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–M548
Increment charge 6 to 9	M549
Maximum chamber pressure (at 21°C)	160MPa
Muzzle velocity	428m/s
Range	8.5km
Descent rate	+/-4m/s
Infrared band	0.7-1.2µm
Illuminated rate-period	Approx. 50s
Operational temperature	-46°C to +62°C
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)	1,200x1,000 x1,070mm
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 CHARACTERISTICS

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
Maximum chamber pressure (at 21°C)	165MPa
Muzzle velocity	440m/s
Range	>9km
Descent rate	+/-4m/s
Infrared band	0.7-1.2µm
Illuminating rate-period	approx. 50s
Operational temperature	-46°C to +62°C
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)	1,200x1,000 x1,020mm
UN Classification	1.2 G UN 0171

120MM MORTAR BOMB HE-PD

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Maximum range	6,840m
Operational temperature	-40°C to +63°C
1 round per fiber container, 2 containers per wooden box	
UN Classification	1.1E UN 0006

120MM MORTAR BOMB TP

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.

TECHNICAL CHARACTERISTICS

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
Maximum range	6,840m
Operational temperature	-40°C to +63°C
1 round per fiber container, 2 containers per wooden box	
UN Classification	2C UN 0328

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 CHARACTERISTICS

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

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

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 CHARACTERISTICS

Type	HE-IM
Caliber	81mm
Round mass (nominal)	4.2kg
Round length	510mm
Projectile filling (XF® 11585)	0.8kg
Fuze	PD
Primary ignition cartridge	M563
Charge increments*	2 or 4 increments type–M565
Supercharge**	1 increment type–M565
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
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)	1,550x800x 720mm
UN Classification	Under qualification

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

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 CHARACTERISTICS

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

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

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 CHARACTERISTICS

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
Range (low pressure mortar)	250 to 2,050m
Range (medium pressure mortar)	250 to 3,450m
Range (high pressure mortar)	250 to 4,050m
Burst height	600m
Descent rate	4m/s
Illuminated rate	Period: approx. 55s Intensity: 600,000cd
Operational temperature	-32°C to +62°C
Gross weight (container)	18kg
Dimension ext (container)	710x330x120mm
Gross weight (complete pallet)	675kg
Dimension ext (complete pallet)	1,400x1,000 x840mm
UN Classification	1.3 G UN 0254

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

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 CHARACTERISTICS

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

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

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 CHARACTERISTICS

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
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
3 rounds per container, 36 containers per pallet	
UN Classification	1.2 C UN 0328

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

81MM MORTAR BOMB HE

MISSION

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

DESCRIPTION

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

The maximum number of propellant increments depends on the mortar model.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Maximum range	6,900m
Operational temperature	-46°C to +63°C
Lethal radius	>22m
3 rounds per container, 36 containers per pallet or in accordance with Client's requirements	
UN Classification	1.1 E UN 0006

81MM MORTAR BOMB ILL

MISSION

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

DESCRIPTION

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

The tail assembly is fitted with the ignition primer and the propellant increments.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

*Charge configuration in accordance to Client's requirements

81MM MORTAR BOMB ILL SIL447

MISSION

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

DESCRIPTION

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

STATUS

In production.

TECHNICAL CHARACTERISTICS

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
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
3 rounds per container, 36 containers per pallet or in accordance with Client's requirements	
UN Classification	1.2 G UN 0171

*Charge configuration in accordance to Client's requirements

81MM MORTAR BOMB IR-ILL

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	IR (Infrared Illuminating)
Caliber	81mm
Round mass	4.5kg
Round length	650mm
Bomb filling	Illuminating composition IR (Infrared)
Fuze	Mechanical time
Propellant*	Max 6 propellant increments
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
2 rounds for container, 2 containers per metal box, 32 metal box per palletor in accordance to Client's requirements	
UN Classification	1.2 G UN 0171

*Charge configuration in accordance to Client's requirements

FB650

MECHANICAL TIME FUZE FOR MORTAR ROUNDS

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 MILSTD-333.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Functions	Time
Mechanical safety distance	1s
Minimum operating distance	6s
Operational temperature	-46°C to +63°C
50 fuzes per wooden container, 24 wooden containers per pallet	
UN Classification	1.2D UN 0409

FB652

INCREASED SAFETY MECHANICAL TIME FUZE FOR MORTAR ROUNDS

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 MILSTD-333.

STATUS

In service.

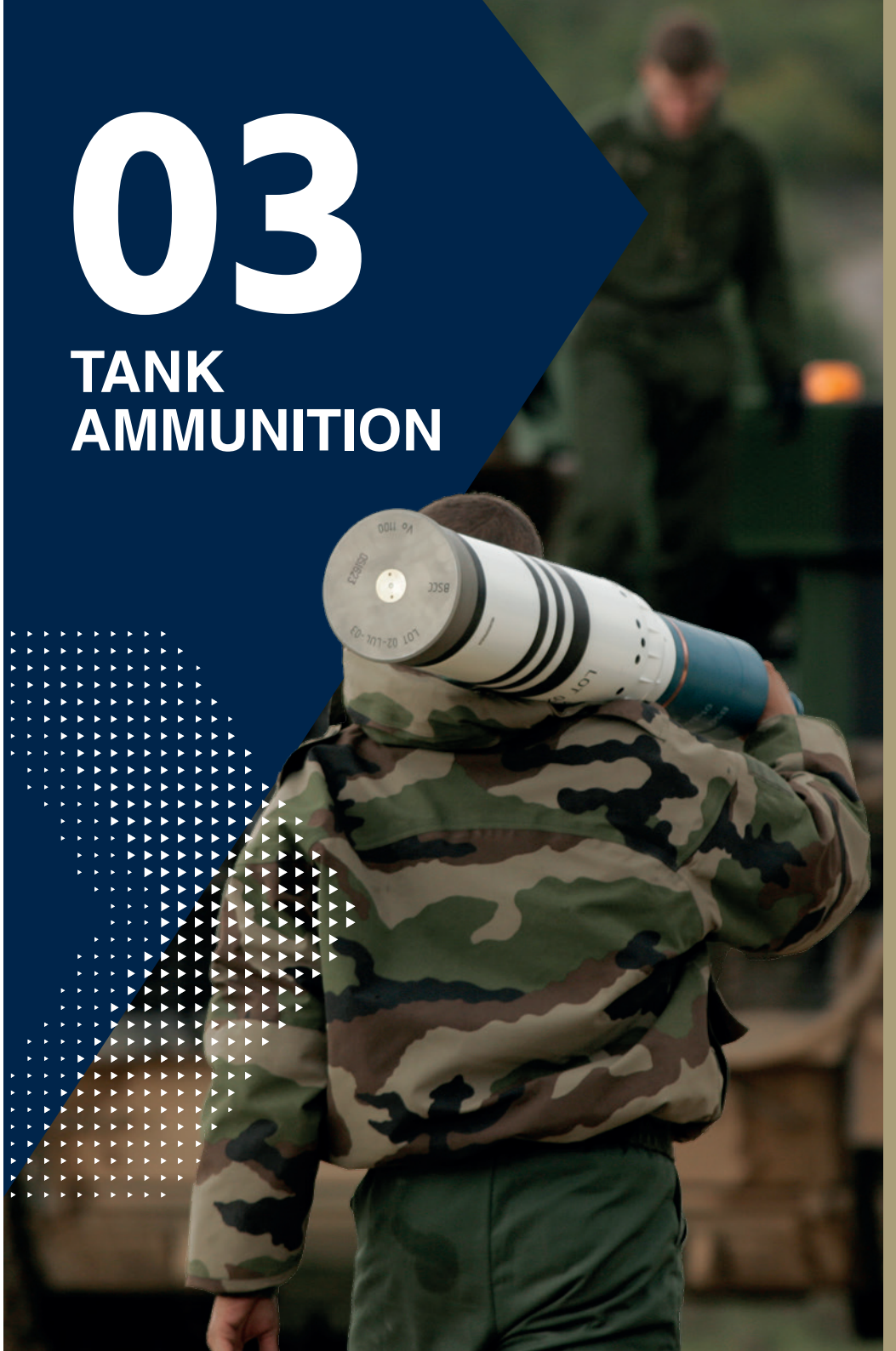
TECHNICAL CHARACTERISTICS

Type	Mechanical fuze
Caliber	60mm, 81mm, 120mm ILL Mortar Bombs
Fuze mass (nominal)	210g
Fuze length (nominal)	120mm (overall 248mm)
(overall 248mm)	PD (Delay)
Booster charge mass (nominal)	3g of black powder
Power supply	Mechanical energy
Functions	Time
Mechanical safety distance	1s
Minimum operating distance	6s
Operational temperature	-46°C to +63°C
50 fuzes per wooden container, 24 wooden containers per pallet	
UN Classification	1.2D UN 0409

Mortar Ammunition

03

TANK AMMUNITION



120MM HE F1

120MM AMMUNITION FOR NATO GUNS

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 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.

TECHNICAL CHARACTERISTICS

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 independent-safety devices compliant with STANAG 4187
Primer	Semi-combustible, Electrical primer
Projectile type	HE SQ
Explosive mass	3kg
Type of explosive	Compo B
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
Box	Plastic container

120MM HE IM3M

120MM AMMUNITION FOR NATO GUNS

MISSION

The 120mm HE IM3M (Insensitive Ammunition with 3 functioning Modes) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP26 requirements. It can be fired by the LECLERC MBT and other MBT's fitted with a 120mm smoothbore gun. The 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.

TECHNICAL CHARACTERISTICS

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®"
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
Box	Plastic container

120MM APFSDS ‘SHARD®’

120MM AMMUNITION FOR NATO GUNS

MISSION

The 120mm SHARD® (Solution for Hardened Armor Defeat) is KNDS’s newest generation of high velocity APFSDS round.
Compliant with STANAG 4385 and MOPI AEP 26 requirements, the 120mm SHARD® can be fired from every Main Battle Tank equipped with NATO’s 120mm smoothbore gun.

DESCRIPTION

By implementing a brand new tungsten penetrator technology and a state-of-the-art optimized sabot, the Kinetic Energy 120mm SHARD® projectile offers a significant increase of terminal efficiency, allowing to defeat the latest generation of heavily armored Main Battle Tanks. Fitted with a proven propulsion system, the 120mm SHARD® can be safely used worldwide in all climate zones, with limited barrel wear despite its high performance.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

Type	Armour Piercing Fin Stabilized Discarding Sabot
Caliber	120mm
Round mass	22kg
Round length	984mm
Cartridge case	Combustible
Propellant	Double base
Primer	Semi-combustible, Electrical primer
Range	4,000m
Muzzle velocity	1,720m/s (52cal.)
Operational temperature	-40°C to +51°C
Box	Plastic container

120MM APFSDS

120MM AMMUNITION FOR NATO GUNS

MISSION

The 120mm APFSDS (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 is designed to defeat heavy armored vehicles such as MBT’s.
The family of ammunition consists of combat rounds (120 APFSDS armour piercing round, 120 HE High Explosive round, 120mm CAN) and practice rounds (120 APFSDS-TP practice armour piercing round and 120 HEAT-TP practice anti-tank round) and drill rounds for tank crew training for ammunition handling.

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
Box	Plastic container

120MM CAN

120MM AMMUNITION FOR NATO GUNS

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity	1.410m/s approx
Maximum range	500m
Operational temperature	-31°C to +51°C
Box	Plastic container

120MM HEAT-TP F1A

120MM AMMUNITION FOR NATO GUNS

MISSION

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

DESCRIPTION

The 120mm HEAT-TP F1A is a training round consisting in an assembly of a propelling charge and of an inert projectile with a tracer.

The propulsion system consists in a metallic stub case with a combustible cartridge case, granular propellant and an electric semi-combustible primer.
The projectile consists of an inert steel shell body with a spike. A fin tail assembly, fitted with a tracer, is fixed on the shell body.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
Box	Plastic container

Tank Ammunition

120MM APFSDS-TP

120MM AMMUNITION FOR NATO GUNS

MISSION

The 120mm APFSDS-TP (Armour Piercing Fin Stabilized Discarding Sabot–Training Practice) belongs to an ammunition family complying with STANAG 4385 and MOPI AEP 26 requirements and can be fired by the LECLERC MBT, Abrams M1 (A1 and A2), Leopard 2, C1 Ariete and other 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, which is fixed into a 3-parts sabot.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

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
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
Box	Plastic container

120MM HEP-MP-T IM

M1084

MISSION

For use with MBTs fitted with a 120mm smoothbore gun such as Abrams M1 (A1 and A2), Leopard 2 and equivalents to defeat reinforced concrete structures, bunkers, roadblocks, light armored vehicles and personnel targets.

DESCRIPTION

The HEP-MP-T (HESH-MP-T) projectile consists of a thin walled steel cylindrical body and a base plug to which is secured the dual safety base detonating fuze.
The warhead is loaded with insensitive pressed explosive and is stabilized by deployable fins. The projectile is assembled to a combustible cartridge case fitted with an electric primer and loaded with a multi perforated propelling charge.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

Type	Fixed round HEP-MP-T(HESH-MP-T)
Caliber	120mm
Round mass (nominal)	24.5kg
Round length	912mm
Projectile mass (nominal)	13.7kg
Projectile filling (IM explosive)	3.6kg
Fuze	BD
Tracer	✓
Cartridge case	Combustible
Primer	Electric
Propellant DB (nominal)	6.4kg
Muzzle velocity (at 21°C) (nominal)	1,180m/s
Dispersion	<0.3mil
Effective range	3,000m
Operational temperature	-32°C to +52°C
One rounds per steel container	

105MM TK HE

M1010

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

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

STATUS
Under development.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	700m/s
Maximum range (42°C elevation)	12,930m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.1 E UN 0006

105MM TK HEP-IM-T

M393B3-E

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

DESCRIPTION
The HEP-IM-T (HESH-IM-T) projectile consists of a thin walled steel cylindrical body with two driving bands, a relatively short ogive and a base plug to which is secured the dual safety base detonating fuze and a tracer. The warhead is loaded with insensitive pressed explosive (P16945) and is compliant with STANAG 4439. The projectile is assembled to a brass cartridge case fitted with an electric primer and loaded with a cool burning, single base, multi perforated, bagged type propelling charge. This round is an upgrade of the KNDS 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).

STATUS
Qualified.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity at 21°C) (nominal)	731.5m/s
Dispersion	0.3mil
Maximum range	9,510m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
Gross weight (twin container)	53kg
Dimension ext (twin container)	1,100x410 x200mm
Gross weight (complete pallet)	710kg
Dimension ext (complete pallet)	1,220x1,095 x910mm
UN Classification	Under qualification

Tank Ammunition

105MM TK HEP-T

M393A3-E

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

DESCRIPTION
The HEP-T (HESH-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 KNDS M393A3 round, that was type classified by the US Army in 2004.

STATUS
In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round HEP-T(HESH-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
Muzzle velocity (at 21°C) (nominal)	731.5m/s
Dispersion	0.3mil
Maximum range	9,510m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

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 MILSTD-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 CHARACTERISTICS

Type	Fixed round HEAT-MP-T
Caliber	105mm
Round mass (nominal)	22.2kg
Round length	1.001mm
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
Muzzle velocity (at 21°C) (nominal)	1,173m/s
Dispersion	0.3mils
Maximum range	8,200m
Penetration (at 21)C)	180mm RHA steel at 60° obliquity
Tracer time	≥2.5s
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

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 KNDS 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.

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,460m/s
Dispersion	0.25mil
Line of sight penetration (RHA at 2,000 & 60° obliquity)	440mm
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

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 KNDS 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 CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,560m/s
Dispersion	0.25mil
Line of sight penetration (RHA at 2,000 & 60° obliquity)	>500mm
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

105MM TK CANISTER

M1204

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,173m/s
Effective range	200m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers 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 CHARACTERISTICS

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
Muzzle velocity at (at 21°C) (nominal)	731.5m/s
Maximum range	9,150m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 H UN 0245

105MM TK HESH-TP-T

M467A1-E

MISSION

For use with 105mm US M68, UK L7 and other STANAG 4458 compliant tank guns, to provide cost effective marksmanship 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 KNDS M467A1 round, that was type classified by the US Army.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	730m/s
Dispersion	0.31mil
Maximum range	9,510m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 C UN 0328

105MM TK HEAT-TP-T

M490A1

MISSION

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

DESCRIPTION

This round is similar in appearance and ballistically to the KNDS 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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,173m/s
Dispersion	0.3mil
Maximum range	8,200m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

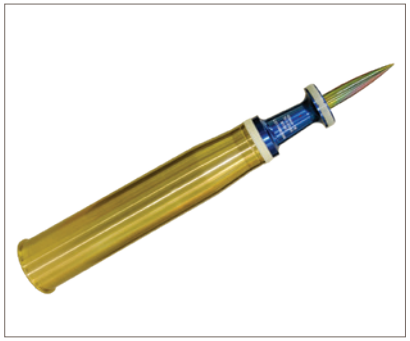
105MM TK TPFSDS-T

M1056

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

DESCRIPTION
The projectile consists of a sub-projectile and sabot. The sub-projectile comprises a fin stabilized steel rod and a tracer assembled in the fin assembly.
The sub-projectile is contained in a 3-piece aluminium Discarding Sabot, held in place with a polymer band at the forward end and a polymer obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case, which is loaded with cool burning, multi-perforated, loose propellant, and is fitted with an electric primer and a wear reducing liner. This round is similar, in appearance and ballistically to the KNDS 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.



TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,505m/s
Dispersion	0.32mil
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

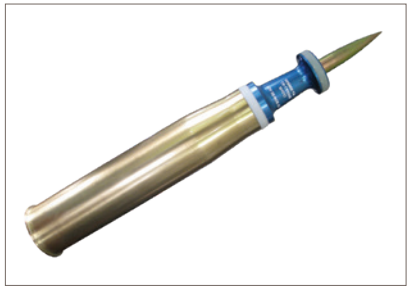
105MM TK TPCSDS-T

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 KNDS 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.

STATUS
In service.



TECHNICAL CHARACTERISTICS

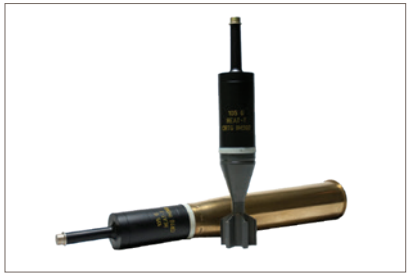
Type	Fixed round TPCSDS-T
Caliber	105mm
Round mass (nominal)	17.3kg
Round length	962mm
Projectile mass (nominal)	5.2kg
Projectile	Steel
Tracer	M13
Cartridge case	Brass
Anti-wear additive	Titanium dioxide
Primer	Electric cap M120
Propellant (nominal)	5.6kg
Muzzle velocity (at 21°C) (nominal)	1,475m/s
Dispersion	0.3mil
Maximum range	<10km
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

Tank Ammunition

105MM L51 HEAT-T

MISSION

The KNDS 105mm L51mm HEAT-T cartridge ensures 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.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,173m/s
Dispersion	0.24mil horizontal 0.20mil vertical
Maximum range	8,200m
Penetration (at operational ranges)	>Than the standard M456A1 model
Operational temperature	-40°C to +52°C
1 round per fiber container 2 containers per wooden box	
UN Classification	1.1E UN 0006

105MM L51 HEP-T (HESH-T)

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	731m/s
Dispersion	0.3mil
Maximum range	9,510m
Operational temperature	-40°C to +52°C
1 round per fiber container, 2 containers per wooden box	
UN Classification	1.1E UN 0006

105MM L51 TP-T

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,125m/s
Dispersion	0.3mil
Maximum range	8,200m
Operational temperature	-40°C to +52°C
1 round per fiber container, 2 containers per wooden box	
UN Classification	1.2 C UN 0328

105MM HE F3B

105MM AMMUNITION FOR AMX-10 RC GUN

MISSION

KNDS 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, personnelor 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.

TECHNICAL CHARACTERISTICS

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
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
Box	Plastic container

105MM HEAT F3B

105MM AMMUNITION FOR AMX-10 RC GUN

MISSION

KNDS 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 anda 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.

TECHNICAL CHARACTERISTICS

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
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
Box	Plastic container

105MM APFSDS F3

105MM AMMUNITION FOR AMX-10 RC GUN

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

105MM HEAT-TP F3A

105MM AMMUNITION FOR AMX-10 RC GUN

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

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 CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1.330m/s
Dispersion	0.32mil
Defeats 150mm target at 60° (NATO HEAVY TARGET)	2,000m
Operational temperature	-32°C to +62°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

90MM MK8 HESH-TP-T
M692A2

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

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

STATUS
In service.

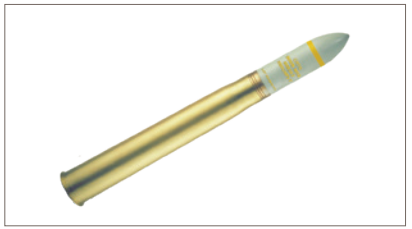
TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	709m/s
Dispersion	0.42mil
Operational temperature	-32°C to +62°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 C UN 0328

90MM MK8 SMK(WP)-T
M693A2

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

DESCRIPTION
The projectile comprises a thin walled, steel cylindrical body with a driving band and a base plug which is fitted with a base detonating fuze and an external tracer. It is loaded with White phosphorus (WP) and has a centrally positioned Composition B5 burster. The projectile is assembled to a brass cartridge case loaded with a cool burning, single base, multi-perforated, bagged type propelling charge.



It is ballistically similar to the HESH-T M691A2 and the HESH-TP-T M692A2 rounds.

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	709m/s
Dispersion	0.42mil
Operational temperature	-32°C to +62°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 H UN 0243

90MM MK8 TPFSDS-T

M697A1

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,360m/s
Dispersion	0.32mil
Operational temperature	-32°C to +62°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 C UN 0328

90MM MK3 HE-T

M616

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

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	714m/s
Dispersion	0.5mil
Operational range	800mm
Effective range	>2,000m
Operational temperature	-32°C TO +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.1 E UN 0006

90MM MK3 HE-T

M616A1

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

DESCRIPTION
The round consists of a steel body filled with Composition B explosive, a tracer, a tail fin assembly and a PD fuze. The fuze has two independent arming 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.

TECHNICAL CHARACTERISTICS

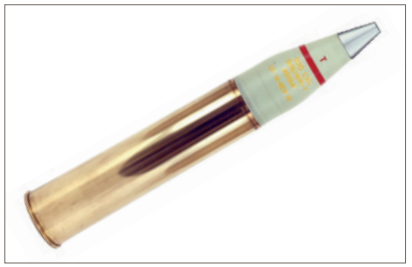
Type	Fixed round HE-T
Caliber	90mm
Round mass (nominal)	9.0kg
Round length	611mm
Projectile mass (nominal)	5.1kg
Projectile filling (Comp B)	1.1kg
Fuze	EPD
Tracer	M22
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.1kg
Muzzle velocity (at 21°C) (nominal)	714m/s
Dispersion	0.5mil
Operational range	800m
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.1 E UN 0006

90MM MK3 SMK(WP)-T

M618

MISSION
For use with current in-service 90mm Cockerill MKIII and Engesa EC-90 guns for screening, signaling 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 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.



STATUS
In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round , SMK(WP)-T
Caliber	90mm
Round mass (nominal)	9.1kg
Round length	612mm
Projectile mass (nominal)	5.3kg
Projectile filling (White Phosphorous)	0.9kg
Fuze	PDM
Tracer	M22
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.1kg
Muzzle velocity (at 21°C) (nominal)	714m/s
Dispersion	0.5mil
Operational range	800m
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.2 H UN 0243

Tank Ammunition

90MM MK3 SMK(WP)-T

M618A1

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

DESCRIPTION
The round consist of a steel body filled with White phosphorus and fitted with an explosive burster charge, a tracer, a tail fin assembly and a PD and Graze fuze. The fuze has two independent safeties, and complies with STANAG 4187 and MILSTD-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.

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round SMK(WP)-T
Caliber	90mm
Round mass (nominal)	9.1kg
Round length	612mm
Projectile mass (nominal)	5.3kg
Projectile filling (White phosphorus)	0.9kg
Fuze	EPD
Tracer	M22
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.1kg
Muzzle velocity (at 21°C) (nominal)	714m/s
Dispersion	0.5mil
Operational range	800m
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 H UN 0243

90MM MK3 HEAT-T

M620A1

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

DESCRIPTION
A High Explosive Anti-Tank round, with a nose cone, a body, a tail fin assembly and a tracer. The body is filled with high explosive and is fitted with a copper liner and an electronic Base Detonating fuze with two independent inbore safeties. The fuze also functions in graze impact mode and complies with STANAG 4187 and MILSTD-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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	890m/s
Dispersion	0.5mil
Effective range	1,500m
Penetration	250mm RHA
Operational temperature	-32°C to +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.1 E UN 0006

Tank Ammunition

90MM MK3 HEAT-TP-T

M623A2

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

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

STATUS
In service.

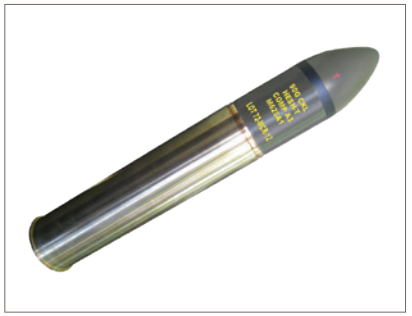
TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	890m/s
Dispersion	0.5mil
Effective range	1,500m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.2 C UN 0328

90MM MK3 HESH-T

M625A1

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



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

STATUS
In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round HESH-T
Caliber	90mm
Round mass (nominal)	8.5kg
Round length	590mm
Projectile mass (nominal)	4.5kg
Projectile filling (Comp A3)	1.2kg
Fuze	BD
Tracer	M13
Cartridge case	Brass
Primer	Percussion cap M61
Propellant SB (nominal)	1.3kg
Muzzle velocity (at 21°C) (nominal)	800m/s
Dispersion	0.5mil
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.1 E UN 0006

Tank Ammunition

90MM MK3 HE-TP-T

M637A1

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

DESCRIPTION
A training practice round with an inert warhead, a tracer and tail fin assembly, mounted on a brass cartridge case.
The round uses single base propellant and is fitted with a mechanical primer. It is designed to match the ballistics of the in service HE-T M616A1 round.

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	714m/s
Dispersion	0.5mil
Operational range	800m
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.2 C UN 0328

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 integrated in the fin assembly. This is contained within a 3-piece aluminium Discarding Sabot, held in place with a plastic band at the forward end and a plastic obturating band at the rear end of the sabot. The projectile is crimped to the cartridge case which is loaded with cool burning, multi-perforated, loose propellant.

STATUS
In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round APFSDS-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
Muzzle velocity (at 21°C) (nominal)	1.210m/s
Dispersion	0.3mil
Penetration (60° obliquity)	100mm RHA
Operational range	>1,500m
Operational temperature	-32°C TO +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.2 C UN 0328

Tank Ammunition

90MM MK3 HESH-TP-T

M655

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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	800m/s
Effective range	>2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.2 C UN 0328

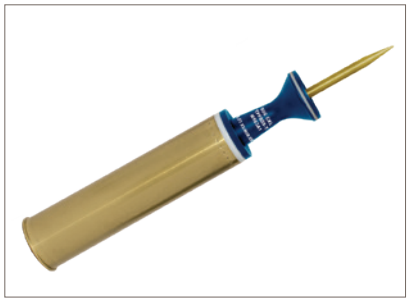
90MM MK3 TPFSDS-T

M663A1

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 integrated 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.



TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,210m/s
Dispersion	0.3mil
Operational range	>1,500m
Operational temperature	-32°C to +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.2 C UN 0328

Tank Ammunition

90MM F3/F4 SMK(WP)-T

M667

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 MILSTD-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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	744m/s
Dispersion	0.5mil
Effective range	2,000m
Operational temperature	-32°C to +62°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 H UN 0243

90MM F4 APFSDS-T

M669A1

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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,275m/s
Dispersion	0.32mil
Defeats (60° obliquity)	150mm at 1,000m (NATO Heavy target)
Operational temperature	-32°C to +62°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.2 C UN 0328

90MM F3/F4 HE-T

M678

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 MILSTD-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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	766m/s
Dispersion	0.5mil
Operational range	910m
Effective range	2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

90MM F3/F4 HEAT-T

M679

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 MILSTD-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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	962m/s
Dispersion	0.5mil
Effective range	2,000m
Penetration (RHA at 0°obliquity)	250mm
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

90MM F4 TPFSDS-T

M698

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

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

The trajectory of the projectile is ballistically similar to the standard M669 APFSDS-T round.

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,300m/s
Dispersion	0.32mil
Operational range	2,000m
Operational temperature	-32°C to +62°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 H UN 0328

90MM F3/F4 HEAT-TP-T

M699

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	950m/s
Dispersion	0.5mil
Effective range	2,000m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 C UN 0328

90MM F1 HEAT-T

M630

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	750m/s
Dispersion	0.5mil
Effective range	800m
Penetration (RHA at 0° Obliquity)	250mm
Operational temperature	-32°C to +62°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.1 E UN 0006

90MM F1 HE-T

M631

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	658m/s
Dispersion	0.5mil
Combat range	1,000m
Maximum range	1,800mm
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.1 E UN 0006

90MM F1 HE-T

M631A1

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 MILSTD-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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	658m/s
Dispersion	0.5mil
Combat range	1,000m
Maximum range	1,800m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.1 E UN 0006

90MM F1 SMK (WP)-T

M632

MISSION

For use with current in-service 90mm DEFA F1 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 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. Ballistically similar to the HE-T M631 round.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	658m/s
Dispersion	0.5mil
Combat range	1,000m
Maximum range	1,800m
Operational temperature	-32°C to +52°C
2 rounds per twin container 18 containers per pallet	
UN Classification	1.2 H UN 0245

90MM F1 HEAT-TP-T

M653

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

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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	750m/s
Dispersion	0.5mil
Effective range	800m
Operational temperature	-32°C to +62°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.2 C UN 0328

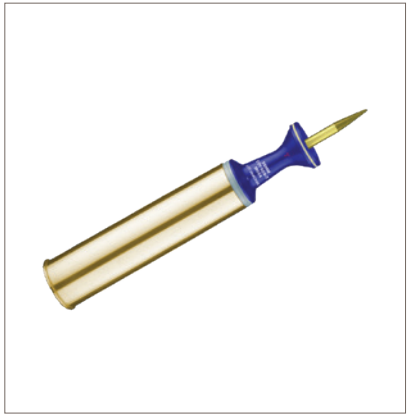
90MM F1 TPFSDS-T

M664

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

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

STATUS
In service.



TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,050m/s
Dispersion	0.32mil
Operational temperature	-32°C to +52°C
2 rounds per twin container, 18 containers per pallet	
UN Classification	1.2 C UN 0328

Tank Ammunition

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 CHARACTERISTICS

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

Type	Fixed round TPFSDS-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
Muzzle velocity (at 21°C) (nominal)	514m/s
Dispersion	0.5mil
Range, Direct Fire	2,400m
Range, Indirect Fire	6,000m
Number of fragments	+/-800
Operational temperature	-32°C to +62°C
2 rounds per twin container, 36 containers per pallet	
UN Classification	1.1 E UN 0006

Tank Ammunition

76MM HESH-TP-T

M331

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	533m/s
Dispersion	0.5mil
Range, Direct Fire	2,400m
Range, Indirect Fire	6,000m
Operational temperature	-32°C to +62°C
2 rounds per twin container, 36 containers per pallet	
UN Classification	1.2 C UN 0328

76MM CANISTER

M333

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round, Canister
Caliber	76mm
Round mass (nominal)	7.7kg
Round length	530mm
Projectile mass (nominal)	5.6kg
Fragments	0.7kg
(Ø 13/32'steel spheres)	+/-800 spheres
Fragments weight	4kg
Cartridge case	Brass
Primer	Percussion cap
Propellant SB (nominal)	0.7kg
Muzzle velocity (at 21°C) (nominal)	533m/s
Effective Range	100m
Maximum Range	700m
Operational temperature	-32°C to +62°C
2 rounds per twin container, 36 containers per pallet	
UN Classification	1.2 C UN 0328

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.

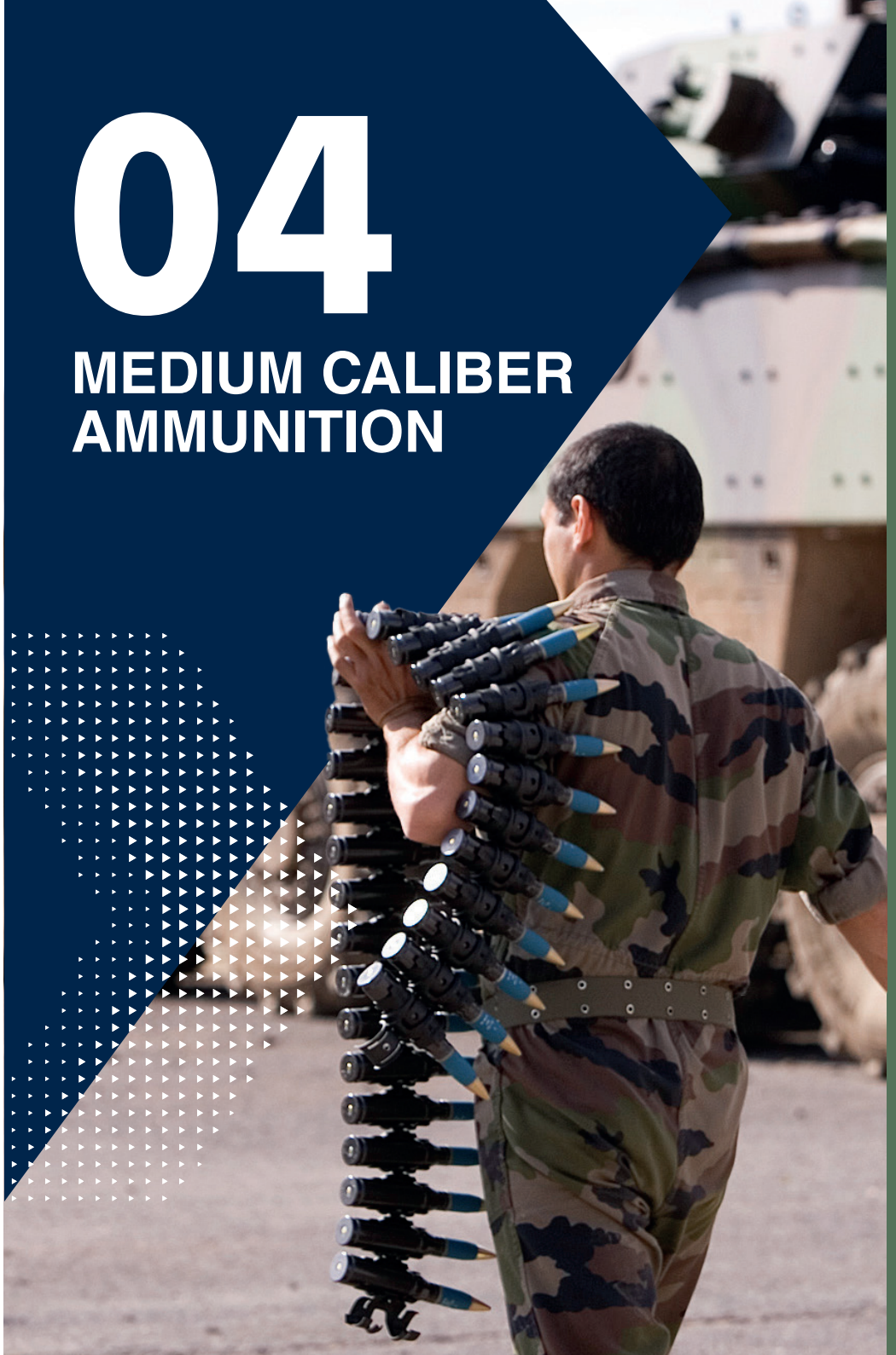
DESCRIPTION
The steel bodied projectile is loaded with White phosphorus, a central burster charge and is equipped with a Point Detonating fuze. A tracer is mounted on the projectile base. The projectile is fixed on a brass cartridge case, which contains a single base multi-perforated propellant. The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

STATUS
In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	514m/s
Dispersion	0.5mil
Range, Direct Fire	2,400m
Range, Indirect Fire	6,000m
Operational temperature	-32°C to +62°C
2 rounds per twin container, 36 containers per pallet	
UN Classification	1.2 H UN 0245

04
MEDIUM CALIBER AMMUNITION



40MM GPR-PD-T

40CTAS WEAPON SYSTEM

MISSION

The 40mm ammunition is intended for use in the 40CTAS weapon system.
The General Purpose Round-Point Detonating-Tracer (GPR-PD-T) is a highly efficient multirole ammunition with high levels of performance defeating 210mm of reinforced concrete at 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 STANAG 4187 requirements.

STATUS

Qualified.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,000m/s
Operational use	>2,500m
Dispersion	<0.5mil
Perforation	Double reinforced concrete wall 210mm thick and Armour 15mm thick
Tracer duration (+21°C)	≥3.4s
Box	Metallic box M548

40MM APFSDS-T

40CTAS WEAPON SYSTEM

MISSION

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

DESCRIPTION

The 40mm APFSDS-T cartridge is composed of:

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

STATUS

Qualified.

TECHNICAL CHARACTERISTICS

Type	Armour 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
Initial velocity	1.510m/s
Operational use	>3.000m
Dispersion	<0.3mil
Penetration RHA	140mm at 1,500m
Tracer duration (+21°C)	≥1.1s
Box	Metallic box M548

40MM GPR-AB-T

40CTAS WEAPON SYSTEM

MISSION

The 40mm ammunition is intended for use in the 40CTAS weapon system.
The General Purpose Round-Airburst-Tracer (GPR-AB-T) is a highly efficient multi-role ammunition is able to perforate 210mm of reinforced concrete at 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, generates splinters behind a 15mm armour plate, ensuring performance against light vehicles, urban and soft targets even at very short range, and allowing 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	990m/s
Operational use	Up to 2,500m
Dispersion	<0.5mil
Area	125m²
Tracer duration (+21°C)	≥3.4s
Box	Metallic box M548

40MM KE-AB

40CTAS WEAPON SYSTEM

MISSION

The 40mm ammunition is intended for use in the 40CTAS weapon system.
With an increased operational range, very high accuracy and a payload of 200 tungsten pellets, the Kinetic Energy Airburst (KE-AB) round provides the 40CTAS Weapon System with a higly Air Defence capability reducing.
The KE-AB ammunition is particularly effective against UAV, UAS helicopters and low speed aircraft.

DESCRIPTION

The 40mm KE-AB cartridge is composed of:

- A steel cartridge case,
- A mechanical primer,
- A propellant load,
- A shell loaded with tungsten pellets,
- An electromechanical fuze (Airburst and self destruction) compliant with STANAG 4187 requirements.

Fully programmable when feeding.
The ammunition does not contain any electrical energy in storage and regains its state of storage in case of unloading.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

Type	General Purpose Round Airburst -Tracer (GPR-AB-T)
Caliber	40mm
Cartridge weight	~2.820g
Cartridge length	255mm
Cartridge diameter	65mm
Projectile weight	1400g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Fuze	40 KE AB (airburst) Muzzle safety ≥15m
Payload	200x3,3g tungsten pellets
Propellant	~350g
Initial velocity	900m/s
Operational use	Up to 4,000m
Dispersion	0.5mil
Perforation	NO
Tracer duration (+21°C)	≥3.4s
Box	Metallic box M548

40MM TP-T OR 40MM BOAT

40CTAS WEAPON SYSTEM

MISSION

The 40mm ammunition is intended for use in the 40CTAS weapon system.
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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	>1,000m/s
Operational use	Up to 2,500m
Dispersion	0.5mil RMS at 1,500m
Tracer duration (+21°C)	≥3.5s
Box	Metallic box M548

40MM TPRR-T

40CTAS WEAPON SYSTEM

MISSION

The 40mm ammunition is intended for use in the 40CTAS weapon system.
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

Ready for Qualification.

TECHNICAL CHARACTERISTICS

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
Initial velocity	>1,000m/s
Operational use	Up to 1,500m
Tracer duration (+21°C)	≥3.5s
Box	Metallic box M548

30MM X 173 APFSDS-T

M928

MISSION

This ammunition is intended for use against armored targets and can defeat multi plate spaced armour using the kinetic energy of its long rod tungsten alloy penetrator.
It has been specially designed for use in the 30x173mm cannon Bushmaster II MK44 gun & GI-30 gun, as fitted on LAVs 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. The round is STANAG 4624 compliant.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round, APFSDS-T
Caliber	30mm
Round mass (nominal)	530g
Round length	290mm
Projectile mass (nominal)	220g
Penetrator	Tungsten Alloy Cobalt Free
Tracer	2.1s
Cartridge case	Aluminium
Primer	Percussion cap
Propellant ECL (nominal)	163g
Muzzle velocity at 21° (nominal)	1.430m/s
Penetration at 2,000m	>50mm RHA steel at 60° obliquity
Dispersion	<0.44mil
Operational tempe-rature	-32°C to +62°C
Tracer duration (+21°C)	≥3.4s
Box	Metallic box M548

30MM X 173 TPFSDS-T

M948

MISSION

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

DESCRIPTION

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

STATUS

In service.

TECHNICAL 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
Muzzle velocity (at 21°C) (nominal)	1.470m/s
Maximum range	≈3,700m
Dispersion	<0.44mil
Operational temperature	-32°C to +62°C
Gross weight (metal container)	30kg-35kg
Dimension ext (metal container)	470x220x355mm
Gross weight (complete pallet)	555kg-635kg
Dimension ext (complete pallet)	1,100x1,000x900mm
UN Classification	1.2 C UN 0328

30MM X 173 HEI-T

30MM BUSHMASTER II MK 44 AND GI-30 WEAPONS

MISSION

The 30mmx173 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 30x173 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,070m/s
Maximum range	Up to 2,500m
Accuracy	SH AND SV ≤0.5mil
Tracing duration	≥3s
Box	Metallic box M548

30MM X 173-TP

30MM BUSHMASTER II MK 44 AND GI-30 WEAPONS

MISSION

The 30mmx173 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.

The 30x173 TP-T cartridge is composed of:

- An aluminum cartridge case,
- A mechanical primer,
- A propellant load,
- An inert shell,
- A day/night tracer.

STATUS

Qualification in progress.

TECHNICAL CHARACTERISTICS

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
Propellant	~155g
Link	MK15
Initial velocity	1,070m/s
Maximum range	Up to 2,500m
Accuracy	SH AND SV ≤0.5mil
Tracing duration	≥3s
Box	Metallic box M548

30MM X 165 APFSDS-T

M929A1

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 CHARACTERISTICS

Type	Fixed round, APFSDS-T
Caliber	30mm
Round mass (nominal)	665g
Round length	283mm
Projectile mass (nominal)	225g
Penetrator	Tungsten Alloy Cobalt Free
Tracer	>2.1s
Cartridge case	Steel
Primer	Percussion cap
Propellant ECL (nominal)	135g
Muzzle velocity (at 21°C) (nominal)	1,300m/s
Penetration at 1,000m	>50mm RHA steel at 60° obliquity
Dispersion	<0.44mil
Operational temperature	-46°C to +62°C

30MM X 165 TPFSDS-T

M949

MISSION

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.

STATUS

In service.

TECHNICAL 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
Muzzle velocity (at 21°C) (nominal)	1,360m/s
Maximum range	≈3,700m
Dispersion	<0.5mil
Operational temperature	-46°C to +66°C
Gross weight (metal container)	35kg
Dimension ext (metal container)	470x220x355mm
Gross weight (complete pallet)	635kg
Dimension ext (complete pallet)	1,100x1,000x900mm
UN Classification	1.2 C UN 0328

30MM X 150 SAPHEI

30M791 WEAPON AMMUNITION

MISSION

The 30mmx150 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 KNDS 30mmx150 family is the only ammunition qualified for 30M791 weapon by French DGA and DASSAULT.

DESCRIPTION

The 30x150 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 CHARACTERISTICS

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
Primer	Percussion cap
Fuze	MR3015 Safety distance: ≥15m Self-destruction: 5 to 17s
Initial velocity	1,025m/s
Operational use	Up to 2,500m
Dispersion	≤0.6mil
Perforation RHA(thickness/ angle/distance)	15mm/30°/800m
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 30mmx150 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 KNDS 30mmx150 family is the only ammunition qualified for 30M791 weapon by French DGA and DASSAULT.

DESCRIPTION

The 30x150 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 CHARACTERISTICS

Type	Target Practice (TP)
Caliber	30mm
Cartridge weight	~550g
Cartridge l.ength	250mm
Projectile weight	275g
Cartridge case	Steel (lacquering protection)
Primer	Electric-M650 1A/1W
Propellant	~90g
Link	30M791
Fuze	MR3015 Safety distance: ≥15m Self-destruction: 5 to 17s
Initial velocity	1,025m/s
Operationnal use	Up to 2,500m
Dispersion	≤0.6mil
Metallic box CMC300	
The inside of the box is covered with insulation material, which reinforces the ammunition fire protection.	

30MM X 113B SAPHEI

DEFA 30MM WEAPON AMMUNITION

MISSION

The 30mmx113B 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 KNDS 30mmx113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

DESCRIPTION

The 30x113 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 CHARACTERISTICS

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

30MM X 113B TP

DEFA 30MM WEAPON AMMUNITION

MISSION

The 30mmx113B 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 KNDS 30mmx113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

The 30x113B TP cartridge is composed of:

- A steel cartridge case,
- An electric primer,
- A propellant load,
- An inert shell fitted with a sintered iron band.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	775m/s
Operationnal use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Box	02D101 Wooden box or CMC300 or CMC30 Metallic box

30MM X 113B TP-T

DEFA 30MM WEAPON AMMUNITION

MISSION

The 30mmx113B 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 KNDS 30mmx113B family is the only ammunition qualified on DEFA weapon family by French DGA and DASSAULT.

DESCRIPTION

The 30x113 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity 795m/s	795m/s
Operationnal use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Tracing duration	≥3s
Box	02D101 Wooden box or CMC300 or CMC30 Metallic box

30MM X 113B 1A/1W SAPHEI

MUNITION FOR DEFA F2B AND 30M781 WEAPONS

MISSION

The 30mmx113B 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 KNDS 30mmx113B family is the only ammunition qualified on DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

DESCRIPTION

The 30x113 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 CHARACTERISTICS

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
Initial velocity	775m/s
Operationnal use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Perforation RHA (thickness/angle/ distance)	15mm/45°/200m
Box	CMC300 or CMC30 Metallic box

30MM X 113B 1A/1W SAPHEI-SSF®

MUNITION FOR DEFA F2B AND 30M781 WEAPONS

MISSION

The 30mmx113B 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 KNDS 30mmx 113B family is the only ammunition qualified on DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

DESCRIPTION

The 30x113 1A/1W SAPHEI SSF® (SUPERSAFE®) 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 CHARACTERISTICS

Type	Semi Armour Piercing High Explosive Incendiary–SUPERSAFE® (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
Initial velocity	775m/s
Operationnal use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Perforation RHA (thickness/angle/ distance)	15mm/45°/200m
Box	CMC300 or CMC30 Metallic box

30MM X 113B 1A/1W TP

MUNITION FOR DEFA F2B AND 30M781 WEAPONS

MISSION

The 30mmx113 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 KNDS 30mmx113B family is the only ammunition qualified on DEFA weapon family by the French DGA, DASSAULT and AIRBUS HELICOPTERS.

DESCRIPTION

The 30x113 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	775m/s
Maximum range	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Box	CMC300 or CMC30 Metallic box

30MM X 113B 1A/1W HEI

30MM DEFA F2B AND 30M781 WEAPONS AMMUNITION

MISSION

The 30mmx113 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 KNDS 30mmx113B family is the only ammunition qualified for DEFA weapon family by French DGA, DASSAULT and AIRBUS HELICOPTERS.

DESCRIPTION

The 30x113 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.

The 30X113B 1A/1W HEI round can also be equipped with a proximity fuze (currently under development) able to defeat complex air and land targets.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

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
Initial velocity	775m/s
Maximum range	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Box	CMC300 or CMC30 Metallic box

30MM X 113B-ADEN HEI

MUNITION FOR ADEN 30MM WEAPONS

MISSION

The 30mmx113B 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 30x113B 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.

TECHNICAL CHARACTERISTICS

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	775m/s
Explosive	22g
Link	Mk1 ou MR1
Muzzle velocity	765m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Box	02D101 Wooden box or CMC300 Metallic box

30MM X 113B-ADEN TP

MUNITION FOR ADEN 30MM WEAPONS

MISSION

The 30mmx113B 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 30x113B 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	765m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤50cm at 100m
Box	02D101 Wooden box or CMC300 Metallic box

25MM X 137 HEI-T

25MM AUTOMATIC WEAPONS

MISSION

The 25mmx137 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 25mmx137 HEI-T cartridge is composed of:

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

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,100m/s
Operational use	Up to 2,500m
Dispersion	σH and σV≤0.8mil
Tracer duration	≥2.5m
Box	Metallic box CMC30 H200

25MM X 137 HEI-AB

25MM AUTOMATIC WEAPONS

MISSION

The 25mmx137 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 (25mmx137ammunition).
The 25mmx137 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 25mmx137 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,100m/s
Operational use	Up to 2,500m
Dispersion	σH and σV≤0.8mil
Box	Metallic box CMC30 H200

25MM X 137APFSDS-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 CHARACTERISTICS

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
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. 0.6mil
Operational temperature	-32°C to +62°C
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

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 (25mmx137 ammunition).

DESCRIPTION

The 25mmx137 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,100m/s
Operational use	Up to 2,500m
Dispersion	σH and σV ≤0.8mil
Tracer duration	≥1.8s
Box	Metallic box CMC30 H200

Medium caliber Ammunition

25MM X 137 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 KNDS 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 CHARACTERISTICS

Type	Fixed round, TP-T
Caliber	25x137mm
Cartridge weight	500g
Cartridge length	217mm
Projectile weight	190g
Cartridge case	Steel
Primer	Percussion cap
Propellant (nominal)	90g
Initial velocity	1,100m/s
Dispersion	max. 0.5mil
Operational temperature	-32°C to +62°C
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 TP-M

M951

MISSION

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

DESCRIPTION

This cartridge is a Training Practice with Marker (TP-M) type. It consists of a projectile with a red flash composition loaded in the nose. The composition is ignited by the impact on the target (no fuse) and generates a red flash for spotting purpose. The flash is visible in daylight, and night.
The projectile is mounted on a steel cartridgecase which is filled with single base propellant.
The M951 round is ballistically matched to the KNDS M938 HEI-T, and the US M792 HEI-T rounds.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

Type	25x137mm
Fixed round, TP marker	450g
Caliber	25mm
Round mass (nominal)	500g
Round length	217mm
Projectile mass (nominal)	185g
Projectile filling	Red flash compound
Cartridge case	Steel
Primer	Percussion cap
Propellant (SB) (nominal)	90g
Muzzle velocity (at 21°C) (nominal)	1,100m/s
Dispersion	<1mil
Operational temperature	-36°C to +62°C
15 rounds on a belt, and 2 belts per weatherproof metal container 28 containers per pallet	
UN Classification	1.2 G UN 0171

25MM X 137 TPRR-T

25MM AMMUNITION

MISSION

The 25mmx137 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 (25mmx137 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 25mmx137 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.

TECHNICAL CHARACTERISTICS

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

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 KNDS 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 CHARACTERISTICS

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

MISSION

The 20mmx139 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 20x139 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.

TECHNICAL CHARACTERISTICS

Type	High-Explosive Incendiary (HEI)
Caliber	20mm
Cartridge weight	~315g
Cartridge length	≤213mm
Projectile weight	120g
Cartridge case	Steel (lacquering protection)
Primer	Mechanical
Fuze	MR201B Self-destruction: 3.5 to 8s Safety distance: ≥15m
Propellant	~55g
Explosive	~9g
Link	24K711
Initial velocity	1,050m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Box	Metallic box 12D201

20MM X 139 HEI-T

20MM AMMUNITION

MISSION

The 20mmx139 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 20x139 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,050m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Tracer duration	≥3.5s
Box	Metallic box 12D201

20MM X 139 AP-T

20MM AMMUNITION

MISSION

The 20mmx139 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 20x139 AP-T cartridge is composed of:

- A steel cartridge case,
- A mechanical primer,
- A propellant load,
- An inert shell fitted with a sintered-iron driving band equipped with an armour-piercing core of high heavy metal,
- A day/night tracer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
Box	Metallic box 12D201

20MM X 139 TP

20MM AMMUNITION

MISSION

The 20mmx139 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 20x139 TP cartridge is composed of:

- A steel cartridge case,
- A mechanical primer,
- A propellant load,
- An inert shell fitted with a sintered-iron driving band.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,050m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Box	Metallic box 12D201

20MM X 139 TP-T

20MM AMMUNITION

MISSION

The 20mmx139 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 20x139 TP-T cartridge is composed of:

- A steel cartridge case,
- A mechanical primer,
- A propellant load,
- An inert shell fitted with a sintered-iron driving band,
- A day/night tracer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	1,050m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Tracing duration	≥3.5s
Box	Metallic box 12D201

20MM X 102 HEI

20MM AMMUNITION

MISSION

The 20mmx102 ammunition is compliant with international standards and has been particularly designed for use with the KNDS'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 20x102 HEI cartridge is composed of:

- A brass cartridge case (M103 type),
- An electric primer,
- A propellant load adapted to thermal conditions,
- An explosive shell loaded with RDX/ aluminium,
- A point detonating fuze equipped with two safety systems and self-destruction.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	975m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Box	Wooden box 02D101 or Metallic box M548

20MM X 102 AP-T

20MM AMMUNITION

MISSION

The 20mmx102 ammunition is compliant with international standards and has been particularly designed for use with the KNDS'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 20x102 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.

TECHNICAL CHARACTERISTICS

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
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
Box	Wooden box 02D101 or Metallic box M548

20MM X 102 TP

20MM AMMUNITION

MISSION

The 20mmx102 ammunition is compliant with international standards and has been particularly designed for use with the KNDS'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 20x102 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.

TECHNICAL CHARACTERISTICS

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
Initial velocity	975m/s
Operational use	Up to 2,000m
Accuracy	H+L ≤60cm at 200m
Box	Wooden box 02D101 or Metallic box M548

20MM X 102 TP-T

20MM AMMUNITION

MISSION

The 20mmx102 ammunition is compliant with international standards and has been particularly designed for use with the KNDS'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 20x102 TP-T cartridge is composed of:

- A brass cartridge case,
- An electric primer,
- A propellant load,
- An inert shell fitted with a sintered-iron driving band,
- A day/night tracer.

STATUS

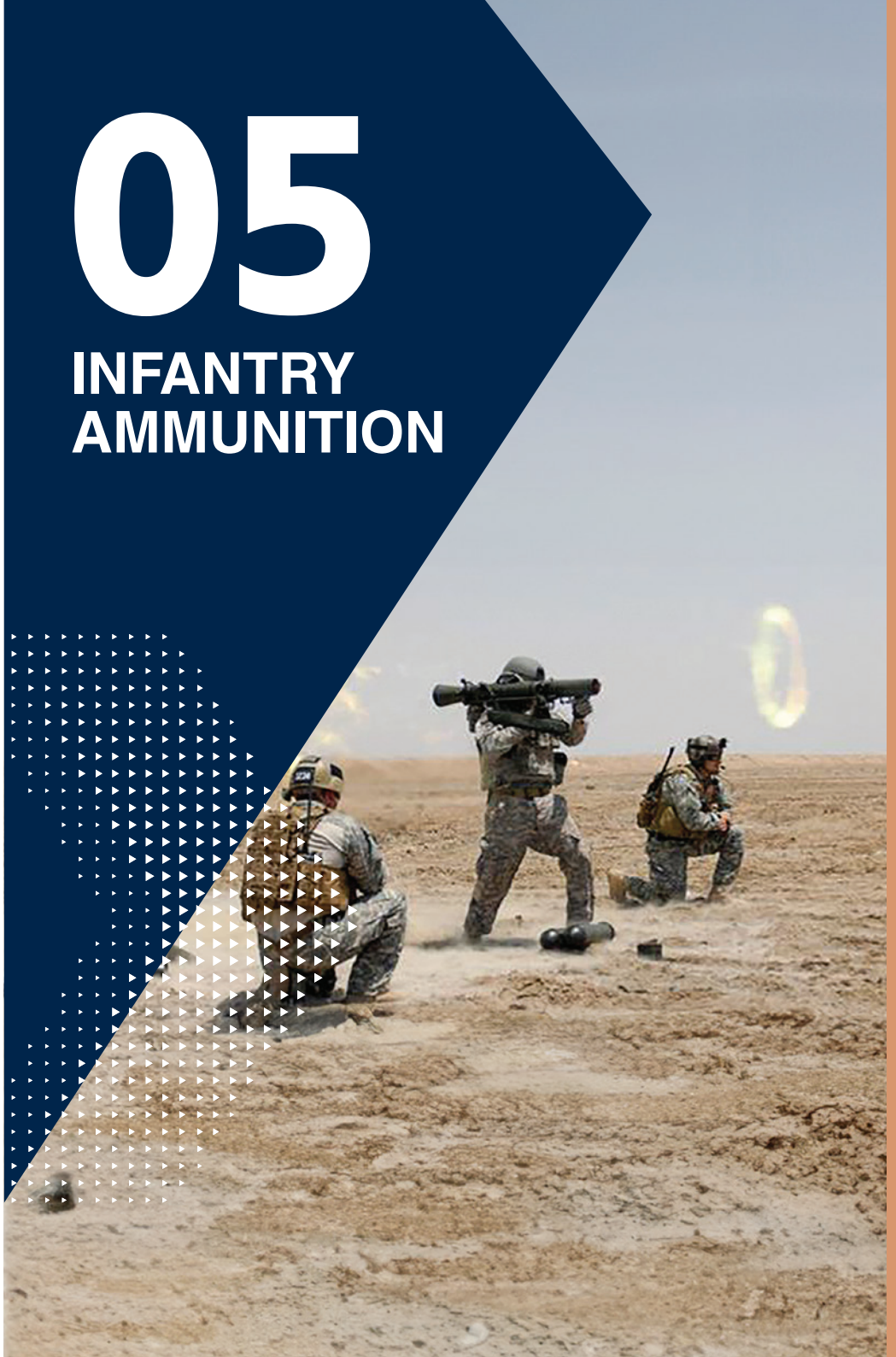
In service.

TECHNICAL CHARACTERISTICS

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
Initial velocity	975m/s
Operational use	2,000m
Accuracy	H+L ≤60cm at 200m
Tracing duration	≥2s
Box	Wooden box 02D101 or Metallic box M548

05

INFANTRY AMMUNITION



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 CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	500m/s
Dispersion	0.8mil
Maximum range	2,750m
Penetration (at 60° obliquity)	150mm
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

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 CHARACTERISTICS

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

M1072

MISSION

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

DESCRIPTION

The HESH-T (HEP-T) projectile comprises a thin walled steel cylindrical body with a premachined driving band, a relatively short ogive and a flat base to which is secured the base detonating fuze and a tracer. It is loaded with Composition A3 explosive. The projectile is assembled to a steel cartridge case fitted with a mechanical primer and loaded with double base, multi perforated propelling charge. The new base detonating fuze has two independent safety mechanisms, improved muzzle safety and improved graze performance. In the event of a non-function after firing, the firing pin will be mechanically locked.
The fuze complies with STANAG 4187 and MIL-STD-1316D.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21° C) (nominal)	500m/s
Dispersion	0.8mil
Effective range	1,350m
Maximum range	6,800 m
Operational temperature	-32°C to +52°C
2 rounds per twin container 12 containers per pallet	
UN Classification	1.1 E UN 0006

106MM RCL HESH-TP-T

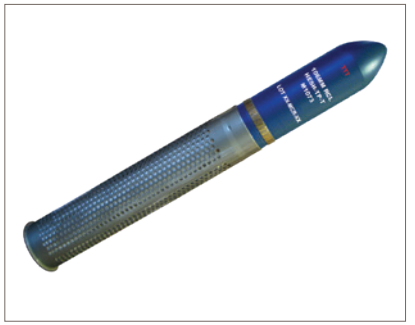
M1073

MISSION

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

DESCRIPTION

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



STATUS

In service.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21° C) (nominal)	500m/s
Dispersion	0.8mil
Range, Direct fire	1,350m
Range, Indirect fire	6,800m
Operational temperature	-32°C to +52°C
2 rounds per twin container, 12 containers per pallet	
UN Classification	1.2 C UN 0328

106MM SUBCALIBER ADAPTER

M1076

MISSION

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

DESCRIPTION

The sub-caliber adapter M1076 is a sub-caliber system used for gun crew training. It consists of a Training Device comprising a 7.62mm rifled barrel in a mount having the shape of a 106mm HESH round. 7.62 rounds are loaded in the Adapter to be fired from the 106mm rifle out to the combat range of full bore rounds. The 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.

TECHNICAL CHARACTERISTICS

Caliber	106mm
Round mass (nominal)	16kg
Round length	920mm
Caliber	7.62mm
1 round per container, 2 containers per wooden box	
12 wooden boxes per pallet	

06 NAVAL AMMUNITION

127MM L54 HE

MISSION

The 127mm HE projectile is designed and manufactured by KNDS to be fired by the OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun.
This projectile can be fired either with full or reduced charge. This type of ammunition can be equipped with PD or Proximity fuzes in order to guarantee the best response to the Navy requirements in every situation.

DESCRIPTION

The projectile consists of a steel shell filled with high explosive and fitted with a proximity fuze or a point detonating fuze. This 127mm projectile is in accordance with NATO design and safety standards.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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)
Muzzle velocity at 32°C	808m/s
Maximum range	20.750m
Operational temperature	-31°C to +55°C
24 projectiles per pallet/crate	
UN Classification	1.1 D UN 0168

*The projectile can be supplied without fuze

127MM L54 HE-IM

MISSION

The 127mm HE-IM projectile is designed and manufactured by KNDS 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 (KNDS 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

In service.

TECHNICAL CHARACTERISTICS

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
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

Naval Ammunition

127MM L54 PFFC

MISSION

The 127mm PFFC projectile is designed and manufactured by KNDS to be fired by the 127mm L54 OTO Melara automatic gun 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun.
The 127mm PFFC is the latest addition to the 127mm L54 family. This projectile has the same external ballistics of the HE projectile, but it is fitted with about 2.270 tungsten cubes, lined to the steel shell, that enhances its effectiveness, especially for shore bombardment mission.
For naval gunfire support, the availability of a Height-Of-Burst (HOB) fuze makes the PFFC extremely effective when a large area is to be cleared. In this case, a detonation at a few meters above the ground ensures the distribution of fragments over a large area.

DESCRIPTION

The projectile shell is fitted with tungsten cubes. The projectile consists of a steel shell filled with high explosive and fitted with a proximity fuze.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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)
Muzzle velocity at 32°C	808m/s
Maximum range	20.750m
Operational temperature	-31°C to +55°C
24 projectiles per pallet/crate	
UN Classification	1.1 D UN 0168

*The projectile can be supplied without fuze

127MM L54 HE-PFFC-IM

MISSION

The 127mm HE PFFC-IM projectile is designed and manufactured by KNDS 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 (KNDS composition) and fitted with a proximity fuze. This 127mm projectile is in accordance with NATO design and safety standards.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity at 32°C (nominal)	808m/s
Maximum range	20.750m
Operational temperature	from -31°C to +55°C
24 projectiles per pallet/crate	
UN Classification	1.1D UN 0168

*The projectile can be supplied without fuze

Naval Ammunition

127MM L54 TP

MISSION

The 127mm TP projectile is designed and manufactured by KNDS to be fired by the 127mm L54 OTO Melara automatic gun , 127mm L54 U.S. guns and the 127mm L64 OTO Melara Lightweight gun.
The TP projectile with dummy fuze is equivalent to HE projectile and it is used for training only. This projectile has the same ballistics, weight and dimensional characteristics of the HE, but it is filled with inert substance.

DESCRIPTION

The projectile consists of a steel shell filled with an inert compound and fitted with a dummy fuze.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	TP
Caliber	127mm
Projectile mass	32kg
Projectile length	661mm
Projectile filling	3.7 kg of Inert compound
Fuze*	Dummy fuze
Muzzle velocity at 32°C	808m/s
Maximum range	20.750m
Operational temperature	All climatic zones
24 projectiles per pallet/crate	
UN Classification	Not Applicable

*The projectile can be supplied without fuze

127MM L54 FNF

MISSION

The 127mm FNF projectile is designed and manufactured by KNDS to be fired by the 127mm L54 OTO Melara automatic gun, 127mm L54 U.S. gun and the 127mm L64 OTO Melara Lightweight gun.
It completes the family of 127mm projectiles. The FNF ammunition has the same internal and external ballistics of the HE projectiles and is used for fuzes testing and for training.

DESCRIPTION

The projectile consists of a steel shell filled with an inert substance and contains a flash charge. This flash charge consisting in a mixture of flash composition and black powder provides a flash and sound indication in case of fuze functioning without the fragmentation of the shell.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	FNF
Caliber	127mm
Projectile mass	32kg
Projectile length	661mm
Projectile filling (Inert Mixture)	3.4kg
Flash charge	0.085kg
Muzzle velocity at 32°C	808m/s
Maximum range	20.750m
Operational temperature	-31°C to +55°C
24 projectiles per pallet/crate	
UN Classification	1.3 C UN 0488

Naval Ammunition

127MM PROPELLING CHARGE

FULL CHARGE

MISSION

The 127mm Full Propelling Charge is designed and manufactured by KNDS 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.

TECHNICAL CHARACTERISTICS

Type	Full Charge
Caliber	127mm
Projectile mass	15.8kg
Projectile length	889mm
Charge filling	8.2kg
Primer	Electric
Operational temperature	-31°C to +55°C
1 Charge per metal container, 36 metal containers per pallet	
UN Classification	1.2C-UN 0488

127MM PROPELLING CHARGE

REDUCED AND CLEARING

MISSION

The 127mm Reduced and Clearing Propelling Charge is designed and manufactured by KNDS 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.

TECHNICAL CHARACTERISTICS

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
Operational temperature	-31°C to +55°C	
1 Charge per metal container, 36 metal containers per pallet		
UN Classification	1.2C-UN 0414	

Naval Ammunition

FB340

POINT DETONATING MECHANICAL FUZE

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.

TECHNICAL CHARACTERISTICS

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
Functions	PD super quick and PD super quick graze
Mechanical safety distance	100m
Minimum operating distance	350m
Operational temperature	-40°C +60°C
15 fuzes per wooden container, 24 wooden containers per pallet	
UN Classification	1.2 D UN 0409

VTPA FBO127

PROXIMITY FUZE

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 MILSTD-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 CHARACTERISTICS

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
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 (176.580m/s2)
Rotating spin	18.000rpm (1.885rad/s)
Self-destruction time (nominal)	35s
Miss distance	10m
Operational temperature	-21°C to +50°C
20 fuzes per wooden container, 24 wooden containers per pallet	
UN Classification	1.2D UN 0409

100MM HE F1

100MM AMMUNITION FOR NAVAL GUNS

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 Mk2 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.

TECHNICAL CHARACTERISTICS

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
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

100MM HE PFF F4

100MM AMMUNITION FOR NAVAL GUNS

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 Mk2 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.

TECHNICAL CHARACTERISTICS

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
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

100MM TP

100MM AMMUNITION FOR NAVAL GUNS

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 Mk2 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.

TECHNICAL CHARACTERISTICS

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
Maximum range surface targets	17,400m
Muzzle velocity	867m/s (new barrel)
Operational temperature	Display of shell operation. Training and Warning shot

76MM L62 HE-PD

MISSION

The 76mm L62 HE–PD round is designed and manufactured by KNDS 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.

TECHNICAL CHARACTERISTICS

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
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
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
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

Naval Ammunition

76MM L62 HE-PROX

MISSION

The 76mm L62 HE–PROX round is designed and manufactured by KNDS to be fired by all versions of 76mm OTO Melara gun systems and equivalent. It is filled with HE (High Explosive) and fitted with a proximity fuze that can be also provided with self–destruction capability. This round is used against patrol boats at short range, large ships and protected on-shore targets at long range.

DESCRIPTION

The projectile consists of a steel shell filled with high explosive and a proximity fuze. The projectile is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

76MM L62 HE-PF-IM6-OES

MISSION

The 76mm L62 HE-PF-IM6-OES ammunition is designed by KNDS and OTO Melara to increase the safety during storage and transport by its IM characteristics. It can be fired by the 76mm L62 OTO Melara compact gun in anti-missile role as well as against aircraft threats.

DESCRIPTION

The HE-PF-IM6-OES round is a Pre-Fragmented Ammunition filled with insensitive explosive. The HE-PF-IM6-OES body incorporates preformed fragments to maximize the round effectiveness to engage aerial targets (missiles and aircrafts) as well as fast jet boats. The lethal beam consists of pre-formed fragments made of high quality tungsten cubes and steel fragments coming from the shell.
The pre-formed fragments assure high levels of penetrations. The round is fitted with the 3AP microwave fuze. It can ignite the HE charge by target impact or proximity function.
The projectile is assembled on a brass cartridge case filled with a multi-perforated single base propellant and fitted with a percussion primer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
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

Naval Ammunition

76MM L62 HE-PFF IM84

MISSION

The 76mm L62 HE-PFF IM84 ammunition is designed and manufactured by KNDS 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.

TECHNICAL CHARACTERISTICS

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
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

76MM L62 HE SAP IM345

MISSION

The 76mm L62 HE SAP IM345 round is designed and manufactured by KNDS 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.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

76MM L62 TP AND TP-T

MISSION

The 76mm L62 TP with Dummy fuze is equivalent to the HE round but is used for training only. This round has the same ballistic, weight and dimensional characteristics as the HE, but it is filled with inert substance. This ammunition is used for training practice.
This practice ammunition can be supplied also with the tracer element which burns for at least five seconds after firing. In this case the projectile will be defined as TP-T model.

DESCRIPTION

The projectile, filled with an inert material, is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	Fixed round TP	Fixed round TP-T
Caliber	76mm	76mm
Round mass	12.5kg	12.5kg
Round length	907mm	907mm
Projectile mass	6.3kg	6.3kg
Projectile filling	Inert mixture	Inert mixture
Fuze	Dummy	Dummy
Tracer		Red effect (5 sec)
Cartridge case	Brass	Brass
Primer	Percussion	Percussion
Propellant SB (nominal)	2.45kg	2.45kg
Muzzle velocity (at 21°C)	905m/s	905m/s
Dispersion	External ballistic i.a.w. OTO Melara range table	External ballistic i.a.w. OTO Melara range table
Maximum range	15,900m	15,900m
Operational temperature	-33°C to +63°C	-33°C to +63°C
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	

76MM L62 FNF

MISSION

The 76mm L62 FNF round is designed and manufactured by KNDS to be fired by all OTO Melara gun systems and equivalent. The 76mm L62 FNF has the same internal and external ballistics behaviour of the HE ammunition and it is used for fuzes testing and training.

DESCRIPTION

The projectile consists of a steel shell filled with an inert compound and contains a flash charge. This flash charge consisting in a mixture of flash composition and black powder provides a flash and sound indication in case of fuze functioning without shell fragmentation. The projectile is assembled on a brass cartridge case which is filled with a multi-perforated single base propellant charge and fitted with a percussion primer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
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

Naval Ammunition

76MM L62 CLEARING CHARGE

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.

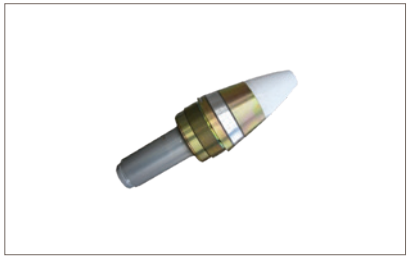
TECHNICAL CHARACTERISTICS

Type	Clearing Charge
Caliber	76mm
Charge mass (nominal)	6.35kg
Charge length	608mm
Cartridge case	Brass
Primer	Percussion
Propellant SB (nominal)	2.45kg
Operational temperature	-33°C to +63°C
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	1.2 C UN 0488

VTPA–FB76

PROXIMITY ELECTRONIC FUZE

MISSION
The VTPA FB76 fuze is a proximity fuze to be used with 76mm L62 HE and PFF ammunition. It was designed by KNDS 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 MILSTD-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.

TECHNICAL CHARACTERISTICS

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
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 (235,440m/s2)
Rotating spin	24,000rpm (2,513rad/s)
Self-destruction time (nominal)	25s
Operational temperature	-21°C to +50°C
20 fuzes per wooden container 24 wooden containers per pallet	
UN Classification	1.2D UN 0409

Naval Ammunition

3AP MOD 2 MICROWAVE FUZE

MISSION

The 3AP MoD 2 fuze was designed to increase the capability of target interception to defeat aircrafts, missiles and small boats by an advanced RF sensor and by different settable proximity modes. The delayed impact mode allows the fuze to penetrate boat or bunker.

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.

OTO Melara
A Finmeccanica Company

TECHNICAL CHARACTERISTICS

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

nexter ARROWTECH

40MM L70 HE-PD

MISSION

KNDS has a long and in-depth experience in 40mm L70 ammunition design and production. The 40mm L70 ammunition is used worldwide and qualified in accordance with NATO standards for use with all types of 40mm L70 guns. The high-explosive bursting charge is detonated by the fuze upon target impact. This cartridge is used against low flying aircrafts and ground targets also.

DESCRIPTION

The HE-PD round consists of a steel body filled with high explosive and a point detonating fuze. The fuze has dual mechanical safety.

The projectile is mounted on a brass cartridge case which is filled with single base propellant multiperforated and fitted with a percussion primer.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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

nexter ARROWTECH

Naval Ammunition

40MM L70 HE-PFF

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C)	1,005m/s
Maximum range	11,800m
Operational temperature	-40°C to +60°C
1 round per container, 20 containers per wooden box or 8 rounds per metal box or i.a.w. Client's requirements	
UN Classification	1.1 UN 0006

40MM L70 HE-PFF IL

IMPROVED LETHALITY

MISSION

KNDS 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 steel alloy 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.

TECHNICAL CHARACTERISTICS

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

Naval Ammunition

nexter ARROWTECH

40MM L70 HE-T AND HEI-T

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

Type	Fixed round HE-T	Fixed round HEI-T
Caliber	40mm	40mm
Round mass (nominal)	2.5kg	2.5kg
Round length	535mm	535mm
Projectile mass (nominal)	0.96kg	0.96kg
Projectile filling (nominal)	0.104kg Comp B	0.104kg Tritolital
Fuze	PDDLY-SD, PDSQ, PDDLY	PDDLY-SD, PDSQ, PDDLY
Tracer	Red effect, 4s (minimum)	Red effect, 4s (minimum)
Cartridge case	Brass	Brass
Primer	Percussion	Percussion
Propellant SB (nominal)	0.480kg	0.480kg
Muzzle velocity (at 21°C)	1,005m/s	1,005m/s
Maximum range	1,1800m	1,1800m
Operational temperature	-40°C to +60°C	-40°C to +60°C
1 round per container, 20 containers per wooden box or 8 rounds per metal box or i.a.w. Client's requirements		
UN Classification	1.1 E UN 0006	

40MM L70 AP-T

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

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
Muzzle velocity (at 21°C) (nominal)	1,005m/s
Penetration	50mm at 30°
Maximum range	11,800m
Operational temperature	-40°C to +60°C
1 round per container, 20 containers per wooden box or 8 rounds per metal box	
UN Classification	1.2 C UN 0328

40MM L70 TP AND TP-T

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

Type	Fixed round TP	Fixed round TP-T
Caliber	40mm	40mm
Round mass (nominal)	2.5kg	2.5kg
Round length	535mm	535mm
Projectile mass (nominal)	0.96kg	0.96kg
Projectile filling	Inert	Inert
Tracer	Absent	Red effect, 4s (minimum)
Cartridge case	Brass	Brass
Primer	Percussion	Percussion
Propellant SB (nominal)	0.480kg	0.480kg
Muzzle velocity (at 21°C)	1,005m/s	1,005m/s
Maximum range	1,1800m	1,1800m
Operational temperature	-40°C to +60°C	-40°C to +60°C
11 rounds per container, 20 containers per wooden box or 8 rounds per metal box		
UN Classification	1.2 C UN 0328	

FB40

PROXIMITY FUZE

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 MILSTD-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.

STATUS

In service.

TECHNICAL CHARACTERISTICS

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
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
20 fuzes per metallic box 2 metallic boxes per wooden container 24 wooden containers per pallet	
UN Classification	1.2D UN 0409

SIL M5

PD DELAY IMPACT FUZE

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

Qualified

TECHNICAL CHARACTERISTICS

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
Muzzle velocity at 32°C (nominal)	808m/s
Maximum range	20.750m
Operational temperature	From -31°C to +55°C
24 projectiles per pallet/crate	
UN Classification	1.1D UN 0168

FB769

PROGRAMMABLE MULTIMODE FUZE

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 MILSTD-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

In service.

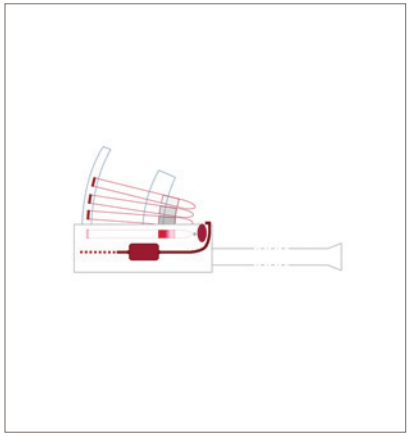
TECHNICAL CHARACTERISTICS

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
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

FB7 PROGRAMMER

MISSION

The FB7 Programmer is the programming device for FB769 fuze.
The FB769 is a programmable multimode fuze for 40mm L70 HE and PFF ammunition Programming the fuze just before firing guarantees the best performances with regards to the encountered operational scenarios.



DESCRIPTION

To ensure optimum performance of FB769 against all targets, the fuze has to be programmed inside the gun, during normal feeding cycle of the ammunition just before the fire. The Programmer receives data to program the fuze from Fire Control System by a dedicated interface, on base of the received data, FB7 generates the data packets for the fuze and starts to send them continuously and wirelessly up to the fire.
The FB7 Programmer can be customized for every 40mm L70 gun system.

STATUS

Under qualification.

TECHNICAL CHARACTERISTICS

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

FB 478

PD ELECTRONIC FUZE

MISSION

The FB 478 fuze is an electric fuze designed to be used on 40mm L70 ammunition.
The fuze has super-quick PD function with self destruction function as backup.
It has been designed to be a low cost PD fuze for 40mmL70 with a very high reliability.

DESCRIPTION

The FB 478 fuze has been designed in accordance with the requirements of STANAG 4187 and it has been designed, developed and tested in accordance with the criteria of AOP 20.
This is an electronic fuze with point detonating function in the event of a direct hit. The self destruction function is set to detonate the fuze after 12 ± 5 sec of flight.

STATUS

In service.

TECHNICAL CHARACTERISTICS

Type	Electronic fuze
Caliber	40mm L70
Fuze mass (nominal)	51g
Fuze length (nominal)	42mm (overall 75.25mm)
Booster charge mass (nominal)	1.8g of A5
Power supply	Setback generator
Functions	Point detonating
Mechanical safety distance	50m
Minimum operating distance	300m
Setback acceleration	40,000g Min (392,400m/s^2)
Rotating spin	40,000rpm Min (4,187rad/s)
Operationnal temperature	-40°C to +60°C
n.63 fuzes per M2A1 metallic container; n.2 M2A1 metallic containers per wooden box; wn.24 wooden box per pallet	
UN Classification	1.2D UN 0409

Naval Ammunition

07

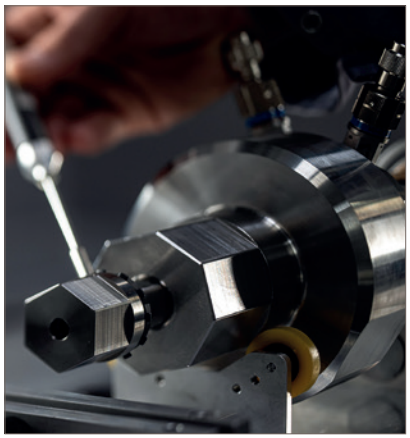
OTHER PRODUCTS AND SERVICES

PYROTECHNIC COMPONENTS

MISSION

KNDS 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, KNDS 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.

TECHNICAL CHARACTERISTICS

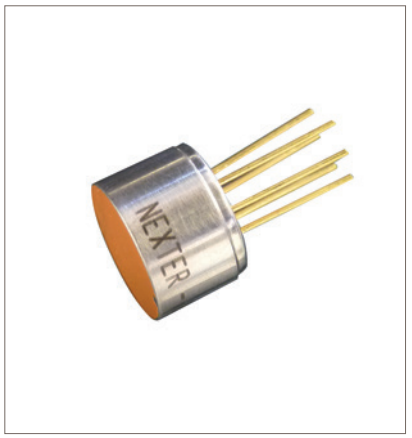
FIRING	
Electric	From low-energy to EBW
Mechanical	From 10 to 300mJ
Optical	From 10 to 20mJ, laser diode initiation
DIMENSIONS	
From Ø 3.7 to Ø 7mm	
APPLICATIONS	
Missiles equipments (thermal battery, actuators, pyrotechnic train...)	
Medium and large caliber ammunition	
Pyrotechnic ammunition	
Aeronautic and space systems	
Pyromechanisms	

FUZE SYSTEM– XFOIL INIT ®

WITH A LOW ENERGY EXPLOIDING FOIL INITIATOR

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 ammunition (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.

TECHNICAL CHARACTERISTICS

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

OPTOPYROTECHNIC COMPONENTS

PYROTECHNIC COMPONENTS

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 KNDS's technology to equip its Ariane 6 launcher.

STATUS

Qualified.

TECHNICAL CHARACTERISTICS

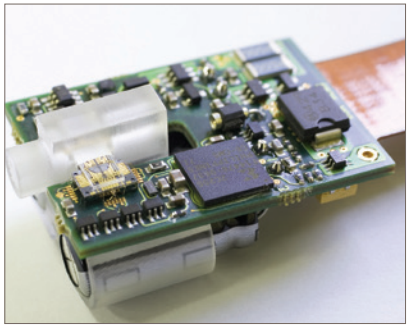
Insensitive to electromagnetic disturbances and electrostatic discharges
Reduced dimension
Temperature range from -120 to +110°C

PYRO-MEMS®

FUZING SYSTEMS

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 ammunition (from 90 to 155mm), missiles, rockets, torpedoes, bombs and aerospace applications. KNDS 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.

Pyro MEMS IN-IT

XF®

MELT-CAST EXPLOSIVE COMPOSITIONS FOR INSENSITIVE AMMUNITION

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

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

XP®

PRESSED EXPLOSIVE FOR INSENSITIVE AMMUNITION

MISSION

KNDS 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.

TECHNICAL CHARACTERISTICS

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

PROPELLANTS

GUN PROPELLANTS

Grains having 1, 7 & 19 holes for calibers 40mm up to 155mm.
Compositions:
- Single Base,
- Double Base,
- Triple Base,
- Multi Base for Special Application.

PROPELLANTS

Propelling charge is the ammunition's part designed to launch the projectile, according to the required internal ballistics. The main component is the propellant, designed to burn releasing gas according a controlled and defined velocity and pressure.
All propellants are made of solid perforated grains and REACH compliant.
KNDS has developed and patented a new family of propellants, the SIL RTP (Reduced Toxicity Propellant), to increase users' safety and to reduce the environmental impact.
KNDS's know-how allows to design and customize new propellants, whenever requested. KNDS can also provide surveillance service in the depots of our Customers to verify propellant shelf life, loaded in the ammunition.

STATUS

In service.

TECHNICAL CHARACTERISTICS

REACH compliant SINGLE BASE propellants		
Propellant	**Plus**	**Application**
SIL RTP1	DNT free-forbidden by 2015 DBP free-according to 2027 REACH DPA free-toxic to environment	• 40/70 ammunition • 105/51 ammunition • 105/14-22 ammunition • 155mm bagged charge
SIL RTP2		• 155mm modular charge
SIL RTP3		• 100mm ammunition
SIL RTP6		• 76/62 ammunition
SIL1	DNT free-forbidden by 2015	• 40/70 ammunition • 105/51 ammunition • 105/14-22 ammunition • 155mm bagged charge HEPT
SIL6+2		• 76/62 ammunition
M10		
SPDF		
REACH compliant MULTI BASE propellants		
Propellant	**Plus**	**Application**
M26	MIL-STD-652	• 105mm artillery propelling charges • 106mm ammunition
SIL26	Reduced gun wearing	• 155mm modular charges
M30	MIL-STD-652	• 105/51 munitions • 120mm thank ammunition • 155mm modular charges
SIL30	Reduced flame and temperature propellant	• 155mm modular charges
BPD5	Multibase	• 155mm propelling charge

MISSILE EQUIPMENT

WARHEADS AND SAFETY DEVICES

MISSION

KNDS 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.

76MM MULTISPECTRAL SMOKE GRENADE

SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

MISSION

KNDS's new generation of 76mm smoke grenade improves the survivability of the vehicles confronted to infrared guided missiles.
The screening multispectral screening grenad is specially designed to ensure effective and rapid self-protection with great efficiely in visible and infrared spectra.

STATUS

Under development.

TECHNICAL CHARACTERISTICS

Caliber	76mm
Protective screening activation	<2s
Protective screening duration	Visible > 40 sec, Infrared > 20 sec
Components	Reach compliant Red Phosphorous free
Operational temperature	-35°C to 71°C

GALIX®

SELF-DEFENSE SYSTEM FOR ARMORED VEHICLES

MISSION

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.

TECHNICAL CHARACTERISTICS

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

SYDEX®

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

MISSION

Compared to the current softkill systems, SYDEX® offers additional capabilities thanks to an embedded Smart Firing Control System (SFCS). This new generation of softkill system increases the performance and survivability of the armored vehicles thanks to its improved digital data link with the vehicle aiming at the optimization of the response to any threats to be dealt with. Furthermore, SYDEX® is able to fire a future generation of programmable ammunition, especially fitted for the "less than lethal" purpose.

STATUS

In service.

BRENUS®

PROTECTION SOLUTIONS FOR LIGHT AND HEAVY ARMORED VEHICLES

MISSION

The BRENUS® add-on Explosive Reactive Armour (ERA) enables to improve the combat survivability of armored vehicles against attack from missiles, anti-tank rockets and top attack grenades. BRENUS® provides protection against Heat and kinetic energy attack with a weight nine times lighter than its steel equivalent. It is remarkably insensitive to accidental battlefield incidents and attacks.

STATUS

Qualified.

EURENCO

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DEMILITARIZATION

The Ammunition Business Unit (ABU) 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. These services are provided with technical assistance as well as training.

Within ABU group, KNDS offers the Demilitarization Plant located in Anagni, near Rome. The Plant is able to process ammunition and explosive materials, starting from small to biggest calibers, as well as hand grenades, mortar bombs, land mines, complete rockets and missiles and their components, any type of propellant and much more.

The Plant is able to dispose the resulting by-products recycling explosive for civil use.

OPERATIONS PHASES

- Ammunition Unpacking,
- Primers Removal and Inertization,
- Projectiles, Bombs, Grenades Defusing,
- Ammunition Cut by submerged saws,
- Ammunition Unloading of large calibers up to 203mm,
- Ammunition Inertization by Rotative Oven,
- Ammunition and explosive Inertization by Tunnel Oven,
- Clearance by Flash Oven,
- Thermal Destruction of dirty explosive packaging,
- Metallic and plastic parts Deformation.

POINTS OF STRENGTH

- Demil Technique Experience,
- Ammunition Knowledge,
- The most advanced safety system and the most modern machines and equipment,
- Sinergy between demil and manufacturing of explosives for civil use by recovering explosives from ammunition,
- Sensitivity to the environment and safet.

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SERVICES

In addition to its comprehensive product catalogue, the Ammunition Business Unit offers an extended range of services able to meet a large customer demand through the whole life cycle of its products.

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 Unit 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 Unit as designer of any type of ammunition is able to support its customers for the monitoring of the ammunition stockpiles from the inspection to Service Life Surveillance facilities.

TRANSFERS OF MANUFACTURING

The Ammunition Business Unit can propose transfer of skills, engineering knowledge, technologies, methods of manufacturing and demilitarization, technical support for plant 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.

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