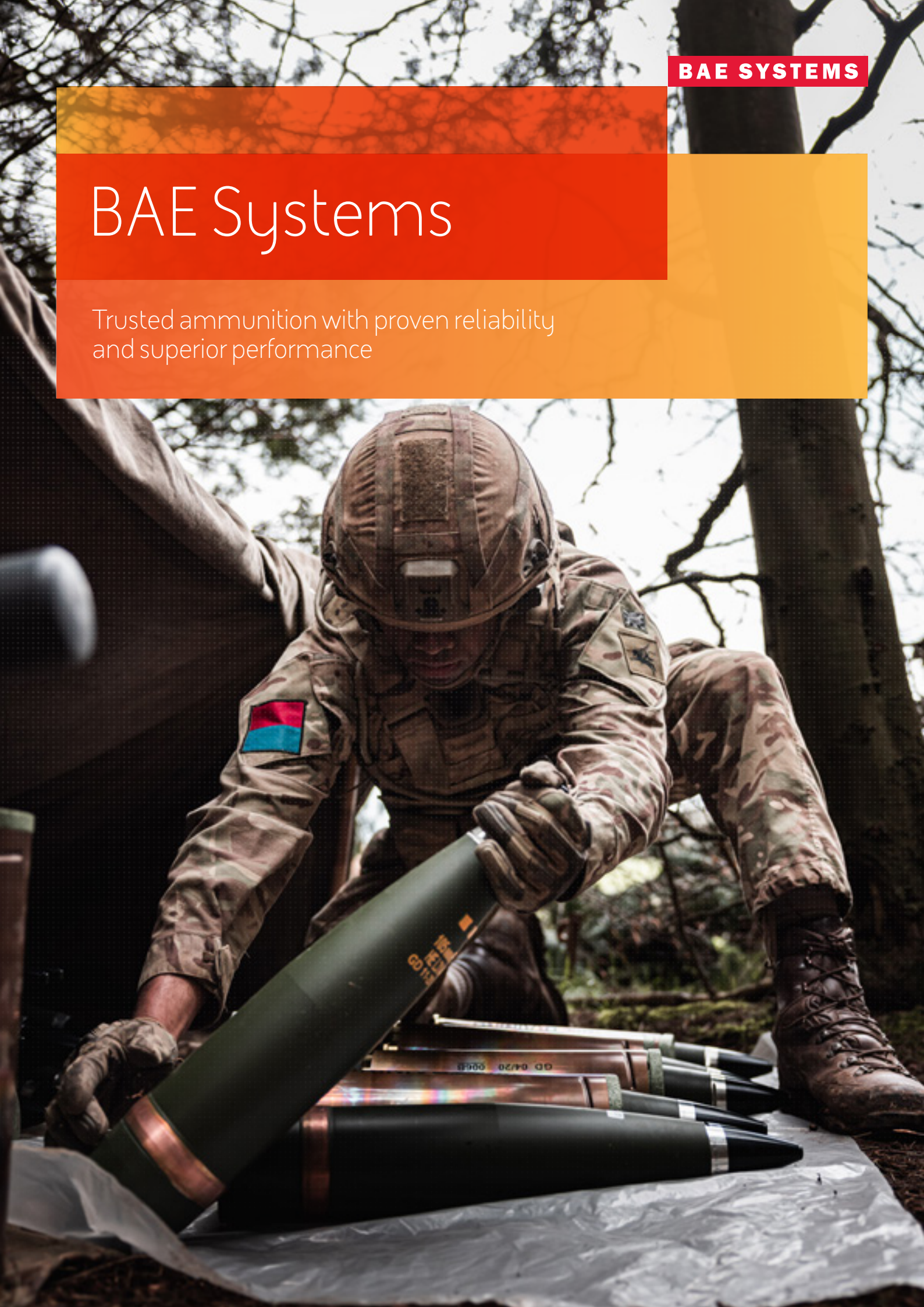
BAE SYSTEMS

BAE Systems

Trusted ammunition with proven reliability
and superior performance



Our Company

At BAE Systems, we provide some of the world's most advanced, technology-led defence, aerospace and security solutions. We employ a skilled workforce of over 110,000 people in more than 40 countries.

In an age of change and increasing uncertainty, where threats are escalating, technology is playing an essential part in our lives.

Our role is critical in helping our customers and partners stay ahead, from delivering innovations that provide military advantage, to offering services and support solutions that maintain, enhance and extend the life of vital military assets.

Why Us?

We are proud to equip the British Armed Forces and international customers with a range of products, including:

- Small arms ammunition
- Medium calibre ammunition
- Mortar ammunition
- Artillery ammunition
- Naval ammunition
- Advanced weapons

Our munitions have been proven in every possible environment, over many decades, with our specialist engineers working in partnership with our customers, to continually make performance improvements.

About Us

Within our munitions business, we employ approximately 1500 highly skilled people at five sites around the UK – Glascoed in South Wales, Washington in Tyne & Wear, Radway Green in Cheshire, Bishopton in Glasgow and Ridsdale in Northumberland.

From our engineers who are developing the next generation of munitions, to our operatives who have decades of experience in manufacturing, we are a trusted partner to military organisations around the world.

Our Products

Small Arms Ammunition
- 5.56 x 45mm Ammunition 6
- 7.62 x 51mm Ammunition 12

40mm Cased Telescoped Ammunition 16

81mm Mortar Ammunition 22

105mm Artillery Ammunition 26

155mm Artillery Ammunition 32

4.5 inch Naval Rounds 38

Small Arms Ammunition 5.56mm and 7.62mm

Proven reliability with superior performance

Our Small Arms Ammunition

We can produce over one million rounds per day of small arms ammunition in 5.56mm and 7.62mm NATO calibres, including: ball, tracer and blank rounds.

As the British Army's partner of choice since the 1940s, we are trusted to provide high volumes of precision rounds that soldiers know they can rely on.

Our engineers have developed new 5.56mm and 7.62mm rounds which can increase effective range and armour penetration, whilst remaining fully NATO compliant.

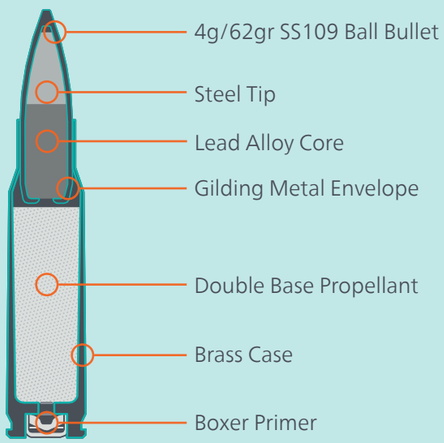
We are also currently designing new, light weight case ammunition that will reduce the weight burden and improve performance.

Our 5.56 x 45mm Ammunition

L15 Ball

- We supply this nature of NATO-qualified ammunition to Armed Forces throughout the world
- Known as the SS109, this has a hardened steel tip and lead alloy core
- Various packaging configurations are available, including carton, linked and clipped

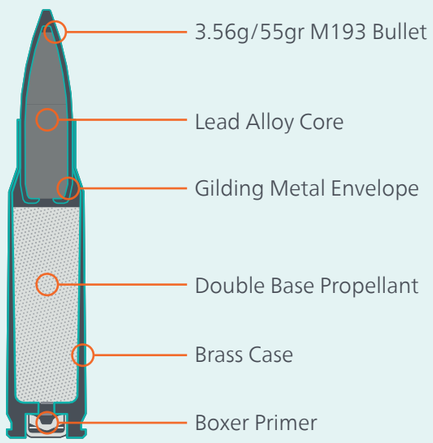
Bullet weight	4g/62gr
Cartridge weight	12g
Bullet	Lead Alloy Core / Steel Tip
Velocity	917m/s (24m from muzzle)
Consistency	≥ 70% hit probability (Rectangular target 350mm x 350mm at 550m range) Equivalent to horizontal and vertical st. dev. of less than 125mm at 550m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Temperature range for weapon function	-54°C to +52°C
Primer type	Boxer - Non Corrosive



M193 Ball

- The original 5.56mm Ball bullet, the M193, is based on a traditional lead-core design
- The lighter 3.56g bullet is favoured by some armed forces depending on their choice of assault rifle and is available with the same packaging options as the L15 Ball
- Designed and manufactured to STANAG 4172 requirements, the M193 round will perform flawlessly in conditions ranging from arid desert to sub-zero Arctic environments

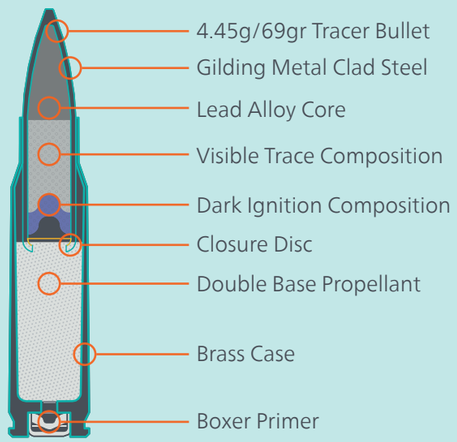
Bullet weight	3.56g/55gr
Cartridge weight	11.7g
Bullet	Lead Alloy Core
Velocity	965m/s (24m from muzzle)
Consistency	Combined horizontal and vertical st. dev. of shot distribution, at 500m range, shall not exceed 120mm, nor exceed 180mm for any individual target (When using an accuracy barrel with rifling twist of 1 in 12 inches)
Temperature range for weapon function	-54°C to +52°C
Primer type	Boxer - Non Corrosive



L16 Tracer

- Our NATO-qualified L16 Tracer round provides a highly accurate ballistic trace for assault rifles and fully-automatic belt-fed weapons
- It is most commonly used in 4-to-1 or 1-to-1 ratios and is highly visible in both day and night
- It also features a tracer delay composition to conceal the location of the shooter

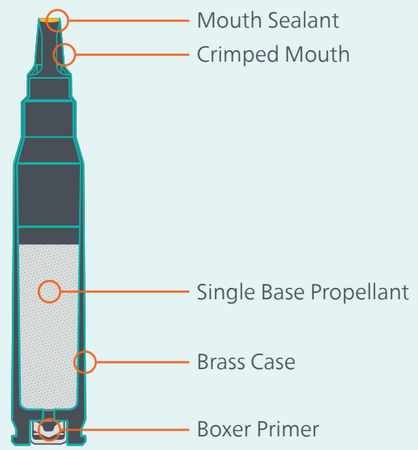
Bullet weight	4.45g/69gr
Cartridge weight	12.25g
Bullet	Lead Alloy Core / Tracer Comp.
Velocity	872m/s (24m from muzzle)
Consistency	≥ 70% hit probability (Rectangular target 650mm x 650mm at 550m range) Equivalent to horizontal and vertical st. dev. of less than 220mm at 550m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Tracer performance	Invisible for 13m min. from the muzzle. Continuous visible trace beginning at 140m max. and continuing for 600m min. from the muzzle
Temperature range for weapon function	-54°C to +52°C
Primer type	Boxer - Non Corrosive

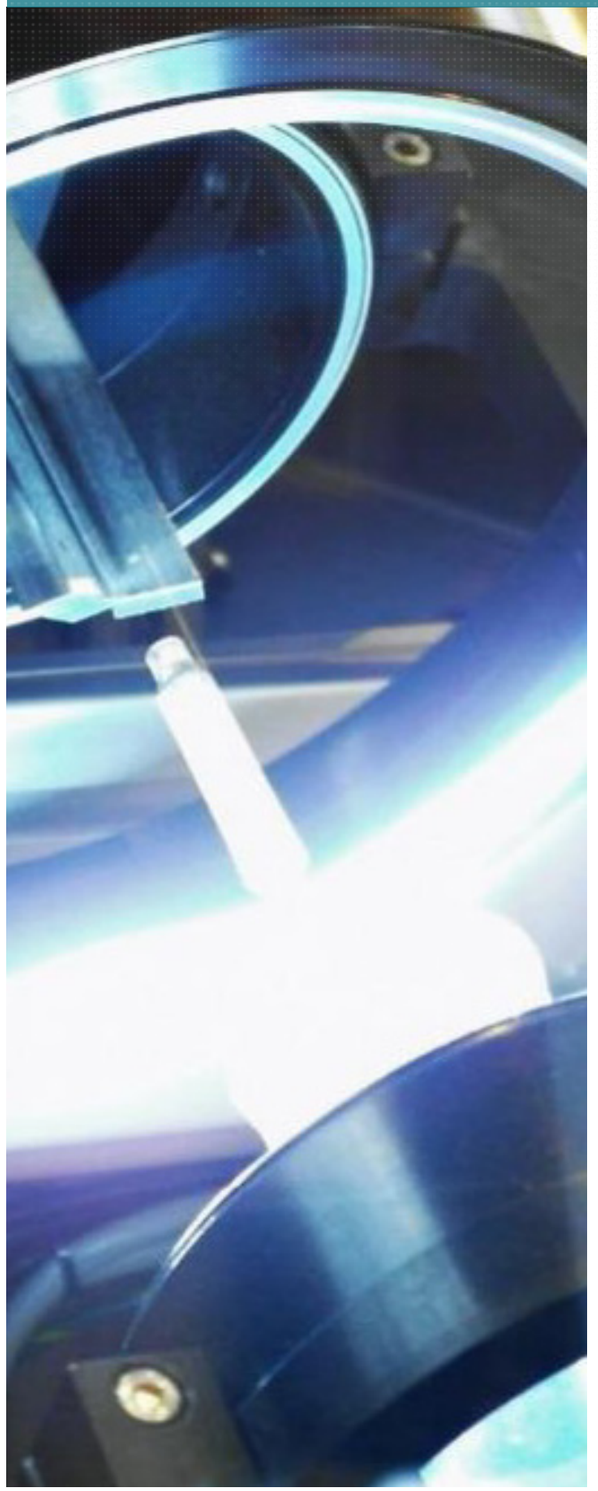


L18 Blank

- This Blank ammunition has an extended case, simulating the form of the bulleted round
- Blank training ammunition can be supplied in a variety of configurations to suit customer requirements

Cartridge weight	7.72g
Temperature range for weapon function	-20°C to +40°C
Primer type	Boxer - Non Corrosive

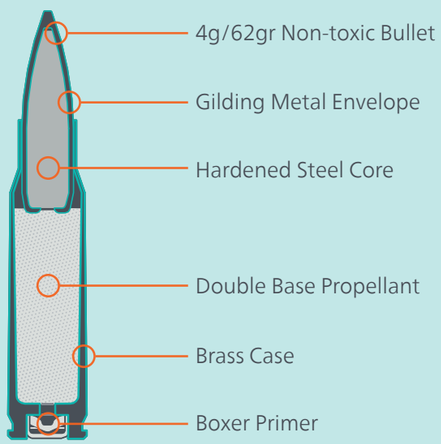




L31 Enhanced Performance (EP) Ball

- This 5.56mm round delivers enhanced penetration, range and lethality
- A lead-free bullet compatible with all 5.56mm NATO weapons
- For use with existing weapons, delivering enhanced performance

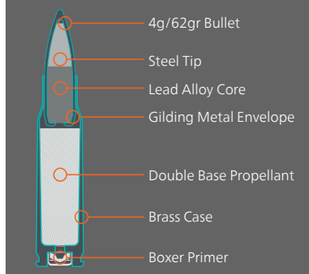
Bullet weight	4g/62gr
Cartridge weight	12g
Bullet	Hardened Steel Core
Velocity	911m/s (24m from muzzle)
Consistency	≥ 70% hit probability (Rectangular target 350mm x 350mm at 550m range) Equivalent to horizontal and vertical st. dev. of less than 125mm at 550m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Temperature range for weapon function	-54°C to +52°C
Primer type	Boxer - Non Corrosive



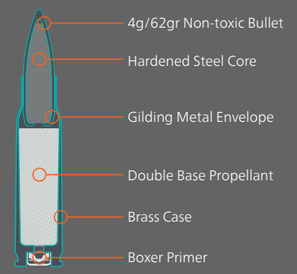
Comparing Standard and Enhanced Performance Ammunition

Our L31 Enhanced Performance (EP) Ball ammunition can penetrate armour at greater ranges, giving troops a significant tactical advantage

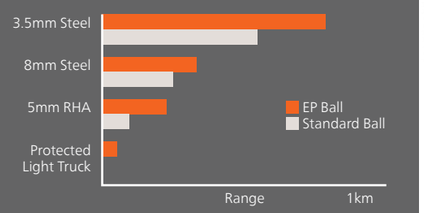
L15 Ball



L31 Enhanced Performance Ball



Range Comparison



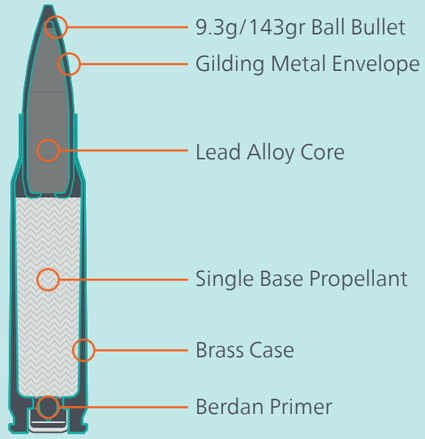


Our 7.62 x 51mm Ammunition

L44 Ball

- We supply this NATO-qualified ammunition to armed forces worldwide
- This product provides exceptional accuracy, consistency and reliability

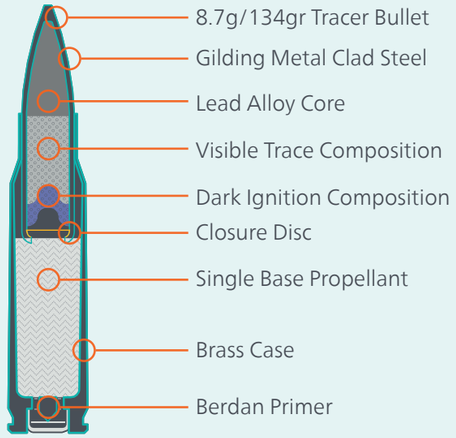
Bullet weight	9.3g/143gr
Cartridge weight	24g
Bullet	Lead Alloy Core
Velocity	830m/s (24m from muzzle)
Consistency	≥ 70% Hit probability (rectangular target 350mm x 350mm at 550m range) Equivalent to horizontal and vertical st. dev of less than 125mm at 500m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Temperature range for weapon function	-54°C to +52°C
Primer type	Berdan - Non Corrosive



L45 Tracer

- Our NATO-qualified 7.62mm Tracer is ballistically matched to the L44 Ball and the L59 High Performance (HP) Ball
- It also features a tracer delay composition to conceal the location of the shooter

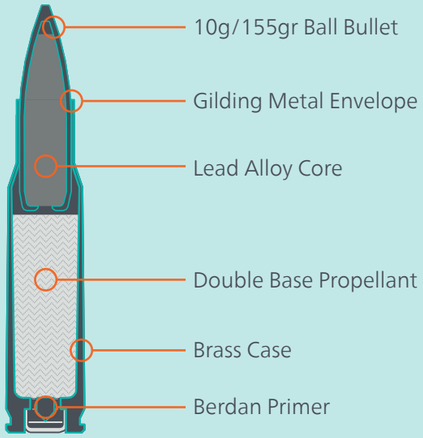
Bullet weight	8.7g/134gr
Cartridge weight	23g
Bullet	Lead Alloy Core / Tracer Comp.
Velocity	828m/s (24m from muzzle)
Consistency	≥ 70% Hit probability (rectangular target 650mm x 650mm at 550m range) Equivalent to horizontal and vertical st. dev of less than 220mm at 500m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Tracer performance	Invisible for 13m min. from the muzzle. Continuous visible trace shall begin at a distance not greater than 140 metres and continue to a distance of 914 metres from the muzzle
Temperature range for weapon function	-54°C to +52°C
Primer type	Berdan - Non Corrosive



L42 Sniper

- The sniper ammunition is designed for use where long range accuracy is of major importance
- This round that is supplied to the British Army Combat Shooting Team for use in international events, as well as to British Army Sharpshooter users
- It uses a 10 gram (155 grain) Full Metal Jacket bullet with a solid lead alloy core, providing excellent accuracy at long ranges
- Sniper ammunition is suitable for use in bolt-action and semi-automatic sniper rifles
- The Sniper round is designed to stringent UK specifications which exceed the requirements of NATO STANAG 2310, providing outstanding performance and reliability

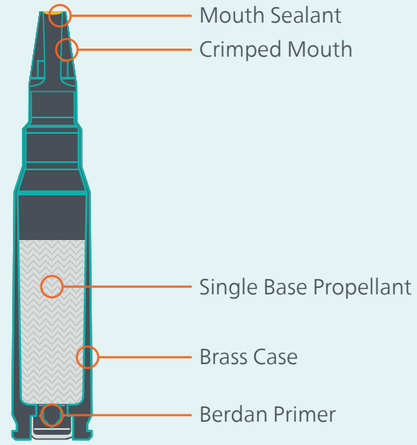
Bullet weight	10g/155gr
Cartridge weight	24g
Bullet	Lead Alloy Core
Velocity	845m/s (24m from muzzle)
Consistency	≥ 94% Hit Probability (rectangular target 250mm x 250mm at 550m range)
Temperature range for weapon function	-54°C to +52°C
Primer type	Berdan - Non Corrosive



L43 Blank

- This Berdan primed Blank ammunition has an extended case, simulating the form of the bulleted round
- Blank training ammunition can be supplied in a variety of configurations to suit customer requirements

Cartridge weight	12.6g
Temperature range for weapon function	-20°C to +40°C
Primer type	Berdan - Non Corrosive

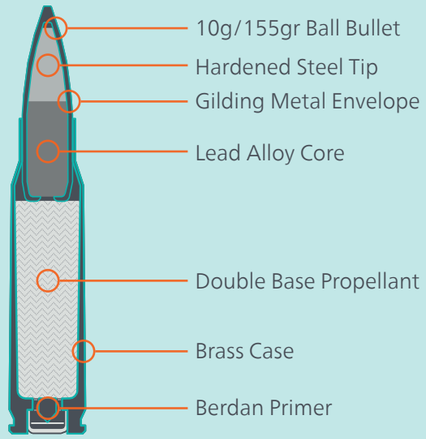




L59 High Performance (HP) Ball

- Our premier NATO-qualified 7.62mm High Performance (HP) round gives superior range, accuracy and firepower
- It is available in a variety of configurations to suit assault/sharpshooter rifles, machine guns or rotary fire weapons

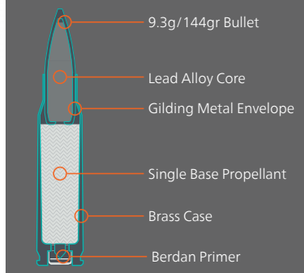
Bullet weight	10g/155gr
Cartridge weight	24g
Bullet	Hardened Steel Tip / Lead Alloy Core
Velocity	825m/s (24m from muzzle)
Consistency	≥ 70% Hit Probability (rectangular target 350mm x 350mm at 550m range) Equivalent to horizontal and vertical st. dev of less than 125mm at 550m
Trajectory matching	Trajectory matched to NATO reference cartridge at 300m and 550m
Temperature range for weapon function	-54°C to +52°C
Primer type	Berdan - Non Corrosive



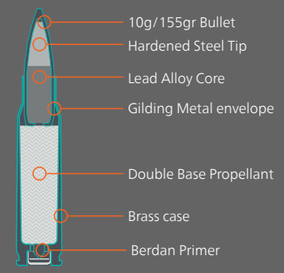
Comparing Standard and High Performance Ammunition

Our L59 High Performance (HP) Ball ammunition can penetrate armour at greater ranges, giving troops a significant tactical advantage

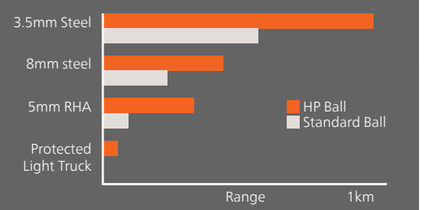
L44 Ball



L59 High Performance (HP) Ball



Range Comparison





40mm Cased Telescoped Ammunition

Proven reliability with superior performance

Our 40mm Cased Telescoped Ammunition

Our 40mm cased telescoped design demonstrates a complete step-change in power over previous generation, medium calibre ammunition.

The projectile is integrated into the cartridge case, making the product significantly more compact, whilst delivering up to four times the power of the 30mm round it replaces.

Our 40mm Cased Telecoped Ammunition

Armour Piercing Fin Stabilised Discarding Sabot-Tracer (APFSDS-T)

- Greater penetration at increased range
- This tungsten projectile can penetrate more than 140mm of Rolled Homogenous Armour (RHA) at 1,500m
- This product is designed to be used against light armoured vehicles and infantry fighting vehicles, including those heavily protected with advanced add-on armour

Dimensions	65 x 255mm
Ammunition mass	1900g
Projectile mass	550g
Muzzle velocity	> 1500m/s
Dispersion	< 0.3mrad
Perforation	140mm RHA at 1500m



General Purpose Round-Airburst-Tracer (GPR-AB-T)

- Defeat behind-cover or dug-in targets
- This programmable, high-explosive ammunition is optimised for fragmentation, providing coverage of up to 125m^2 on the ground or behind obstacles
- It is particularly effective against ground applications, such as infantry, blinding vehicle optics or antennas
- It can also operate in point detonating mode

Dimensions	65 x 255mm
Ammunition mass	2400g
Projectile mass	1000g
Muzzle velocity	1000m/s
Dispersion	< 0.5mrad
Perforation	> 210 mm concrete at 1000m > 15mm RHA at 1000m
Effective range	2500m



General Purpose Round-Point Detonating-Tracer (GPR-PD-T)

- Ammunition with impact delay feature, for hardened targets
- Highly effective against reinforced structures, dismounted troops and light armoured vehicles
- This high explosive ammunition is capable of penetrating more than 210mm of double reinforced concrete
- Optimised for 'behind protection' fragmentation

Dimensions	65 x 255mm
Ammunition mass	2400g
Projectile mass	1000g
Muzzle velocity	1000m/s
Dispersion	< 0.5mrad
Perforation	> 210mm concrete at 1000m > 15mm RHA at 1000m
Effective range	2500m



General Purpose Round-Kinetic Energy-Tracer (GPR-KE-T)

- This full calibre, kinetic energy round is the inert version of the GPR-PD-T
- Cost effective solution to engage improvised structures, bunkers and other low-value targets

Dimensions	65 x 255mm
Ammunition mass	2400g
Projectile mass	1000g
Muzzle velocity	1000m/s
Dispersion	< 0.5mrad
Effective range	2500m





Target Practice-Tracer (TP-T)

- A standard training round
- This inert ammunition matches the ballistic trajectory of the GPR-PD-T, GPR-KE-T and GPR-AB-T, allowing troops to train under realistic conditions

Dimensions	65 x 255mm
Ammunition mass	2400g
Projectile mass	1000g
Muzzle velocity	1000m/s
Dispersion	< 0.5mrad
Max trajectory range	7000m



Target Practice Reduced Range-Tracer (TPRR-T)

- Product currently in development
- A reduced range training round
- This inert ammunition matches the ballistic trajectory of the GPR-PD-T, GPR-KE-T and GPR-AB-T, to a range of 900m
- Its specific profile drastically reduces the safety traces of firing fields
- An ideal, cost-effective training solution

Dimensions	65 x 255mm
Ammunition mass	2200g
Projectile mass	730g
Muzzle velocity	1000m/s
Dispersion	< 0.5mrad
Max trajectory range	3500m



Kinetic Energy-Airburst (KE-AB)

- Product currently in development
- Air defence ammunition to combat aerial threats
- Leveraging proven Airburst technology, this product delivers a payload of tungsten pellets, with a directional terminal effect
- Particularly effective against aerial threats and ground applications, such as infantry, blinding vehicle optics and antennas

Dimensions	65 x 255mm
Ammunition mass	3000g
Projectile mass	1400g
Muzzle velocity	900m/s
Dispersion	< 0.5mrad
Effective range	3500m



81mm Mortar Ammunition

Proven reliability with superior performance

Our 81mm Mortar Ammunition

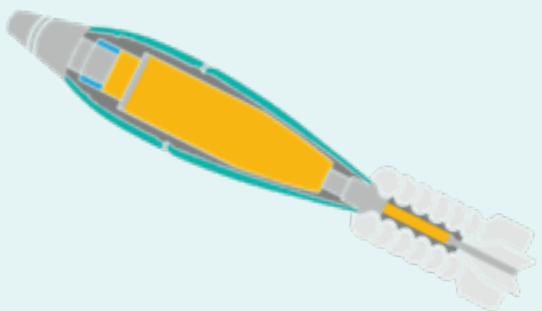
Our 81mm mortar ammunition delivers a battle-proven area effect. It can be used in a range of mortar weapon systems and delivers consistently high performance, underpinned by a Mk4 charge system in all products.

Our 81mm Mortar Ammunition

L41 High Explosive (HE) Mortar

- Highly accurate, giving enhanced fragmentation, whilst keeping a low weight and high range
- This product and previous models have been used by the British Army for many years

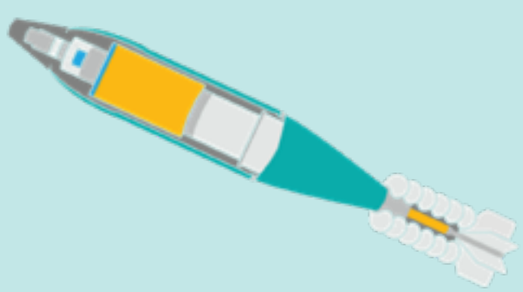
Overall length	482mm
Total weight	4.2kg
Net explosive content	0.9kg
Filling type	RDX/TNT
Propellant	Double base in the primary cartridge and single base in the augmenting cartridges
Fuze type	Standard NATO fuze cavity. The bomb has been qualified with a number of fuzes. L171 (DM111) and M734 currently in service with UK MOD
Max range	5675m
Fragment radius	550m
Qualification status	Qualified and in service



L58 Infra-Red (IR) Illuminating Mortar

- Illuminates the battlespace when used with night vision equipment, providing troops with operational advantage, without giving away their position
- In service with the British Army

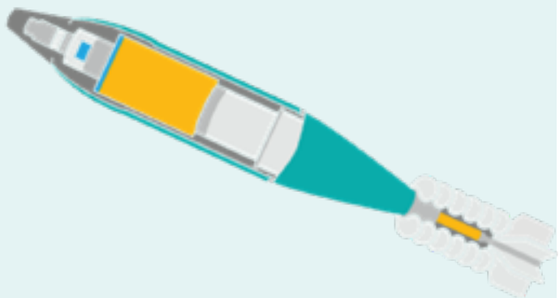
Overall length	651mm
Total weight	4.5kg with charge system
Net energetic content	0.84kg
Filling type	Illuminating composition
Propellant	Double base in the primary cartridge and single base in the augmenting cartridges
Fuze type	Standard NATO fuze cavity. The bomb has been qualified with a DM93 fuze
Max range	4800m
Burn time	120sec
Qualification status	Qualified and in service



L54 Illuminating Mortar

- Based on an air burst, split body design, the illuminating round gives a light rated at one million candela and burn time of 35 seconds
- The wide arc of light gives troops optimum time to spot hostile forces
- Currently in service with armed forces world-wide

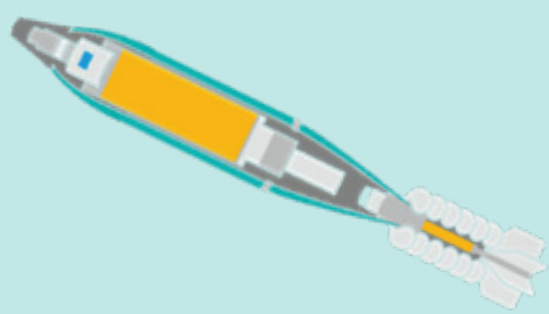
Overall length	651mm
Total weight	4.5kg with charge system
Net energetic content	0.84kg
Filling type	Illuminating composition
Propellant	Double base in the primary cartridge and single base in the augmenting cartridges
Fuze type	Standard NATO fuze cavity. The bomb has been qualified with a DM93 fuze
Max range	4800m
Burn time	35sec
Intensity	1 million candela
Qualification status	Qualified and in service



RO 04-04 Red Phosphorus Smoke Mortar

- Developed to give longer lasting and more effective smoke production
- This design uses 36 pellets that disperse and sit above the ground, giving a smokescreen over a wider area
- Currently in service with armed forces world-wide

Overall length	604mm
Total weight	4.4kg
Net energetic content	1.2kg
Filling type	Red Phosphorus based smoke
Propellant	Double base in the primary cartridge and single base in the augmenting cartridges
Fuze type	Standard NATO fuze cavity. The bomb has been qualified with a DM93 fuze
Max range	5300m
Effective smoke	60sec
Qualification status	Qualified and in service



105mm Artillery Ammunition

Proven reliability with superior performance

Our 105mm Artillery Ammunition

Our 105mm artillery ammunition has been the British Army's product of choice for over 50 years, delivering superior quality, reliable performance and advanced capability for soldiers.

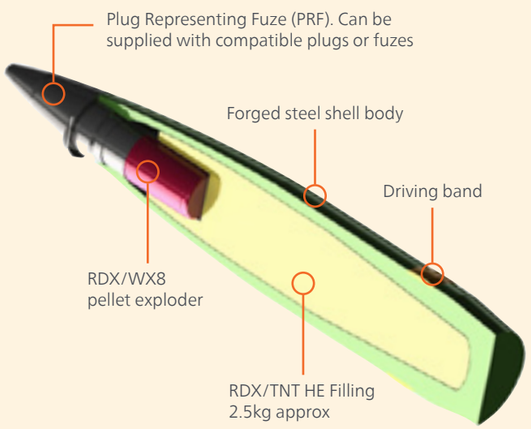
Our range of 105mm ammunition delivers a battle-proven area effect for the British Army and other armed forces around the world.

Our 105mm Artillery Ammunition

L31 High Explosive (HE)

- Comprises of a high tensile steel body, filled with RDX/TNT and fitted with a user selected fuze
- The lethal area is approximately 25% greater than the US M1 shell, with greater range and accuracy
- It is combat-proven and in service with the British Army and many armies worldwide

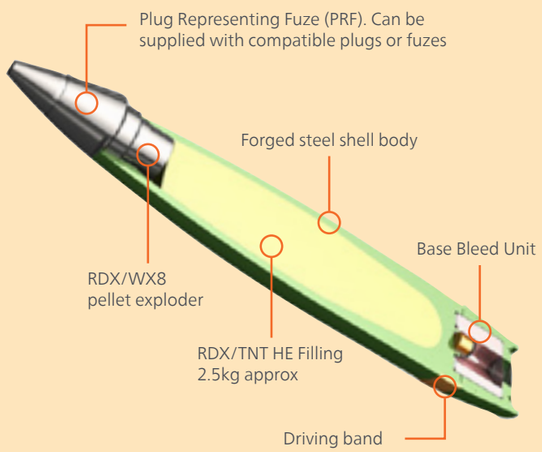
Overall length	550mm
Total weight	15.7kg
Net explosive content	2.5kg
High explosive content	RDX/TNT
Fuze type	Fuze cavities to STANAG 2916. Proximity, impact, and multi-role. Typically L174 and L166
Max range	L36: 17.2km
Gun compatibility	Royal Ordnance L118 Light Gun Abbot Self-propelled Gun L109
Effect	Blast Fragmentation
Qualification status	Currently in service with the UK MOD



XL32E1

- Comprises of a high tensile steel body, filled with RDX/TNT, a Base Bleed unit and is fitted with a user selected fuze
- The Base Bleed unit enables the shell to achieve a range of over 20km
- A thin-walled shell body, optimised for high fragmentation and blast effect

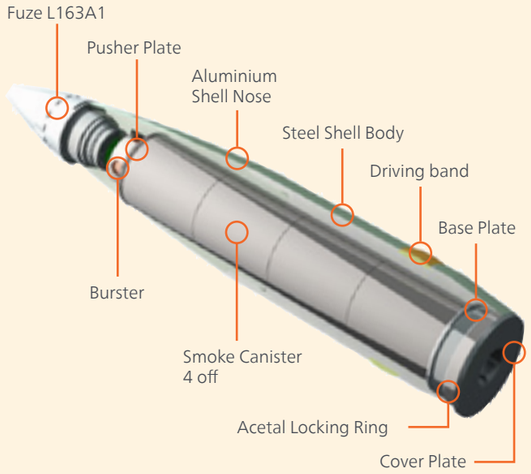
Overall length	614mm
Total weight	16.5kg
Net explosive content	2.5kg
High explosive content	RDX/TNT
Fuze type	Fuze cavities to STANAG 2916. Proximity, impact, and multi-role. Typically L174 and L166
Max range	L36: >20km
Gun compatibility	Royal Ordnance L118 Light Gun Abbot Self-propelled Gun L109
Effect	Blast Fragmentation
Qualification status	Currently undergoing qualification status

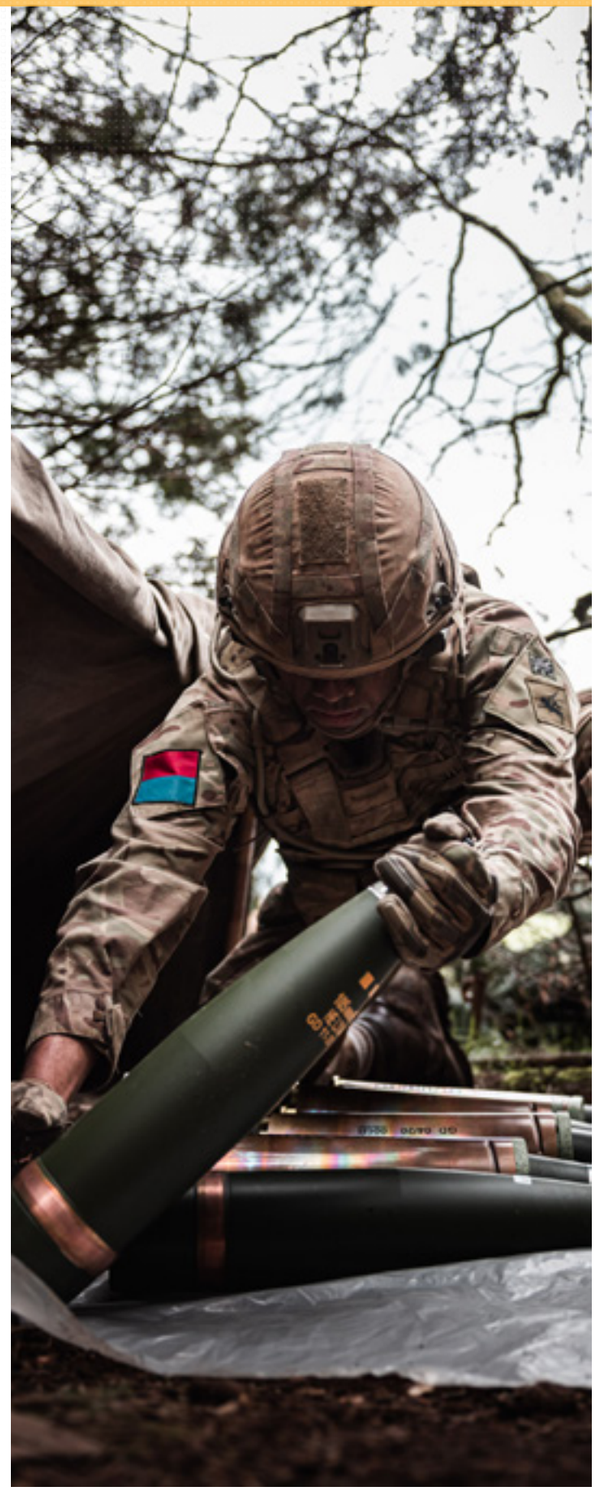


L52 Smoke

- Comprises of a fuzed steel body containing four smoke canisters
- A time fuze is set by the user to determine when the smoke canisters will be ejected, generating a persistent RP-type smoke

Overall length	548mm
Total weight	15.8kg
Net energetic content	2.4kg
Pyrotechnic content	RP based smoke composition
Fuze type	Fuze cavities to STANAG 2916. Typically L163 or DM52
Max range	L36: 17.2km
Gun compatibility	Royal Ordnance L118 Light Gun Abbot Self-propelled Gun L109
Effect	Provides persistent dense smoke screen, generated for 60 seconds
Qualification status	Currently in service with the UK MOD



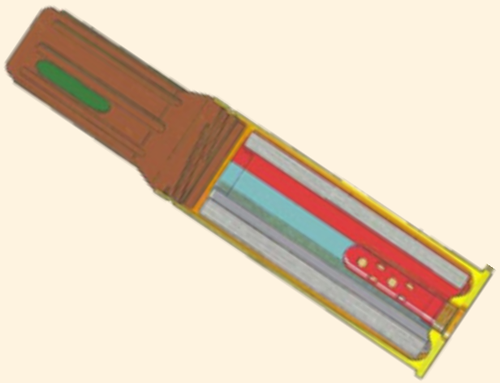


Our 105mm Propelling Charges

L35 Propelling Charge

- Comprises of a brass cartridge case, fitted electric igniter and five incremental charges
- Increments 1-4 are arranged around the cartridge wall
- Increment 5 is placed in the charge, holder which is attached to the top of the cartridge

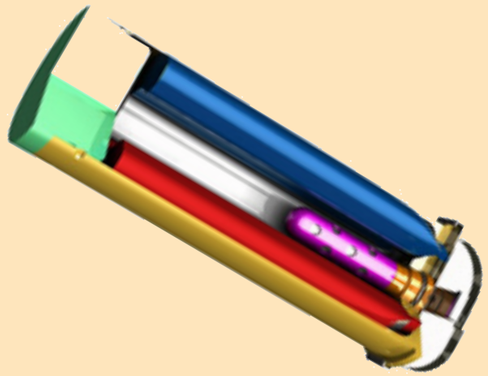
Overall length	520.8mm
Total weight	5.7kg
Net energetic content	2.4kg
Propellant	Triple Base
Max range	15.3km
Gun compatibility	Royal Ordnance L118 Light Gun Abbot Self-propelled Gun L109
Qualification status	Qualified and in service with the UK MOD



L45 Propelling Charge

- Comprises of a brass cartridge case, fitted electric igniter and three incremental charges
- Increments are arranged around the cartridge wall and one or two of the charge increments may be removed prior to deployment, depending on the projectile fired and the range required
- The cartridge provides cost effective, reduced range training in place of the L35 propelling charge

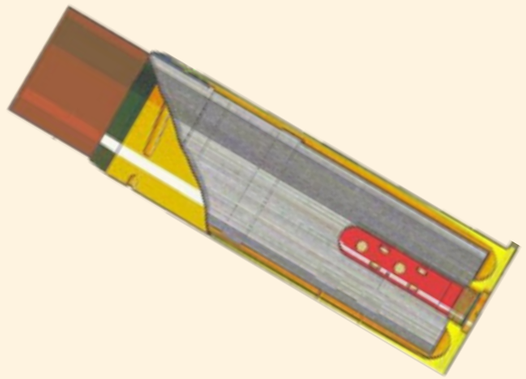
Overall length	326.5mm (excluding clip)
Total weight	4.1kg
Net energetic content	4.9kg
Propellant	Triple Base
Max range	9.5km
Gun compatibility	Royal Ordnance L118 Light Gun Abbot Self-propelled Gun L109
Qualification status	Qualified and in service with the UK MOD



L36 Propelling Charge

- Comprises of a brass cartridge case, fitted electric igniter and one charge
- The case is collared by a moulded plastic sleeve, lined with a cloth bag and secured by cement, to form a single non-detachable unit

Overall length	520.8mm (excluding clip)
Total weight	5.7kg
Net energetic content	2.9kg
Propellant	Triple Base
Max range	17.2km
Gun compatibility	Royal Ordnance L118 Light Gun
Qualification status	Qualified and in service with the UK MOD



Our Fuze

L174 Fuze

- Point Detonating Super Quick mechanical fuze
- Designed for use with 105mm and 155mm High Explosive (HE) shells
- Derivative of the proven L106 design, incorporating the safety and arming unit from the L166 fuze
- Graze mechanism provides reliability at low angles

Overall length	151.6mm
Total weight	1.03kg
Net explosive content	0.0116kg
Fuze type	Direct Action and Graze
Qualification status	AOP20 qualification for UK training use



155mm Artillery Ammunition

Proven reliability with superior performance

Our 155mm Artillery Ammunition

Our 155mm artillery ammunition has been the British Army's product of choice for over 50 years, delivering superior quality, reliable performance and advanced capability for soldiers.

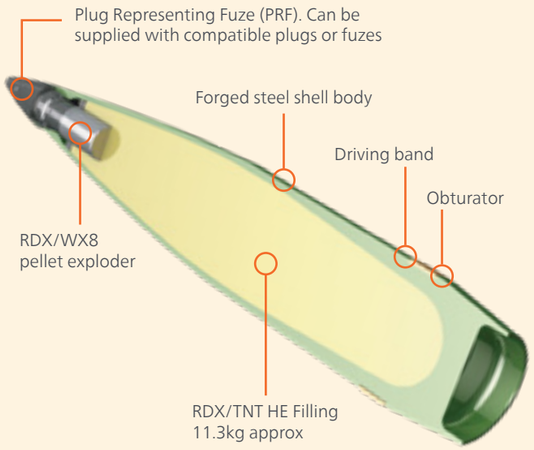
Our range of 155mm ammunition is designed in accordance with NATO Joint Ballistics Memorandum of Understanding (JBMOU) principals and is qualified to STANAG requirements.

Our 155mm Artillery Shell

L15 High Explosive (HE)

- Designed for use with a range of 155mm guns
- Comprises of a high tensile, steel body and is fitted with a user-selected fuze, for greater operational flexibility
- A thin-walled shell body, optimised for high fragmentation and blast effect
- Combining advanced technology with logistic simplicity, giving the user higher performance, in a cost effective manner

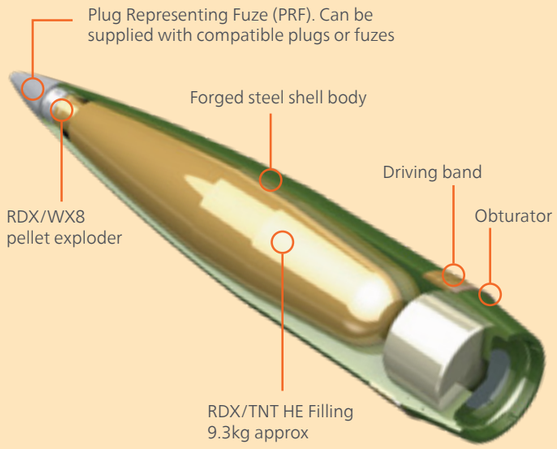
Overall length	874mm (including fuze)
Total weight	43.5kg
Net explosive content	11.3kg
High explosive content	RDX/HMX/TNT
Fuze type	Fuze cavities to STANAG 2916. Proximity, impact and multi-role. Typically L174 and L166
Max range **Max range**	JBMoU L/39: 24.7km JBMoU L/52: 32km
Effect	Blast Fragmentation
Qualification status	Currently in service with the UK MOD in both 39 and 52 calibre platforms



XL12E1 High Explosive (HE) Extended Range (ER)

- A mature design
- The shell body is adapted from the L15 High Explosive (HE) shell
- A screw-on base bleed unit can be used to optimise range extension whilst maximising lethality

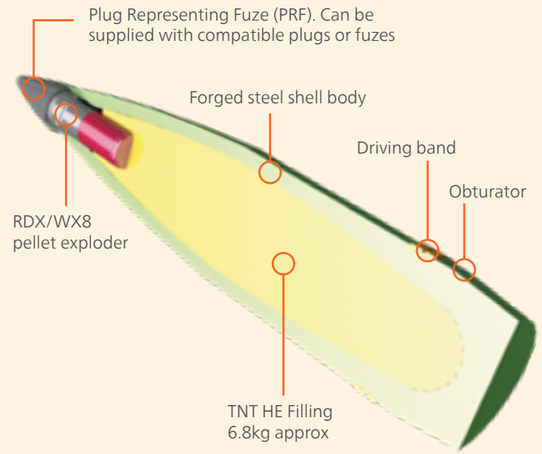
Overall length	899mm (including fuze)
Total weight	43.5kg
Net explosive content	9.3kg
High explosive content	RDX/HMX/TNT
Fuze type	Fuze cavities to STANAG 2916. Proximity, impact and multi-role. Typically L174, L166 or CCF
Max range **Max range**	JBMoU L/39: > 30km JBMoU L/52: 40km
Effect	Blast Fragmentation
Qualification status	Greater than 40km achieved through trials



L21 High Explosive (HE)

- Ballistically matched to the M107, as used by US military
- The shell is fitted with a removable nose plug, providing the user with greater operational flexibility, through choice of fuze

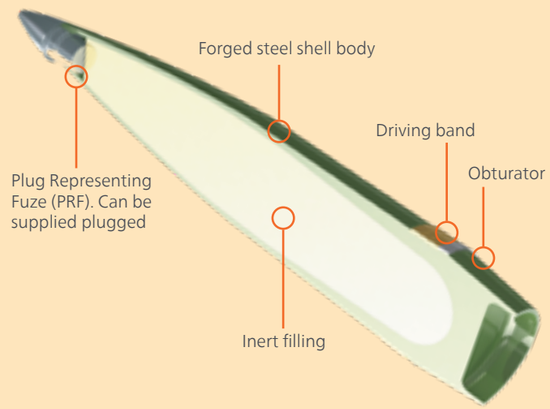
Overall length	699.5mm (including fuze)
Total weight	43.5kg
Net explosive content	6.8kg
High explosive content	TNT
Fuze type	Fuze cavities to STANAG 2916. Proximity, impact and multi-role. Typically L174 and L166
Max range	Typically 17.8km from a 39 Cal weapon system
Effect	Blast Fragmentation
Qualification status	Currently in service with the UK MOD in both 39 and 52 calibre platforms



L17 Inert

- For use in gun proving, gun warming and handling practice
- Ballistically matched to the L15 High Explosive (HE) shell
- Fitted with a Plug Representing Fuze (PRF)
- Steel body with inert filling

Overall length	874mm (including fuze)
Total weight	43.5kg
Net explosive content	N/A (inert)
High explosive content	N/A (inert)
Fuze type	Plug representative fuze
Max range **Max range**	JBMoU L/39: 24.7km JBMoU L/52: 32km
Qualification status	39 Cal: Currently in service with the UK MOD 52 Cal: Mature design pending qualification

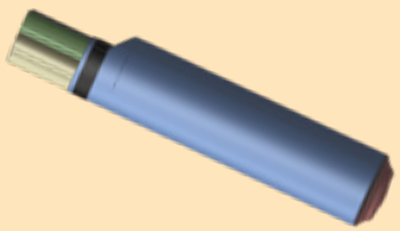


Our 155mm Propelling Charges

L8 Propelling Charge

- Consists of a cloth bag containing charge increments three to seven, increments four to seven being removable
- Ignition is by base igniter pad, contained in charge increment three and a breech-loaded percussion primer
- A flash reduction agent is included in increment five and a de-coppering agent in increments five, six and seven

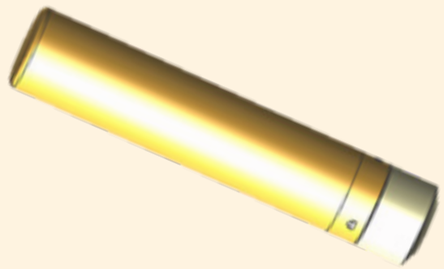
Overall length	780mm
Total weight	8.1kg
Net explosive content	7.5kg
Propellant	Triple Base
Max range	19.6km (L15 High Explosive (HE) 155mm shell)
Qualification status	Qualified and in service



L10 Propelling Charge

- Consists of a combustible case containing a single bundle of propellant and an igniter and disc assembly
- A de-coppering agent is included in the charge

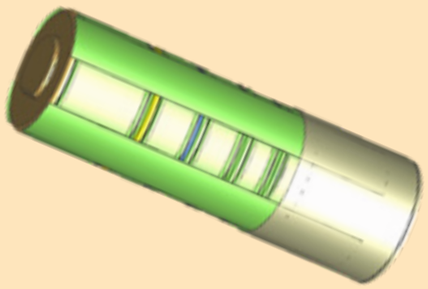
Overall length	763mm
Total weight	13.4kg
Net explosive content	12.3kg
Propellant	Triple Base
Max range	24.7km (L15 High Explosive (HE) 155mm shell)
Qualification status	Qualified and in service



L18 Propelling Charge

- Used for training, the charge system consists of five increment charges of unequal size to provide coverage for all zone firings
- A flash reduction agent is included in the propellant composition and a de-coppering agent is included in increment four
- The propellant is contained in cloth bags. The complete charge is secured together by cloth tying straps, attached to the base charge

Overall length	406mm
Total weight	2.5kg
Net explosive content	2.5kg
Propellant	Triple Base
Max range	10km (L15 High Explosive (HE) 155mm shell)
Qualification status	Qualified and in service

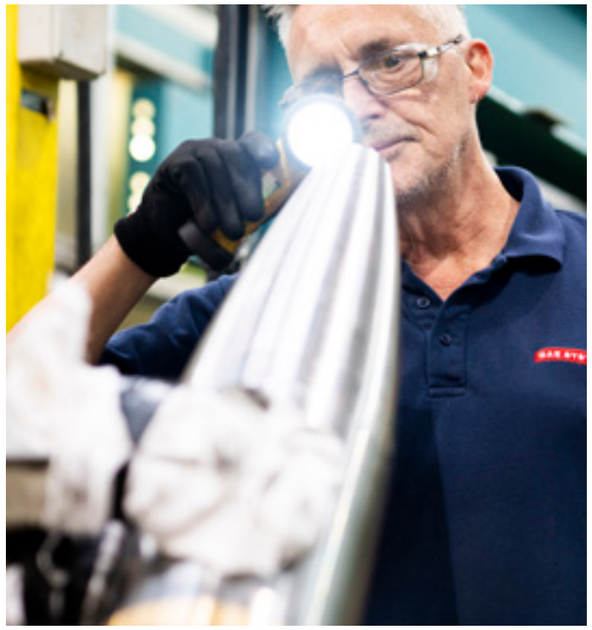


Our Fuze

L174 Fuze

- Point Detonating Super Quick mechanical fuze
- Designed for use with 105mm and 155mm High Explosive (HE) shells
- Derivative of the proven L106 design, incorporating the safety and arming unit from the L166 fuze
- Graze mechanism provides reliability at low angles

Overall length	151.6mm
Total weight	1.03kg
Net explosive content	0.0116kg
Fuze type	Direct Action and Graze
Qualification status	AOP20 qualification for UK training use



4.5 inch Naval Rounds

Proven reliability with superior performance

Our 4.5 inch Naval Ammunition

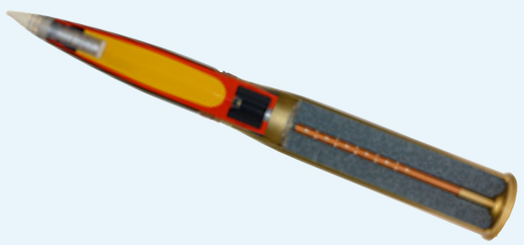
We have provided the UK Royal Navy and the Armada De Chile with 4.5 inch Naval rounds for over 30 years, delivering reliable performance and advanced capability whilst remaining cost-competitive.

Our 4.5 inch Naval Rounds

Improved Ammunition (IA) High Effect (HE) N20 Fuzed NC23

- This round is designed for use with a 4.5 inch Mk8 Naval Gun
- It is a fixed round and comprises of a shell, fuze and propelling charge
- The shell is fitted with a Base Bleed unit to increase range and a proximity/point detonating fuze
- The propelling charge comprises of a brass cartridge case, containing triple base propellant and a primer

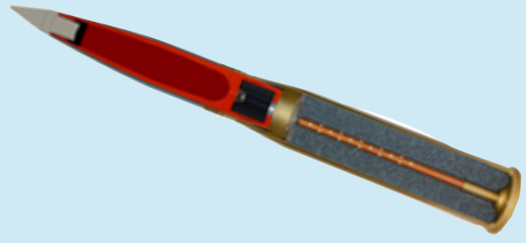
Overall length	1237.5mm (including fuze)
Total weight	37kg
High explosive content	3kg Max
Explosive filling	RDX/TNT
Propellant	Triple Base
Max range	27.2km
Effect	Fragmentation and blast damage
Gun compatibility	4.5 inch Mk8 Naval Guns
Qualification status	Qualified and in service



Improved Ammunition (IA) Surface Practice (SuP) N21

- This round is ballistically matched to IA HE 4.5 inch N20 and is used for training purposes

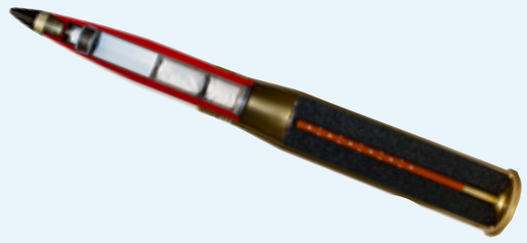
Overall length	1237.5mm (including fuze)
Total weight	37kg
Payload mass	8.1kg
Propellant	Triple Base
Max range	27.2km
Gun compatibility	4.5 inch Mk8 Naval Guns
Qualification status	Qualified and in service



Illum L1 Fuzed L163

- This round is designed for use with a 4.5 inch Mk8 Naval Gun
- It is a fixed round and comprises of a shell, fuze and propelling charge
- The shell is manufactured from steel and is a base ejecting projectile that contains a white light illuminating flare and parachute assembly
- The shell is fitted with a time fuze, set by the user, to determine ejection time of the flare. This ignites and during a controlled descent, illuminates the target area in the visible spectrum for up to 45 seconds
- The propelling charge comprises of a brass cartridge case, containing triple base propellant and a primer

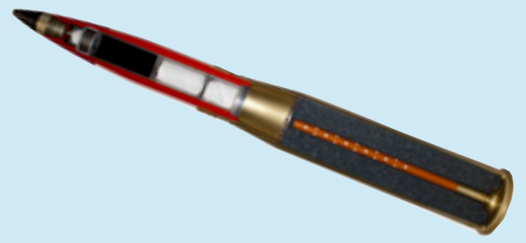
Overall length	1222mm (including fuze)
Total weight	37kg
Payload mass	8.5kg
Propellant	Triple Base
Max range	21.5km
Light output	Appox. 750,000 candela for 45 sec
Descent rate	Typically 5.5m/s
Gun compatibility	4.5 inch Mk8 Naval Guns
Qualification status	Qualified and in service



Infra-Red (IR) Illum L2 Fuzed L163

- This round is designed for use with a 4.5 inch Mk8 Naval Gun
- It is a fixed round and comprises of a shell, fuze and propelling charge
- The steel shell is base ejecting and contains a near infra-red spectrum illuminating flare and parachute assembly
- The shell is fitted with a time fuze, set by the user, to determine ejection time of the flare. This ignites and during a controlled descent, illuminates the target area in the near infra-red spectrum for up to 90 seconds
- The propelling charge comprises of a brass cartridge case, containing triple base propellant and a primer

Overall length	1222mm (including fuze)
Total weight	37kg
Payload mass	8.3kg
Propellant	Triple Base
Max range	21.5km
IR illumination duration	Typically 90 sec
Descent rate	Typically 5.5m/s
Gun compatibility	4.5 inch Mk8 Naval Guns
Qualification status	Qualified and in service





Engineering the Future

Staying one-step ahead of the enemy is key on the modern battlefield. Having the right equipment, in the right place, at the right time is essential to provide advantage.

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