

# Latest trends in machine gun ammunition



INDEX PARTS| TOPIC| PAGE NO| PART I| BRIEF HISTORY| 1| PART II| RELATED TERMS| 2| PART III| AMN USED IN INDIA| 9| PART IV| AMN OF THE WORLD| 5| PART V| AGL AMN USED IN INDIA| 12| PART VI| AGL AMN OF THE WORLD| 12| PART VII| RECOMMENDATIONS| 28| Introduction 1. There is an old saying

among artillery men that their weapon is not the gun. It is the ammunition/shell, and the gun is only the last stage in transportation from the factory to the target.

The same applies to all fire arms as they are merely devices for discharging bullets, shells, bombs/projectiles of one sort or another which are the things destined to have the desired effect on the enemy target. Without ammunition the finest firearm is merely an expensive club or at best, a handle for a bayonet, while a piece of artillery with no ammunition is no more than an ornament. 2.

But for all its importance, ammunition is usually taken for granted : received, loaded, fired and if it does not work the firer gets more aggrieved even if he does not know why it failed. Yet it is a fascinating topic on its own. Many a weapon which appeared to have reached the end of its usefulness has been revitalized and given a new lease of life by nothing more than redesigning the ammunition for it, and many weapons have their effectiveness enhanced by new and improved ammunition.

It is impossible to have a complete understanding of a weapon unless there is complete understanding of the ammunition as well. 3. The conflict in Afghanistan, Iraq and the Kargil war with its emphasis on targeting specific enemy individuals while avoiding collateral damage, demands the use of

wpns of high precision and limited destructive effect. As a result, inf small arms have a much more prominent role than that expected in conventional high-intensity warfare and this is highlighting the performance of their amn to a greater extent than ever before.

Now that several nations have started the process of defining their reqmts for the next generation of small arms, this is a rare opportunity to ask the question: is the present combination of 5. 56 and 7. 62 mm rifle and machine gun amn optimal, or could we do better in the next generation. 1 PART - I BRIEF HISTORY 3. Although ammunition has been in existence since the initial days of firearms in the 14th century, it remained at a fairly static stage of development for the first 400 years.

It was not till the industrial revolution got into stride in the mind-19th century that gun design began to show some advances, and with this came improvements in ammunition. The activity of designers and manufactures in the 1880s and 1890s showed its effect is South Africa and Russo- Japanese wars of the early 20th century. These wars led to improvements and innovations development its greatest impetus. The First World War produced new techniques of warfare which demanded new type of ammunition.

The arrival of military aircraft, for example, brought the first aerial bombs, but is also led to the development of special ammunition of shooting at the aircraft that were dropping these bombs. Old ammunition used during the early 17th century 4. Bullets for black powder, or muzzle loading firearms, were classically molded from pure lead. This worked well for low speed bullets, fired at velocities of less than 300 m/s (100 ft/s). for slightly higher

speed bullets fired in modern firearms, a harder alloy of lead and tin or typesetter's lead (used to mould Linotype) works very well.

For even higher speed bullet use, jacketed coated lead bullets are used. The common element in all these, lead is widely used because it is highly dense, thereby providing a high amount of mass and thus, kinetic energy for a given volume). Lead is also cheap, easy to obtain, and melts at a low temperature, making it easy for use in fabricating bullets. 5. The advances made during the First World war were consolidated and refined during the 1920s and 1930s to design the standard ammunition types with which the Second World war began.

But once again, advance in military tactics and technology brought new forms of warfare and new types of ammunition. Improvements in the tank technology brought about improvements in anti-tank projectiles, higher-flying aircraft demanded new type of shell and fuse, portable infantry anti-tank weapons had to be given special projectile capable of defeating tanks, and so on. 2 PART II- RELATED TERMS AND EXPLANATION 6. Bullet The various types and characteristics of bullet are as follows (a)Lead Simple case, extruded, swaged, or otherwise fabricated lead slugs are the simplest form of bullets.

At speeds of greater than 300m/s (common in most handguns), lead is deposited in rifled bores at an ever-increasing rate. Alloying the lead with a small percentage of tin and or antimony serves to reduce this effect, but grows less effective as velocities are increased. A cup made of harder metal, such as copper, placed at the base of the bullet and called a gas check, is

often used to decrease lead deposits by protecting the rear of the bullet against melting when fired at higher pressures, but this too does not solve the problem at higher velocities.

Lead bullets used in the early 18th century (b)Jacketed Lead Bullets intended for even higher-velocity applications generally have a lead core that is jacketed or plated with cuprous-nickel, copper alloys, or steel, the thin layer of harder copper protects the softer lead core when the bullet is passing through the barrel and during flight, which allows delivering the bullet intact on the target. There the heavy lead core delivers its kinetic energy to the target.

Full Metal jacket bullets or Ball bullet have the front and sides of the bullet completely encased in the harder metal jacket. Some bullet jackets do not extend to the front of the bullet to aid in expansion and increase lethality. These are called soft points or hollow point bullets. Steel bullets are often plated with copper or other metals for additional corrosion resistance during long periods of storage. Synthetic jacket materials such as nylon and teflon have been used with limited success. 3 Jacketed Lead bullets c) Armour Piercing Jacketed designs where the core material is very hard, high-density metal such as tungsten, tungsten Carbide, depleted Uranium, or Steel. A pointed tip is often used, but a flat tip on the penetrator portion is generally more effective. Armour piercing bullets (d)Tracer These have a hollow back, filled with a flare material. Usually this is a mixture of Magnesium Perchlorate, and Strontium salts to yield a bright red colour, although other materials providing other colours have also sometimes been used. Tracer material burns out after a certain amount of time.

<https://assignbuster.com/latest-trends-in-machine-gun-ammunition/>

Such ammunition is useful to the shooter as a means of verifying how close the point of aim is to the actual point of impact, and for learning how to point shoot moving targets with rifles. The flight characteristics of tracer rounds differ from normal bullets, decreasing in altitude of the flare material. 4 M196 Tracer ammunition (e) Incendiary These bullets are made with an explosive or flammable mixture in the tip that is designed to ignite on contact with a target. The intent is to ignite fuel or munitions in the target area, thereby adding to the destructive power of the bullet itself.

M191 Incendiary ammunition (f) Frangible Designed to disintegrate into tiny particles upon impact to minimize their penetration for reasons of range safety, to limit environmental impact, or to limit the shoot-through danger behind the intended target. An example is the glaser safety slug. 5 Glaser safety slug (g) Practice Made from lightweight materials like rubber Wax, wood, plastic, or light weight metal, practice bullets are intended for short-range target work, only. Because of their weight and low velocity, they have limited range. German Plastic practice ammunition (h) Blanks Wax, paper, plastic, and other materials are used to simulate live gunfire and are intended only to hold the powder in a blank cartridge and to produce noise. The 'bullet' may be captured in a purpose-designed device or it may be allowed to expend what little energy it has in the air. Some blank cartridge are crimped or close at the end and do not contain any bullet. 6 7. 62mm blank ammunition 7. PRIMER (a) Percussion Cap The percussion Cap, introduced around 1830, was the crucial invention that enabled muzzle loading firearms to fire reliably in any weather.

Before this development, firearms used flintlock ignition systems which produced flint-on-steel sparks to ignite a pan of priming powder and thereby fire the gun's main powder charge. (The flintlock mechanism replaced older ignition systems such as the matchlock and wheel lock). Flintlocks were prone to misfire in wet weather, and many flintlock firearms were later converted to the more reliable percussion system. The percussion cap is a small cylinder of copper or brass with one closed end. Inside the closed end is a small amount of a shock-sensitive explosive material such as fulminate of mercury.

The percussion cap is placed over a hollow metal “nipple” at the rear end of the gun barrel, pulling the trigger releases a hammer which strikes the percussion cap, and ignites the explosive primer. The flame travels through the hollow nipple to ignite the powder charge. Percussion caps were (and still are) made in small sizes for pistols and larger sizes for rifles and muskets. In the 1850s, the percussion cap was first integrated into a metallic cartridge, which contained the bullet, powder charge and primer. By the late 1980s, breech loading metallic cartridges had made the percussion cap system obsolete.

When subsequently introduced into breech loaded cartridges, the percussion cap became known as a Primer. Largely the presence of the weak single nitrogen-oxygen bond which leads to its instability. Nitrogen very easily forms a stable triple bond to another nitrogen atom, forming gaseous nitrogen. Today mercury fulminate tends to be replaced by other primary explosives which are less toxic and more stable over time. Lead azide, lead styphnate and tetrazene derivatives.

revolver 8. Cartridge Case Brass is generally used. Brass has higher malleability than copper or zinc.

The relatively low melting point (900 - 940 C depending on composition) of brass and its flow characteristics make it a relatively easy material to cast. By varying the proportions of copper and zinc, the properties of the brass can be changed, allowing hard and soft brasses. Today almost 90% of all brass alloys are recycled. Because most brass is nonmagnetic, it can be separated from ferrous scrap by passing the scrap near a powerful magnet. Brass scrap is collected and transported to the foundry where it is melted and recast into billets. Billets are later heated up and extruded in to the right form and size.

Brass cartridge cases 8 9. Linear Thermal Expansion Coefficient The Linear Thermal Expansion Coefficient relates the change in temperature to the change in a material's linear dimensions. It is the fractional change in length of a bar per degree of temperature change. The expansion and contraction of material must be considered when designing large structures, when using tape or chain to measure distances for land surveys, when designing molds for casting hot material, and in other engineering applications when large changes in dimension due to temperature are expected.

Some values of common materials, given in parts per million per Celsius degree (Note : This can also be in Kelvins as the change in temperature are a 1: 1 ration). 9 PART III- AMN USED IN INDIA 10. India possess the 7. 62mm MAG 58 med machine gun as its primary coy support wpn. The three types of amn fired from the gun are Ball, Tracer and Blank. A brief description of the same in given succeeding paras : (a)Ball This amn is anti pers and can also



be used against soft skinned veh. The amn is named so as in early times the amn, which used to be muzzle loaded, was of the shape of a ball. b)Tracer : This amn is used to indicates tgts with the help of a red flare that follows the bullet. The flare can also be used for incendiary purpose, through only till 1050m. (c)Blank But for the bullet, which is absent, this amn is alike a ball amn. This is used to simulate auto fire in Exercises, demos and battle inoculation. Ball Tracer Blank Types of 7. 62mm amn used in India 10 PART IV - AMMUNITIONS OF THE WORLD (7. 62X51MM) 11. 7. 62mm ammunition is issued in the form of a complete round.

A complete round (Cartridge) consists of all the components (Cartridge case, bullet or shot, propellant powder, and primer) necessary to fire the weapon once. 12. Ammunition for use in machine guns is issued in metallic link belts. The 7. 62mm M 13 link are manufactured with partially open loops and have a positioning finger on one side which snaps into extractor grooves of cartridge to retain cartridge in proper feed alignment. This link design permits a portion of bolt to ride through link loop opening and push cartridges forward and out of link into chamber for firing.

Weapons using this type link are designed and manufactured with a short receiver. 7. 62mm M 13 link Cartridge, 7. 62mm, Ball, M59. 13. The cartridge is used in the M 60 and M 219 machine guns, and the M 14 rifle. The cartridge in intended for use against personnel and unarmored targets. Contains a soft steel core. The cartridge is identified by a plain bullet tip. 7. 62 mm Ball M59 11 Cartridge 7. 62mm, High Pressure Test, M 60 14. Used by all 7. 62mm weapons. The cartridge is not for field issue, but is used for proof firing of weapons during manufacture, test, or repair.

The cartridge is identified by a stannic-stained (silvered) case. High pressure M60(Israel) Cartridge 7. 62mm Armour Piercing. M 61. 15. Used by M 60, M219 and M 240 machine guns, and the M 14 rifle. The cartridge is used in rifles and machine guns against personnel and light armored or unarmored targets, concrete shelters, and similar bullet-resisting targets. Armour Penetration. 300 meters : 0.28 in (7mm) 500 meters : 0. 2 in (5mm). The cartridge is identified by a bullet up. This ammunition is not authorized for training purpose. Cartridge 7. 62mm, Tracer, M 62. 16.

Used by M60, M219 and M240 machine guns, and the M14 rifle. For observation of fire, incendiary effects, signaling, and for training. When tracer rounds are fired in machine guns, they are mixed with ball ammunition in a ratio of four ball 12 rounds to one tracer round. R284 tracer. The cartridge is identified by an orange bullet tip. Cartridge 7. 62mm, Tracer, M 62. Cartridge, 7. 62mm Tracer, M62 (Overhead fire application) 17. Used by M60, M219 and M240 machine guns, and the M14 rifle. The cartridge is used in weapons for firing over the heads of troops being trained I field exercises.

Stringent production control and screening of ammunition lots ensure the safety of personnel operating immediately below the trajectory of the fired bullets. R284 tracer. The cartridge is identified by a red bullet tip. Cartridge 7. 62mm, Dummy, M63. 18. Used by M60, M219 and M240 machine guns, and the M14 rifle. The cartridge is used for practice in loading 7. 72mm weapons for simulated firing to detect flinching of personnel during firing and for inspecting and testing the weapon mechanism. There are six longitudinal

corrugations (flutings) on the cartridge. Also, there is no primer or vent hole in the primer pocket.

Chinese made 7.62mm dummy amn for M60 rifles 13 Cartridge 7.62mm, Grenade, M64. 19. Used by the M14 rifle. The cartridge provides pressure upon functioning ton project rifle grenade to a desired target when using a grenade projectile adapter. The cartridge is indentified by a rose-petal (rosette-crimp) closure of the cartridge case mouth and sealed with red lacquer. Cartridge 7.62mm Ball, M80. 20. Used by M60, M219 and M240 machine guns, and the M14 rifle. For used against light materials and personnel, and for range training. The bullet consists of a gilding-metal steel jacket with a lead-antimony slug.

The cartridge case is brass and the bullet is unpainted. Its armor penetration is 300 meters : 0.16 in (4mm) 500 meters : 0.12 in (3mm) This is a training standard item used for both training and combat. Cartridge 7.62mm, Ball M80, (Overhead Fire application) 21. Used by M60, M219 and M240 machine guns. The cartridge is used in machine guns for firing over the heads of troops being trained in field exercises. Stringent production control and screening of ammunition lots ensure the safety of personnel operating immediately below the trajectory of the fired bullets. The cartridge is identified by a plain bullet tip. 4 Cartridge 7.62mm, Blank , M82. 22. Used by M60, M219 and M240 machine guns, and the M14 rifle. For use during training when simulated live fire desired. A blank firing attachment (BFA) should be used to fire this ammunition. This cartridge consists of a primer and propellant contained in a brass case shaped to conform to the configuration to the service round. The propellant is held in by a wad. The <https://assignbuster.com/latest-trends-in-machine-gun-ammunition/>

mouth of the cartridge is sealed and crimped. 23. Used by the M 14 rifle, and the M21, M24 and M 40A1 sniper rifles. The cartridge is intended and specifically prepared for use in high accuracy weapons.

Its spread (accuracy standard) for a 10 shot group is no more than 12 inches (305mm) at 600 yards (550m) fired from an accuracy barrel in a test cradle. The bullet consists of a gilding metal jacket and a lead antimony slug. It is a boat-tailed bullet (rear of bullet is tapered). The tip of the bullet is not colored. The cartridge is identified by cartridge case head stampings with NATO design mark, manufacturer and year. 7. 62mm blank M82 15 Cartridge 7. 62mm, Frangible, M160. 24. Used by M219 and M240 machine guns. The cartridge is designed for firing single shoots in the machine gun for gunnery practice.

The frangible bullet, upon striking a target, disintegrates, leaving a mark at the point of impact. The cartridge is identified by a green bullet tip with a white ring to the rear of the green tip. 7. 62mm Frangible M160 Cartridge 7. 62mm, Dummy, M172. 25. The cartridge is inert and is used to test the mechanism and metallic link belts of 7. 62mm weapons. The cartridge is identified by a black oxide finish over the entire round and has no primer. There is no vent hole in the primer pocket. Cartridge 7. 62mm, Dim Tracer, M276. 26. Used by M60, M134, M219 and M240 machine guns, and the M14 rifle.

The combat cartridge is to be used by soldiers equipped with night vision equipment. R440 trace mix. The cartridge is identified by a pink ring behind a green tip. 7. 62mm, Dim Tracer, M276 Cartridge 7. 62mm, Match , M 852.

27. Used by National Match M14 rifle. The cartridge is intended and specifically prepared for use in those weapons designated as competitive rifles and also for marksmanship training. The cartridge is not for combat use. The cartridge is identified by the cartridge case head stamping of MATCH. It also has a knurl at the base of the cartridge case and a hollow point bullet. 16 7. 2mm, Match , M 852 Ammunition Effects 28. Barriers that offer protection against 5. 56mm rounds are also effective against 7. 62mm rounds with some exceptions. The 7. 62mm round can penetrate a window pane at a 45 degree obliquity, a hollow cinder block, or both sides of a car body. At 50 meters, the 7. 62mm ball round cannot reliably penetrate a single layer of well-packed sandbags. It can penetrate a single sandbag layer at 200 meters, but not a double layer. The armor-piercing round does only slightly better against sandbags. It cannot penetrate a double layer but can penetrate upto 10 inches at 600 meters.

The penetration of the 7. 62mm round is best at 600 meters. Most urban targets are closer . the longest effective range is usually 200 meters or less.

17 Penetration capabilities of a single 7. 62mm (ball) round. Range| Pine Board| Dry Loose sand| Cinder Block | Concrete| 82 Ft (25M)| 13 in (330mm)| 5 in (127mm)| 8 in (203mm)| 2in (51mm)| 328Ft (100M)| 18 in (457mm)| 4. 5in (114mm)| 10 in (254mm)| 2 in (51mm)| 656Ft (200M)| 41 in (1, 041mm)| 7in (178mm)| 8 in (203mm)| 2 in (51mm)| 29. Continued and concentrated machine gun fire can breach most typical urban walls. uch fire cannot breach thick reinforced concrete structure or dense natural stone walls. Internal walls, partitions, plaster, floors, ceilings, common office furniture, home appliances, and bedding can be easily penetrated by 7. 62mm rounds.

Armour Piercing Round 30. Armour-piercing ammunition is used to penetrate hardened armored targets such as body armor, vehicle, concrete, tanks and other defenses, depending on the caliber of the firearms. Armor-piercing ammunition consists of a hardened steel, tungsten-carbide, or depleted uranium penetrator enclosed within a softer material, such as copper or aluminum.

Armor-piercing ammunition can range from rifle and pistol caliber rounds all the way up to tank rounds. 31. Rifle and pistol rounds are usually built around a penetrator of steel or tungsten. Aircraft and tank rounds sometimes use a core of depleted uranium. The penetrator is a pointed mass of high density material that is designed to retain its shape and carry the maximum possible amount of energy as deep as possible into the target. Depleted- uranium, penetrators have the advantage of being pyrophoric and self-sharpening on impact, resulting in incredible heat and energy focused on a minimal area of the target's thicker armor.

Rifle armour-piercing, ammunition generally carries its hardened penetration within a copper or cupro-nickel jacket, similar to the jacket that would surround lead in a conventional projectile. Upon impact on a hard target, the copper case is destroyed, but the penetrator. 34. The M993 7. 62mm AP Round is capable of penetrating a 7mm thick high hardness armor (HHA) plate at a distance of 500 meters from the muzzle of the weapon. This corresponds to ? “ armor plate at a distance of 550 m. High Explosive Incendiary/Armor Piercing Ammunition 35.

High Explosive Incendiary/Armor Piercing Ammunition (HEIAP) is a form of shell which combines both an armor piercing capability and a high explosive effect. In this respect it is modern version of armor piercing shell. Typical of a modern 18 HEIAP shell is the Raufoss MK 211 0. 50 inch round designed for anti-material weapons such as heavy machine guns and anti-material rifles.

36. The primary purpose to these ammunitions is armor penetration, but unlike SLAP rounds (Saboted-Light Armor penetrator) which gets their armor piercing ability from the propulsion of a 7. 62mm tungsten heavy alloy bullet from a 12. mm barrel (. 50" csl). with much more energy than is usually possible from a 7. 62mm round (plus the fact that a tungsten alloy bullet will completely destroy the rifling of the barrel-hence the plastic sabot), the HEIAP munitions use explosives to "blast a path" for the penetrator. 37. The round is loaded just as solid full metal jacketed round would be. The special effect is developed when the around strikes the target. The initial collision ignites the incendiary material in the tip. Triggering the detonation of the HE charge. The second (zirconium powder) incendiary charge ill also ignite. This burns at a very high temperature and is not readily extinguished and can last for 30 seconds. 38. The remaining element of the ground is the tungsten carbide penetrator. This has a large kinetic energy and will penetrate the armour as solid-cored armour piercing shot would. This would take some of the incendiary round through the armor. The MK 211 is claimed to penetrate up to 2 inches (50mm) of rolled steel. 19 APDS and SLAP 39. SLAP (Saboted Light Armor Penetrator) and APDS (Armor Piercing Discarding Sabot) are two names for the same type of ammunition.

However, the "SLAP" acronym is usually reserved for small caliber ammunition (less than 20mm), while "APDS" is more common for medium or large caliber ammunition. 40. There are two parts in a SLAP/APDS payload. The first part is the armor-piercing (AP) bullet itself. This consists of a sub-caliber bullet (sometimes called a flechette, dart, or penetrator) usually made out of particularly hard and dense metal or metal alloy, such as tungsten carbide. The second part of a SLAP/APDS payload is a discarding sabot (DS).

This is a plastic collar that fits between the sub-caliber penetrator and the rifle's bore, transferring spin from the rifling to the sub-caliber penetrator. The sabot lightens the load that the propellant charge must push from the barrel, increasing the bullet's velocity substantially. This higher velocity facilitates greater penetration. 41. Shortly after exiting the muzzle, the sabot is stripped from the bullet by centrifugal forces and wind resistance, leaving the bullet free to move down range independently from the sabot. SPECIAL PURPOSE SMALL ARMS AMMUNITION 42.

Ammunition for Silenced Weapons The SP-2 ammunition, which was the first to be produced in any quantity, has been based on 7.62×39 case, slightly shortened and fitted with round-nose 7.62mm bullet (most probably similar to one used in 7.62×25 TT cartridges). Internally this cartridge contained a small charge of propellant behind a two-stage telescoped piston, which propelled the bullet out of the case when fired and then locked the hot powder gases inside the case. The resulting sound was almost non-existent, and the cartridge was adopted by the KGB for clandestine operations.



To improve performance and some what confuse possible investigators, the round-nose bullet was later replaced by a standard pointed 7.62mm bullet originally used in 7.72×39 M43 ammunition. This cartridge designated 7.62x38 SP-3 has been in use since the early 1970, along with the MSP two – barreled derringer type pistol and NRS –1 scout shooting knife. While the SP-3 cartridge was more or less adequate for the clandestine work of the KGS, it was far too underpowered for use by elite Spetsnaz units, which were supposed to operate deep behind enemy lines.

To provide the Spetsnaz with a more potent weapon, Soviet designers developed an enlarged version of the SP-3 cartridge, initially know as PZ, which latter involved into the PZA and PZAM 7.62mm silent cartridge. Used in the S-4M” Groza” (Thunderstorm) tow-barreled break-open pistol, 20 the 7.62×63 PZAM cartridge has a very strong, thick walled, slightly bottle necked case with a tow-stage telescoped piston, similar to the SP-3. It is loaded with the same 7.62 pointed M43 bullet. It has been used by Soviet Spetsnaz forces in Afghanistan.

The SP-6 cartridge featured an armour-piercing bullet with a hardened steel core, which could defeat typical military-type body armour at ranges of up to 300-400 meters. 43. Underwater Weapons The next line of development, almost unique to the Soviet armed forces, has been underwater firearms and ammunition for them. Initially developed during the late 1960s, underwater cartridge propelled the long and slim drag-stabilized bullets, and were used in four barreled SPP-1 break-open pistols.

To achieve better loading and extraction, the bottlenecked brass cartridge were rimmed and loaded using special flat clips, which held all four rounds together. Both primer pockets and case necks were sealed against the water, and the steel bullets were covered by special lacquer coating. Initially satisfied with the pistol, Special forces elements of the Soviet Navy requested further development and by the mid 1970s Soviet designers brought in a unique underwater assault rifle, the APS(which, in fact, was a smoothbore weapon).

This weapon used cartridge externally similar to earlier SPS pistol ammunition, but based on the standard 5.45×39 M74 cases. This “ rifle” ammunition is available in two basic forms, MPS “ ball” and MPST “ tracer”. Both APS underwater automatic weapon and SPP-1 M underwater pistol are still in used by Russian navy, as well as offered for export. 7.62mm SP-3| 7.62X38| 8| Not published| Silent Cartridge| 7.62mm SP-4| 7.62×41| 9.3| 260| Silent Cartridge| 7.62mm PZAM| 7.62×63| 8| Not published| Silent Cartridge| 7.62mm M43 US| 7.62×39| 12.5| 290| Subsonic Cartridge| 21

PART V -AGL AMN USED IN INDIA 44. VOG-17This round is intended for firing from the AGS-17 and AGS-30 automatic grenade launchers to engage manpower and war material. The grenade launcher is used to arm motorized rifle units. It can also be installed on helicopters, motor boats and vehicals. The grenade launcher is designed for flat and curved fire. The around is provided with an instantaneous point fuze ensuring reliable functioning of grenades on impact, including with snow and water surface. The enhanced fragmentation is obtained owing to weakening grooves on the internal surface of the grenade body. 2 PART VI - AGL AMMUNITION OF THE WORLD

Air Burst Round 45. An air burst round is a bullet that detonates in mid air, causing shrapnel damage to an enemy. This makes it easy to hit enemy soldier behind a wall, in a foxhole, or in a confined space or room. It is used on many guns including the XM-29 assault rifle. On many guns like XM-29, it is 20mm and is similar to a smart grenade. Although useful in many situations. It is not as effective as a hand or launcher grenade and its fragments are not as dangerous but is still a very dangerous weapon.

To fire it simply set the distance you want to detonate, fire and watch the round explode in mid air. Parameters & Features Operating range 40m to 1600m Self Destruction (SD) 1600m Programming of impact function ON/off Impact function & SD on if not programmed. Sensitivity of impact sensor 2mm AL alloy. Data transmission check if negative- SD is on. Absolutely ECM safe. Without external energy the fuze still works on impact even at graze angles. M430 HEDP (High Explosive, dual purpose) 46. The HEDP (High explosive Dual Purpose) M 430 cartridge joined with M 16 A2 links is the standard round for the MK-29.

The impact-type round penetrates 2 inches of steel armor at 0 degree obliquity and inflicts personnel casualties in the target area. This round is packed in an M 548 ammunition container (48 rounds, linked, in each container). It is olive drab with a yellow give and yellow markings. It has a PIBD M 549 fuze and comp B filler. It arms between 18 to 30 meters and has a casualty radius of 15 meters. 23 M430 HEDP (High Explosive, dual purpose) Identification Olive drab with yellow olive and yellow markings. Fuze Point initiating base detonating (PIBD) M549 Filler - Composition B Arming distance - 18 to 30 meters 23

<https://assignbuster.com/latest-trends-in-machine-gun-ammunition/>

Kill radius - Approximately 5 meters Maximum range - 2200 meters. Wound radius - Approximately 15 meters. Maximum effective range - 1500 meters. SM 1018 HIGH EXPLOSIVE AIR BURSTING (HEAB) 47. The key to delivering the revolutionary increase in lethality and survivability of the Objective individual Combat Weapon (OICW) was the precision XM1018 High Explosive Air Bursting (HEAB) ammunition. It consists of a center-body fuze with a controlled fragmenting warhead on each end. This design was chosen to maximize lethality. This is a very challenging system to develop and test but was successfully demonstrated multiple times.

The key technologies and integration drivers being addressed included miniaturized and gun hardened fuze electronics, ammunition reliability, a "men-rated" safe and arming system, system interfaces between the weapon, fire control, and ammunition, dual warhead lethality, uniform ammunition 24 propulsion, and weapon recoil mitigation. What makes this system unique is its ability to provide all-electronics information on range, to automatically. All the soldier has to do is aim, lase, adjust his/her aim point, and fire the calculations are transparent to the user. 48.

The HEAB ammunition will have a settable fuze that interacts with the TA/FCS automatic fuze programming. It will have the necessary lethal radius to insure the required P (i) s are met. The HEAB ammunition shall demonstrate a minimum reliability of not less than that of the current 40-millimeter M406 HE/M433 HE Dual Purpose (HEDP) cartridge. A family of cartridge for the HE portion of the weapon will be developed including an inert cartridge for training, as target practice spotter cartridge which indicates actual burst location, and a blank cartridge for force on force

<https://assignbuster.com/latest-trends-in-machine-gun-ammunition/>

training. M 433 40MM CARTRIDGE HIGH EXPLOSIVE DUAL PURPOSE (HEDP)

9. The High Explosive dual purpose (HEDP) round has an olive drab aluminum skirt with a steel cup attached, white markings, and a gold olive. It penetrates at least 5cm (2 inches) when fired straight at steel armor. It arms between 14 and 27 meters, and it causes casualties within a 5 meters radius. The existing M 433 series HEDP cartridge (DoDIC B 546) used in the M203 Grenade Launcher was developed and fielded in the late 1960s. It does not meet the current insensitive Munitions (IM) requirements. Its dispersion characteristics are less than satisfactory, and it has a long history of safety related malfunctions. 5 40mm x 51PPHE, US MK 285 US MK 285 40mm high velocity 50. Programmable Prefragmented High Explosive Air-Burst ammunition is especially made to defeat targets in defilade e. g. behind corners, on rooftops and in foxholes. A nose mounted fuze will make the fragments be distributed sideways and rearwards. The ammunition is highly effective in urban terrain. The fuze provides Air-Burst (time), point detonation and self-destruct capabilities. The round is made for use in the MK47 striker -40 Automatic Lightweight Grenade Launcher. 40mm x 53 IHV-HEDP 51.

The improved High Velocity High Explosive Dual Purpose round is currently under development. Nammo is working on a round with improved properties compared to instance the standard M430A1 HEDP round. The improved ammunition will be available in two different versions with mechanical PD/SD fuze and with the above mentioned MK285 fuze. The version with the mechanical PD/SD fuze can operate in most of the available 40mm high velocity AGLs while the version with the MK 285 fuze will only operate in

the MK 47 striker 40. 26 40mm M58A1 M661 AND M662 Parachute Cartridge  
40mm M661 Green Star Parachute Cartridge 53.

Description The M583A1, M661 and M662 are identical except they are white star, green star and red star signaling grenades, respectively. The cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge-case assembly. The projectile has a one-piece hollow aluminum body with a metal rotating body. A plastic o give embossed with a raised letter for night identification of payload, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains a pyrotechnic flare candle assembly and an integral ignition/ejection charge attached to a 20 in diameter parachute.

The projectile had a 4 to 5 second delay ignition element crimped into the centre opening of a metal delay carrier. 54. The projectile is press fitted into an O-ring in the front opening of the cartridge case. The case is hollow bi-chambered cylinder with a metal closing plug crimped into the base of the cartridge case. The propellant cup is sealed on the bottem by the closing plug. The cup acts as a high pressure chamber, and the cavity in the case surrounding the cup acts as a low pressure chamber. A percussion primer is crimped into a centre opening in the closing plug. 55.

The round leaves the barrel at about 76m/s and achieves a maximum burst height of 135 m at quadrant elevation of 85 approximately 2 seconds after firing. A pyrotechnic delay element in the base of the projectile initiates the ejection charge/candle. This ejects the parachute and candle out the front of the projectile. 27 The parachute delays and provides visual light for about 45

seconds while descending. Armament Low velocity grenade launcher of the M79 and M203 types. Specification Type Pyrotechnic white, green or red star. Round length 133.9 mm Round weight 223.3 gm Payload Illuminating compound

M583A 193 kg M661 85g M662 85g Muzzle Velocity 76m/s Arming distance 183m (burst distance) Normal burst distance 91m Color marking white/black 28 40mm M713, M715 and M716 Smoke Cartridge 56 Description The M713, M716 smoke cartridge are identical except that they are red, green and yellow smoke grenades respectively : They are used to provide aerial identification and location of troops on the ground. The cartridge consist of a cartridge case, a projectile with a pyrotechnic smoke payload, and a pyrotechnic impact fuze. The cartridge case is a bi-chambered aluminum container housing a brass propellant cup.

The propellant cup is held in the case by a crimped base plug that provides a pressure type waterproof use a one-piece aluminum body ogive and a steel base. The payload consists of a pyrotechnic smoke mixture pressed into the body ogive with a cylindrical cavity in the centre. The fuze is cemented to the base of the projectile and protrudes into the cylindrical cavity of the smoke mixture. The fuze designed form at a minimum of 15m and a maximum of 45m from the muzzle the fuze is designed form at a minimum of 15m and a maximum of 45m from the muzzle of the weapon. Armament Low velocity grenades launchers of the M79 and M 203 types.

Specification Type Pyrotechnic ground smoke Round length 99.9 mm Round weight 222.3g 29 Payload 75g smoke mixture Muzzle velocity 76m/s Arming

distance 15-45 Max range 400m Color marking all, light green/black M713 : red ogive M715: green ogive M 716: yellow ogive Candor GL 204 37/38, 1mm Long Range Projectile with coloured smoke 57. Description The GL 204 long range coloured smoke projectile was designed to be used in public disorder situation and to combat criminals. It can also be used to flush out criminals from confined spaces. It can be used with condor AM 600 projector or by a multi purpose anti riot launcher. Specification Length 115. mm Caliber 37/38 , 38, 38. 1 and 40mm Weight 130g Effective range 90 and 150 m Delay time 1.5 to 3 s Minimum emission time 20 to 30 s Colour White, yellow, red, blue and green 40 x 46mm M407 A1 TP Cartridge 58. Description This cartridge is a fixed round of ammunition, consisting of an aluminum projectile body with rotation band and a cartridge case assemble. A hollow aluminum ogive is fitted to a front end of the projectile. A plastic ball assembly, containing an A= RDX booster pellet and two yellow smoke pellets, is fitted into the rear end of the projectile. An impact fuze assembly is threaded into the front opening of the ball assembly.

The projectile assembly is press fitted into a cartridge case. The case is a hollow bi-chambered aluminum cylinder with an annealed brass propellant cup assembly crimped into the centre of the cartridge base, a high-pressure chamber, while the hollow cavity in the case, which surrounds the cup, acts as a low-pressure chamber. Specifications Type TP Round length 99mm Round weight 226. 8g Payload Yellow dye Muzzle velocity 76 m/s Max range 400m Colour / Marking Blue/ White 28 PART VII RECOMMENDATIONS 59. After having seen the existing ammunitions across the world in caliber of 7. 2mm MMG amn and 30/40mm Grenades and comparing them with the



ammunitions used in our country, recommend the following . (a)For 7. 62mm MMG amn - Armour piercing round Reasons. (i)India does not possess a armour piercing round though the weapon (MAG-58 MMG) is capable of firing the same. (ii)Will add on to our A/tk def at coy level. (iii)Rounds exist for this weapon system with some more research we can improve upon the same and provide a better amn system at par with the world standards. (b)For 30mm AGL/AGS HEDP(ROUNDS) Reasons (i)Our country uses just one type of amn VOG -17, HE amn, AGL is a very potent weapon at coy level with long rg.

Capability to engage A/tk as well as A/pers tgts at long rgs will be a force multiplier keeping in view its present capability. (ii)Will add on the A/tk fighting capability at coy level. (c)ILL Rounds Reasons (i)Ltd illuminating capability at coy/pl levels. (ii)Will add on to the weapons potential. (d)Smoke Rounds Reasons (i)Ltd capability of provide smoke. Only 81mm mor in std Inf Bn org has the amn to provide a smoke screen. (ii)AGL being a long rg weapon system at coy level can be used effectively and at junjor's cdr's disposal.