



6.5mm Grendel

6.5mm Grendel			
			
6.5mm Grendel showing variety of bullets 144 gr (9.3 g) to 90 gr (5.8 g)			
Type	Rifle		
Place of origin	 United States		
Production history			
Designer	Bill Alexander and Janne Pohjoispää		
Designed	2003 ^[1]		
Specifications			
Parent case	.220 Russian		
Case type	Rimless, bottleneck		
Bullet diameter	6.71 mm (0.264 in)		
Neck diameter	7.44 mm (0.293 in)		
Shoulder diameter	10.87 mm (0.428 in)		
Base diameter	11.15 mm (0.439 in)		
Rim diameter	11.2 mm (0.44 in)		
Rim thickness	1.5 mm (0.059 in)		
Case length	38.7 mm (1.52 in)		
Overall length	57.5 mm (2.26 in)		
Rifling twist	1 in 8" or 1 in 9"		
Primer type	Small rifle		
Ballistic performance			
Bullet weight/type	Velocity	Energy	
90 gr (6 g) Speer TNT	2,880 ft/s (880 m/s)	1,658 ft-lbf (2,248 J)	
120 gr (8 g) Norma FMJBT	2,700 ft/s (820 m/s)	1,942 ft-lbf (2,633 J)	
123 gr (8 g) Sierra Matchking	2,650 ft/s (810 m/s)	1,917 ft-lbf (2,599 J)	
130 gr (8 g) Norma	2,510 ft/s (770 m/s)	1,818 ft-lbf (2,465 J)	
108 gr (7 g) Scenar (moly)	2,790 ft/s (850 m/s)	1,866 ft-lbf (2,530 J)	
<i>Test barrel length: 24 inches</i> <i>Source(s): Alexander Arms Pressure-safe Load Data ^[2]</i>			

The **6.5mm Grendel** (6.5×39mm) is an intermediate cartridge designed by Bill Alexander and Janne Pohjoispää as a low recoil, high accuracy, 200-800 yard cartridge specifically for the AR-15 platform. Since its introduction it has proven to be a versatile design and is now expanding out into other platforms including bolt action rifles and the Kalashnikov system.

The name "6.5mm Grendel" was a trademark owned by Alexander Arms until

it was legally released to allow the cartridge to become SAAMI standardized.^[3] The release of the trademark removes the requirement of manufacturers to seek the permission of the trademark holder to use the mark.

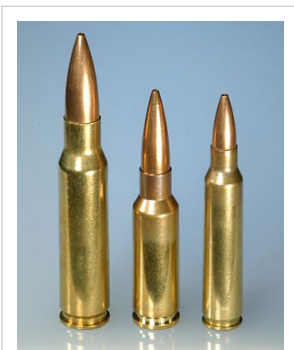


20" Grendel Counter-Sniper

Development and history

The 6.5mm Grendel design goal was to create an effective 200-800 yard AR-15 magazine length loaded cartridge for the AR-15 platform that surpassed the performance of the native 5.56 NATO / 223 Remington cartridge. Constrained by the length of the 5.56 mm NATO round, the Grendel designers decided to use a shorter, larger diameter case for higher powder volume while allowing space for long, streamlined, high ballistic coefficient (BC) bullets. Firing factory loaded ammunition loaded with bullets ranging from 90 to 129 grains (5.8–8.4 g), its muzzle velocity ranges from 2,500 ft/s (760 m/s) with 129- and 130-grain (8.4 g) bullets to 2,900 ft/s (880 m/s) with 90 gr (5.8 g) bullets (similar in velocity to a 5.56 mm 77-grain (5.0 g) round).

The case head diameter of the Grendel is the same as that of the parent case the .220 Russian, the 7.62×39mm, and PPC cases. This is larger than the 5.56×45mm NATO, thereby necessitating the use of a non-standard AR-15 bolt. The increased case diameter results in a small reduction in the capacity of standard size M16/AR15 magazines. A Grendel magazine with the same dimensions as a STANAG 30-round 5.56 magazine will hold 26 rounds of 6.5mm ammunition.



7.62 mm NATO, 6.5mm Grendel, 5.56 mm NATO



C-Products 26rd Grendel Magazine

Timeline

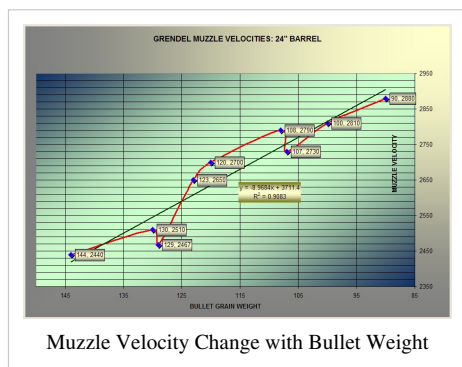
- 1943: The Soviets develop and adopt the 7.62x39mm M43 cartridge and begin to field it.
- Late 1950s: The .220 Russian hunting cartridge is developed based upon the military 7.62x39mm M43 design.
- 1984: Drs. Louis Palmisano and William B. Davis, PhD, develop the 6.5mm PPC from the .220 Russian for the US Shooting Team for use in bolt action rifles in the 1986 world championships. While performance was exceptional, the US Shooting Team stays with 6mm. The 6.5mm PPC is shelved and never seen again, although Dr. Louis Palmisano believes the 6.5mm PPC could be a formidable competition cartridge with new sub-100 grain bullets.

- 1998: Arne Brennan, a competition shooter and founder of competitions shooting.com, designs and orders 6.5 PPC reamer from JGS Tool optimized for AR-15 magazine length after conducting extensive theoretical study of multiple calibers and cartridge cases.
 - 2000: Arne Brennan, after thousands of rounds of testing 6.5 PPC, compares notes with Dr Louis Palmisano (creator of the 22 and 6mm PPC cartridges).
 - Early 2002: Bill Alexander, a well respected engineer who worked for the British Ministry of Defense and designer of the .224 BOZ, .499 L-W and .50 Beowulf cartridges, begins research on developing a 6.5mm Intermediate cartridge specifically for the AR-15. Eventually the 6.5mm PPC caught his attention as it would fit his existing high strength .50 Beowulf bolt. So he machined a solid brass 6.5mm PPC dummy round to ponder over. It seemed like a fantastic cartridge which was small enough to double-stack in an AR-15 size magazine.
 - July 2002: Noted American firearms journalist David M. Fortier and Bill Alexander share ideas for a 6.5mm Intermediate cartridge. Fortier shares his idea for a 7.62x39mm based cartridge for use in the Kalashnikov system. He shelves his idea though when Alexander shares what he is working on for the AR-15 platform.
 - August 2002: Arne Brennan and Bill Alexander are introduced by a mutual acquaintance at Lothar Walther USA.
 - January 2003: Janne Pohjoispää, a noted engineer working for Lapua, and Bill Alexander begin working together on designing and finalizing what would become the 6.5mm Grendel cartridge. Pohjoispää shelves basing it on the PPC as Lapua is already producing .220 Russian brass. He redesigns it using Lapua's .220 Russian case as the starting point. The two bounce ideas off each other and finalize the cartridge. The end result is noticeably different than Brennan/Alexander's original 6.5mm PPC based design. The new design features a relocated shoulder, increased case capacity and a thicker neck for increased case life in auto-loading rifles.
 - November 2003: Alexander Arms pays for the cartridge tooling and places an initial order for 50,000 brass cases.
 - November 2003: JGS produces the first reamer for the new cartridge.
 - January 2004: Alexander Arms officially introduces their new cartridge, dubbed the 6.5mm Grendel, at the SHOT Show. They introduce both a line of rifles and ammunition.
 - May 2006: Independent ballistic gelatin testing completed for 90 gr (5.8 g) TNT, 120 grains (7.8 g) Norma, 120 gr (7.8 g) SMK, and 123 grains (8.0 g) SMK prototype.
 - Aug 2006: Pressure safe loading data is published for AR platforms with 14.5- to 28.0-inch (370–710 mm) barrels.
 - Feb 2007: Production Wolf brand ammunition becomes available. Wolf Performance Ammunition becomes a vocal supporter of the cartridge and introduces both a 123 grain Soft Point and 120 grain Multi Purpose Tactical HPBT in their brass cased Gold line.
 - Nov 2009: Hornady teams with Alexander Arms to produce 6.5mm Grendel ammunition, cartridge cases and dedicated projectiles. They introduce a 123 grain AMAX load which quickly gains a reputation for excellent accuracy.
 - Early 2011: Barnaul of Russia begins development of a 110 grain FMJ-BT load using steel cartridge cases. Preproduction cases are delivered for testing in the fall of 2011.
 - February 2012: Molot of Russia begins production of 6.5mm Grendel AK rifles in their Vepr line.^[citation needed]
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Performance

Proponents assert that the Grendel is an ideal middle ground between the 5.56 mm NATO and the 7.62 mm NATO, taking the best attributes of each. It has a flatter trajectory and retains greater terminal energy at extended ranges than either of these cartridges due to its higher ballistic coefficient.^[1]

External ballistics



Bullet velocity: 20 inch (508 mm) barrel						
	Bullet mass		Muzzle velocity		1,000 meter velocity	
	gr	g	ft/s	m/s	ft/s	m/s
Lapua Scenar	108	7.0	2,700	820	1,166	355
Lapua Scenar	123	8.0	2,620	800	1,222	372
Lapua FMJBT	144	9.3	2,450	750	1,213	370

As noted above, the Grendel case is very closely related to the .220 Russian case. When sufficient load data was made available, a thorough study of the Grendel case, which constitutes a precisely dimensioned combustion chamber when the round is chambered, was done with the following results. In general, each additional grain of bullet weight will reduce muzzle velocity by 10 ft/s (47 m/s for each gram) and each additional inch of barrel length will increase muzzle velocity by 20 ft/s (2.4 m/s for each centimeter). Therefore, a handy rule of thumb is "one inch of barrel length equals two grains of bullet weight (1 mm → 5 mg)". Specific details are available as graphs derived from Alexander Arms' public domain load table linked below.

Sporting uses

The cartridge developer, Bill Alexander, has been quoted as saying he was looking for a cartridge with "more legs" (i.e. longer effective range) than the .50 Beowulf so that it could be used for white tail deer hunting.^[1] But its original marketing for military and police usage created skepticism about its suitability for hunting. Despite this there has been critical acknowledgement that it is sufficient for CXP2 class game such as deer.^[1] Its manufacturer is more enthusiastic, saying that it has "flat trajectories and bullets well-suited to deer and varmints".^[1] A neutral viewpoint is the acknowledgement that it is similar to proven deer cartridges such as the .30-30 Winchester, .257 Roberts and .243 Winchester but is not in the same class as the .270 Winchester nor the 30-06.^[4]

References

[2] <http://www.65grendel.com/65GrendelReloadingData.pdf>

[3] "Alexander Arms Announces: The 6.5 Grendel Is An Official SAAMI Cartridge " (<http://www.alexanderarms.com/index.php/news-events/111-65-grendel-saami.html>)

Bibliography

- Guns 'n' Ammo: Book of the AR-15, 2004, "The 6.5mm Grendel," David Fortier, p. 66.
- Special Weapons for Military & Police, Annual #27 2004, "Beyond the 5.56mm NATO," Stan Crist, p. 62-67.
- Guns 'n' Ammo: Book of the AR-15, 2005, "6.5mm Grendel and 6.8 SPC," David Fortier, p. 32-44.
- Shooting Times, February 2005, "Cooking up Loads for the 6.5mm Grendel," David Fortier, p. 52-56.
- Shooting Illustrated, September 2005, "6.5mm Grendel and Alexander Arms," J. Guthrie, p. 34-37, 67-69.
- Petersen's: Rifle Shooter, March/April 2006, "Cartridge Efficiency - Why case shape matters," M.L. McPherson, p. 22-24.
- Shooting Times, January 2007, "Other AR Chamberings," Sidebar Article, David Fortier, p. 56.
- Special Weapons, Semi-Annual #50 2007, "The Super Versatile AR," Charlie Cutshaw, p. 44-45, 80-83.
- Special Weapons, Semi-Annual #50 2007, "5.56mm NATO Alternatives," Stan Crist, p. 52-59.
- Shooting Times, March 2007, "Les Baer's 6.5mm Grendel AR Sets a New Standard," David Fortier, p. 26-32.
- Special Weapons for Military & Police #52, Spring 2007, "BETTER-IDEA 6.5mm GRENDEL," Stan Crist
- Special Weapons for Military & Police #52, Spring 2007, "New Battlefield Requirements - New Rifles and Ammo Needed," Charlie Cutshaw

External links

- <http://www.alexanderarms.com/>

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