

CPNI

Centre for the Protection
of National Infrastructure



Ballistic testing – AK-47 rounds

PUBLISH DATE:
June 2019

CLASSIFICATION:
OFFICIAL

Ballistic Testing

Recommended AK-47 (Kalashnikov) assault rifle rounds





Fig.1: AK-47 Assault rifles – (T to B: AK-47 and AKM)

The current European standards¹ for ballistic testing of glass and complete windows, doors and shutters provide a comprehensive testing procedure and classification system against firearms threats. They provide a number of standard ballistic threats to cover the range of weapons and ammunition from small pistols to the NATO assault rifle. However the glass standard does not include the AK-47 bullet as a test threat. The test standard for windows, doors, and shutters includes the AK-47 ball round as an additional option but the bullet is not well defined.

Variants of the AK-47 (Kalashnikov) assault rifle have been produced in large quantities by a number of former Warsaw Pact and other countries and it has become one of the main weapons used by insurgent and terrorist groups. The ammunition is also manufactured in numerous factories. There is some variation in performance due to differences in the manufacturing standards for both weapons and ammunition. Because of this variability it has been difficult to develop consistent and repeatable test criteria for AK-47 ammunition. To overcome this problem, well defined surrogate rounds have been developed for ballistic test purposes.

The AK-47 fires 7.62mm diameter bullets using a 39mm long cartridge, usually referred to as 7.62 x 39mm rounds. These are significantly less powerful than the 7.62mm NATO bullets which are fired using a larger, 51mm long, cartridge, usually referred to as 7.62 x 51mm rounds. As only NATO rounds appear in the current standards, windows and doors have been designed and tested to defeat this threat. Such products are likely to be unduly heavy if the threat is limited to the less energetic AK-47 bullets.

¹ European Test Standards

- BS EN 1063 Glass in building – Security glazing – Testing and classification of resistance against bullet attack
- BS EN 1522 Windows, doors, shutters and blinds – Bullet resistance – Requirements and classification
- BS EN 1523 Windows, doors, shutters and blinds – Bullet resistance – Test method

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Fig2: AK-47 7.62x39 and NATO 7.62x51 ammunition – (L to R: PS ball round, BZ API round, NATO ball round, NATO AP round)

The AK-47 may fire conventional ball bullets with a lead or mild steel core or armour piercing incendiary (API) bullets with a hardened steel core. Following an assessment of the available AK-47 bullets the best performing ball and API examples were identified. Subsequently, surrogate AK-47 bullets have been designed, and validated by testing, to match the performance of the selected rounds. The surrogate for the API bullet does not have an incendiary component but is armour piercing (AP).

If testing against AK-47 bullets is required, testing and classification should follow the procedures in the European standards. However, the requirements and classification data for the surrogate rounds should be taken from Table 1 below. The surrogate AK-47 bullets should be fired from a standard NATO 7.62mm barrel with a twist of 1 in 305mm (12in) and a minimum length of 508mm (20in). It is recommended that surrogate bullets should be procured from the manufacturers listed on page 5.

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Class	Weapon	Calibre	Bullet		Test Conditions	
			Type	Mass g	Test range m	Bullet velocity m/s
AK-47 Ball	Rifle	7.62 x 39	FJ/PB/FeC	7.9 ± 0.1	10 ± 0.5	720 ± 10
AK-47 AP	Rifle	7.62 x 39	FJ/PB/HC	8 ± 0.05	10 ± 0.5	740 ± 10
FJ full metal jacket AP Armour Piercing HC hardened steel core PB pointed bullet FeC Soft steel core						

Table 1: Classification and requirements for testing with AK-47 surrogate bullets.



Fig3: AK-47 surrogate bullets (L to R: ball bullet and AP bullet)

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Manufacturers:

AK-47 SURROGATE BALL ROUNDS:

.30" calibre Surrogate Projectile Part No. PT 11009

EPA Manufacturing
Faldingworth Base Spridlington Road
Market Rasen Lincolnshire LN8 3SQ
Factory: 01673 866200
Sales: 01673 871310
Email: BM@EPgroupuk.com
www.EPgroupuk.com

AK-47 SURROGATE AP ROUNDS:

Round No.4 .30" calibre Short AP MK3 Part No. CU31798-004-ASM

Davromatic Precision Ltd
Avon Industrial Estate, Rugby, Warwickshire, CV21 3UY
Phone: 01788 561969
Email: sales@davromatic.co.uk
www.davromatic.co.uk

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