

Draft

NIJ Specification

***Threat Levels and Associated Ammunition to Test Equipment
Intended to Protect U.S. Law Enforcement Against
Handguns and Rifles***

National Institute of Justice

January 2018

Introduction

This draft document specifies the threat levels and associated ammunition intended for use with voluntary National Institute of Justice (NIJ) Standards that specify a minimum performance requirement for equipment intended to protect U.S. law enforcement against handgun and rifle ammunition. It defines ballistic threats identified by U.S. law enforcement as representative of prevalent threats in the United States. Its primary purpose will be for use by the NIJ Compliance Testing Program (CTP) for testing and evaluation of ballistic-resistant body armor for certification by NIJ. It will be used by both ballistics laboratories that test body armor and body armor manufacturers participating in the NIJ CTP. This standard will be included in the Personal Body Armor scope of accreditation used by the National Voluntary Laboratory Accreditation Program (NVLAP) to accredit ballistics laboratories.

The final version of this document is anticipated to be published in late 2018 as a companion to NIJ Standard 0101.07, which will revise NIJ Standard 0101.06, *Ballistic Resistance of Body Armor*, published in 2008.¹ This draft ballistic test threats document is incorporated by reference into the draft version of NIJ Standard 0101.07, which specifies minimum performance requirements and test methods for the ballistic resistance of body armor used by U.S. law enforcement that is intended to protect the torso against handgun and rifle ammunition. A standalone threats specification may also enable testing of a variety of ballistic-resistant equipment, not just ballistic-resistant body armor, against contemporary U.S. law enforcement threats.

Threat level nomenclature has been revised from NIJ Standard 0101.06 to be more descriptive of threats and to reduce confusion among law enforcement end users of body armor. Level II and level IIIA have been replaced with “HG1” and “HG2,” respectively, to represent handgun (HG) threats. Level III and level IV have been revised to three levels representing rifle (RF) threats—“RF1,” “RF2,” and “RF3”—with RF1 and RF3 replacing level III and level IV, respectively. RF2 is a new intermediate threat level introduced in this draft specification.

This document uses the following in accordance with international standards:

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” indicates a permission;
- “can” indicates a possibility or a capability.

Please send all written comments on this draft document to Mark Greene, Policy and Standards Division Director, Office of Science and Technology, National Institute of Justice in electronic format by email at mark.greene2@usdoj.gov.

¹ NIJ Standard 0101.06, *Ballistic Resistance of Body Armor*, National Institute of Justice, U.S. Department of Justice, Washington, DC, July 2008, <https://www.ncjrs.gov/pdffiles1/nij/223054.pdf>.

DRAFT FOR PUBLIC COMMENT

Please send all other written comments and suggestions to the Director, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice, 810 7th Street NW, Washington, DC 20531.

Nothing in this document is intended to create any legal or procedural rights enforceable against the United States. Moreover, nothing in this document creates any obligation for any individual or organization to follow or adopt this voluntary standard nor does it create any obligation for manufacturers, suppliers, law enforcement agencies, or others to follow or adopt voluntary NIJ equipment standards.

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1. Scope

- 1.1. This document specifies the threat levels and associated ammunition as defined by the National Institute of Justice (NIJ). It is intended for use with NIJ Standards that specify a minimum performance requirement for equipment intended to protect U.S. law enforcement against handgun and rifle ammunition.
- 1.2. This document defines ballistic threats identified by U.S. law enforcement as representative of prevalent threats in the United States.
- 1.3. The ammunition detailed in this document is classified into five threat levels: NIJ HG1, NIJ HG2, NIJ RF1, NIJ RF2, and NIJ RF3.
 - 1.3.1. HG represents handgun.
 - 1.3.2. RF represents rifle.
- 1.4. This document, when used with an appropriate NIJ standard, is applicable for certification testing or research and development testing.
- 1.5. The primary unit of velocity is specified as ft/s (feet per second). Additional units in parenthesis of m/s (meters per second) are for reference only. Units where referenced from external documents are referenced in their native, published format.

2. References

The following references form a basis, and provide support, for the requirements and procedures described in this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies, including any amendments.

- ANSI/SAAMI. *Glossary of Industry Terms*. Newtown, CT: Sporting Arms and Ammunition Manufacturers' Institute (SAAMI).
- ANSI/SAAMI. American National Standard ANSI/SAAMI Z299.3 -2015, *Voluntary Industry Performance Standards for Pressure and Velocity of Centerfire Pistol and Revolver Ammunition for the Use of Commercial Manufacturers*. Newtown, CT: Sporting Arms and Ammunition Manufacturers' Institute (SAAMI).
- ANSI/SAAMI. American National Standard ANSI/SAAMI Z299.4 -2015, *Voluntary Industry Performance Standards for Pressure and Velocity of Centerfire Rifle Ammunition for the Use of Commercial Manufacturers*. Newtown, CT: Sporting Arms and Ammunition Manufacturers' Institute (SAAMI).
- ASTM E3005-15, *Standard Terminology for Body Armor and Related Items*. West Conshohocken: PA: ASTM International.

3. Terms and Definitions

- 3.1. *ammunition*, n – one or more loaded cartridges consisting of case, primer, propellant, and one or more projectiles. (ASTM E3005)
- 3.2. *cartridge*, n – single assembled unit consisting of a bullet, propellant, primer, and casing. Synonymous with *round*. (ASTM E3005)
- 3.3. *reference velocity*, n – The specified velocity for a given test threat.
- 3.4. *test threat*, n – the projectile that is used in laboratory testing to impact the test item at a specific velocity or energy to assess performance of body armor. (Adapted from ASTM E3005)

Discussion: In this standard, test threat only refers to bullets fired from specified barrels.

4. NIJ Threat Levels and Ballistic Test Threats

- 4.1. Table 1 lists the NIJ HG threat levels, the associated ammunition for each level, and the reference velocity to be used during testing. Table 2 lists the NIJ RF threat levels, the associated ammunition for each level, and the reference velocity to be used during testing. These tables were developed based on input from experienced practitioners and subject-matter experts.
- 4.2. The projectile firing system shall be capable of consistently and reproducibly propelling the test projectiles at the required aiming point with acceptable accuracy, impact velocity, and angle of impact yaw.
 - 4.2.1. SAAMI specifications provide a good starting point to achieve a system capable of achieving acceptable accuracy, impact velocity, and angle of impact yaw.

Table 1. NIJ HG Threat Levels and Test Threat Ammunition

NIJ HG Threat Level	Test Threat Ammunition	Manufacturer & Model ID	Reference Velocity
NIJ HG1 (Formerly NIJ 0101.06 Level II)	9mm Luger FMJ RN 124 grains	Remington #23558	1305 ft/s (398 m/s)
	.357 Mag JSP 158 grains	Remington #22847	1430 ft/s (436 m/s)
NIJ HG2 (Formerly NIJ 0101.06 Level IIIA)	9mm Luger FMJ RN 124 grains	Remington #23558	1470 ft/s (448 m/s)
	.44 MAG JHP 240 grains	Speer #4453 or #4736 ¹	1430 ft/s (436 m/s)

Notes on Table 1:

¹ *These rounds may be special ordered from Speer or purchased from surplus.*

Table 2. NIJ RF Threat Levels and Test Threat Ammunition

NIJ RF Threat Level	Test Threat Ammunition	Manufacturer & Model ID	Reference Velocity
NIJ RF1 (Enhanced version of NIJ 0101.06 Level III)	7.62x51mm M80 Ball NATO FMJ Steel Jacket Spire PT BT 149 +0/-3 grains	U.S. military supply or rounds meeting NATO specifications	2780 ft/s (847 m/s)
	7.62x39mm Surrogate test round	See Figure 1a, b & c	2380 ft/s (725 m/s)
	5.56mm M193 BT 56 +0/-2 grains	U.S. military supply or rounds meeting NATO specifications	3250 ft/s (990 m/s)
NIJ RF2 (Same as NIJ RF1 plus 5.56 mm M855)	7.62x51mm M80 Ball NATO FMJ Steel Jacket Spire PT BT 149 +0/-3 grains	US military supply or rounds meeting NATO specifications	2780 ft/s (847 m/s)
	7.62x39mm Surrogate test round	See Figure 1a, b & c	2380 ft/s (725 m/s)
	5.56mm M193 BT 56 +0/-2 grains	U.S. military supply or rounds meeting NATO specifications	3250 ft/s (990 m/s)
	5.56mm M855 BT 61.8 ± 1.5 grains	U.S. military supply or rounds meeting NATO specifications	3115 ft/s (950 m/s)
NIJ RF3 (Formerly NIJ 0101.06 Level IV)	30.06 M2 AP FMJ Spire PT AP 165.7 +0/-7 grains	U.S. military supply or rounds meeting NATO specifications	2880 ft/s (878 m/s)

Figure 1 a 7.62 x 39 Surrogate drawing:
Short bullet assembly

ITEM NO.	PART NUMBER	TITLE	QTY.
1	M100841	7.62 SHORT BULLET JACKET	1
2	M100842	7.62 SHORT BULLET CORE	1

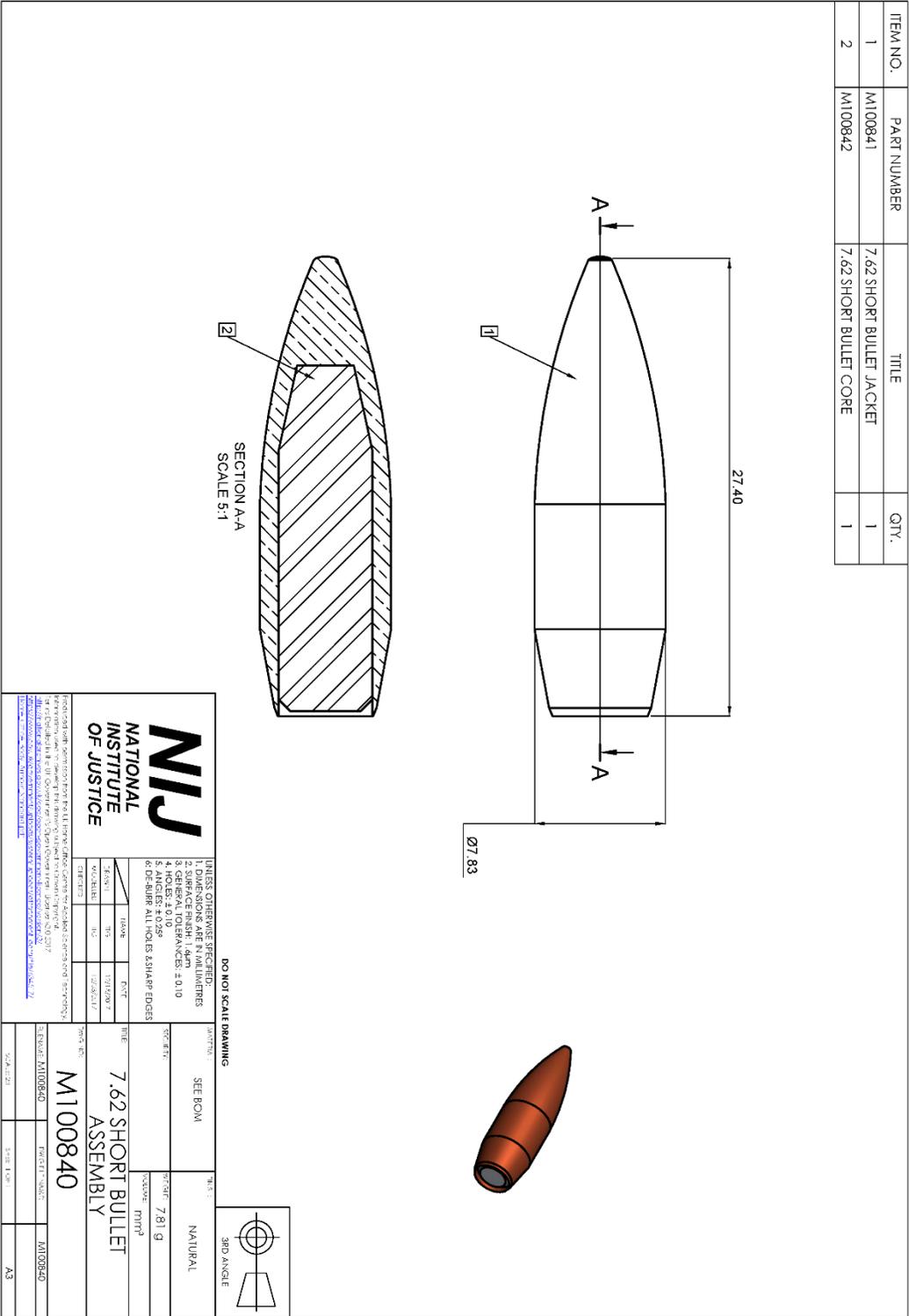


Figure 1 b 7.62 x 39 Surrogate drawing:
Short bullet core

