



# SLOVENSKI STANDARD

## oSIST prEN 1063:2019

01-november-2019

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### **Steklo v gradbeništvu - Varnostna zasteklitev - Preskušanje in klasifikacija odpornosti proti strelom**

Glass in building - Security glazing - Testing and classification of resistance against bullet attack

Glas im Bauwesen - Sicherheitssonderverglasung - Prüfverfahren und Klasseneinteilung für den Widerstand gegen Beschuß

Verre dans la construction - Vitrage de sécurité - Essai et classification de la résistance à l'attaque par balle

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**Ta slovenski standard je istoveten z: prEN 1063**

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#### **ICS:**

13.310	Varstvo pred kriminalom	Protection against crime
81.040.20	Steklo v gradbeništvu	Glass in building

**oSIST prEN 1063:2019**

**en,fr,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 1063**

September 2019

ICS 13.310; 81.040.20

Will supersede EN 1063:1999

English Version

## Glass in building - Security glazing - Testing and classification of resistance against bullet attack

Verre dans la construction - Vitrage de sécurité - Essai et classification de la résistance à l'attaque par balle

Glas im Bauwesen - Sicherheitssonderverglasung - Prüfverfahren und Klasseneinteilung für den Widerstand gegen Beschuß

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 129.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 1063:2019) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1063:1999.

The main changes compared to the previous edition are:

- a) A new ammunition was added for class BR3;
- b) A new class was created for rifles (KS);
- c) Extension rules have been clearly defined.

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## Introduction

The main requirement for bullet-resistant glazing is to prevent the penetration of projectiles from various types of weapon. The classification of bullet-resistance of glazing in this document is a technical classification, based on common weapons and ammunition, in order of attacking power. As the variety of weapons and ammunition does not allow them all to be taken into account, a selection had to be made that covers most weapons and ammunition. The choice of bullet-resistant glazing is established by the user for each individual case.

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## 1 Scope

This document specifies performance requirements and test methods for the classification of the bullet-resistance of glass (consisting of one or more layers of glass) and glass/plastic composites.

NOTE 1 The term “bullet-resistant glazing” applies to products that have the obvious characteristics of glass, but it is understood to include also laminated products of glass and plastics and in some cases, insulating glass units.

This document applies to:

- attack by handguns, rifles and shotguns;
- glazing in buildings, for interior and exterior use;
- the glazing product itself, assuming proper fixing;

NOTE 2 The protection provided by bullet-resistant glazing depends not only on the product itself, but also upon the design and fixing of the glass.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 868, *Plastics and ebonite. Determination of indentation hardness by means of a durometer (Shore hardness)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **bullet-resistant glazing**

security glazing that affords a defined resistance against the firing of specified weapons and ammunition

Note 1 to entry: The glass or plastics component of a unitary bullet-resistant panel may be separated by gas space

### 3.2

#### **witness foil**

sheet of aluminium foil positioned behind the test piece in order to detect splinters ejected from the rear face of the test piece by the impact of the bullet and to determine the risks of injury due to the ejection of these splinters

**prEN 1063:2019 (E)****3.3****attack face**

face of a bullet-resistant glazing, marked by the manufacturer and/or supplier that is designed to face the attack

**3.4****perforation**

piercing of a test piece by a bullet or by bullet fragments, and/or creation of an opening from the attack face to the rear face

**3.5****striking distance**

distance between the centres of two strikes on a test piece

**3.6****bullet velocity**

velocity of the bullet measured within 2,5 m in front of the attack face of the test piece

**3.7****test range**

distance between the muzzle of the firearm and the attack face of the test piece

**4 Classification of the levels of bullet-resistance and test conditions****4.1 Classification and requirements for the testing**

The bullet-resistance glazing intended to withstand certain level(s) of attack shall be classified according to a class defined in one or more of the tables 1 to 3.

The target should be to match as closely as possible the nominal test conditions.



**Table 1 — Classification and test requirements for testing the bullet resistance of glazing: hand guns and rifles (BR)**

Class	Type of weapon	Calibre	Type	Mass [g]	Test conditions			
					Test distance [m]	Bullet velocity [m/s]	nr. of strikes	Striking distance [mm]
BR1	Rifle	0,22 LR	L/RN	2,6 ± 0,1	10,00 <sup>a</sup>	360 ± 10	3	120 ± 10
BR2	Hand gun	9mm Luger	FJ <sup>b</sup> /RN/SC	8,0 ± 0,1	5,00 ± 0,5	400 ± 10	3	120 ± 10
BR3	Hand gun	0,357 Magnum	FJ <sup>b</sup> /CB/SC or FJ <sup>c</sup> /CB/SC	10,2 ± 0,1	5,00 ± 0,5	430 ± 10	3	120 ± 10
BR4	Hand gun	0,44 Rem. Magnum	FJ <sup>c</sup> /FN/SC	15,6 ± 0,1	5,00 ± 0,5	440 ± 10	3	120 ± 10
BR5	Rifle	5,56 × 45 <sub>d</sub> )	FJ <sup>c</sup> /PB/SCP1	4,0 ± 0,1	10,00 ± 0,5	950 ± 10	3	120 ± 10
BR6	Rifle	7,62 × 51	FJ <sup>b</sup> /PB/SC	9,5 ± 0,1	10,00 ± 0,5	830 ± 10	3	120 ± 10
BR7	Rifle	7,62 × 51 <sub>e</sub>	FJ <sup>c</sup> /PB/HC1	9,6 ± 0,2	10,00 ± 0,5	820 ± 10	3	120 ± 10

Abbreviations:

L lead

CB coned bullet

FJ full metal jacket bullet

FN flat nose

HC1 steel hard core, mass 3,7 g ± 0,2 g, hardness from 60 HRC to 65 HRC (type P80)

PB pointed bullet

RN round nose

SC

SCP1 soft core (lead) and steel penetrator (type SS109) soft core (lead)

<sup>a</sup> this test parameter can be adapted to obtain the specified velocity

<sup>b</sup> full steel jacket (tin plated)

<sup>c</sup> full copper jacket

<sup>d</sup> twist length 178 mm + 10 mm

<sup>e</sup> twist length 254 mm + 10 mm

**Table 2 — Classification and test requirements for testing the bullet resistance of glazing: shot guns (SG)**

Class	Type of weapon	Calibre	Type	Mass [g]	Test conditions			
					Test distance <sup>a</sup> [m]	Bullet velocity [m/s]	nr. of strikes	Striking distance [mm]
SG1	Shot gun	cal. 12/70	solid lead slug <sup>b</sup>	31,5 ± 1,0	10,00 ± 0,5	420 ± 20	1	-
SG2	Shot gun	cal. 12/70	solid lead slug <sup>b</sup>	31,5 ± 1,0	10,00 ± 0,5	420 ± 20	3	125 ± 10

<sup>a</sup> this test parameter can be adapted to obtain the specified velocity  
<sup>b</sup> Brenneke

**Table 3 — Criteria for testing with ammunition of types and calibers other than those shown in Tables 1 and 2**

Class	Type of weapon	Calibre	Type	Mass [g]	Test conditions			
					Test distance [m]	Bullet velocity [m/s]	nr. of strikes	Striking distance [mm]
KS	Rifle	7,62x39 <sup>a</sup>	FJ b/PB/FeC	8,0 ± 0,1	10,00 ± 0,5	720 ± 20	3	120 ± 10

Abbreviations: <https://standards.iteh.ai/catalog/standards/sist/c47309cc-94c4-43e8-81bb-dd25ef8bcb2a/osist-pren-1063-2019>

FJ full metal jacket bullet  
 PB pointed bullet  
 FeC mild steel core “type PS”

<sup>a</sup> twist length 240 mm ± 10 mm  
<sup>b</sup> full steel jacket with copper alloy coating

**4.2 Extension rules**

The following extension rules apply:

- When a bullet resistant glazing achieves a particular BR class, it can also be classified to all lower BR classes without further testing;
- When a bullet resistant glazing achieves the SG2 class, it can also be classified to the SG1 class without further testing;
- When a bullet resistant glazing achieves the KS class, it can also be classified to the BR1 to BR4 classes without further testing;
- When a bullet resistant glazing achieves a BR6 or BR7 class, it can also be classified to the KS class without further testing.

Classes SG do not necessarily comply with the requirements specified in the classes BR as the ammunition is different. Separate tests are necessary if both classifications are requested.