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**NATIONAL STANDARD OF THE
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GB/T 44951-2024

V50 test methods for ballistic materials and products

防弹材料及产品V50试验方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this

document does not assume the responsibility for identifying patents. This document is issued by the Ministry of Public Security of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee for Standardization of Police Equipment (SAC/TC561). This document was drafted by: The First Research Institute of the Ministry of Public Security and Shandong Non-metallic Materials Research Institute. The main drafters of this document. Peng Gang, Li Yang, Qu Yi, and Wang Xucai. V50 test method for bulletproof materials and products

1 Scope

GB/T 44951-2024 specifies the V50 test for ballistic materials and products. V50 is the velocity at which a given projectile has an even chance of perforating the armour, and it is the only measure that lets two armour materials be compared on a continuous scale rather than by pass or fail against one threat; it is obtained by bracketing, firing at progressively adjusted velocities until a set of partial and complete penetrations spans a narrow enough band. The standard sets the technical requirements on the whole test system - the ballistic range, the test projectile, the test barrel, the selection of propellant charges, the velocity screens, the chronograph, the target mount, the backing material, the standoff distance, the witness plate, the specimen size and its conditioning - then the test procedure, the calculation of V50 from the accepted rounds, and the test report, with an annex on the verification of the system and the processing of the verification data. It takes effect on 1 March 2025.

This document specifies the technical requirements for ballistic limit V50 evaluation of bulletproof materials and products, V50 value calculation and correction, test report, etc. The relevant test methods are described. This document is applicable to the testing and evaluation of the ballistic limit V50 of various ballistic materials and products.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 308.1 Rolling bearing balls Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Ballistic limit V50 ballisticlimit V

50 The projectile has a penetration probability of 50% when striking the target.

Note. Indicated by V50.

3.2 Sample Ballistic materials or products used for ballistic limit V50 test.

3.3 A projectile made of specific material, shape and size used in ballistic shooting tests.

3.4 Sabot Lightweight bracket used to stabilize and propel simulated fragment launch.

3.5 Witnessplate Aluminum alloy sheet used to monitor the state of the sample after being penetrated by a projectile.

3.6 penetration The specimen is impacted by a projectile and any of the following phenomena occur.