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CP/11/2020

Government of India/भारत सरकार  
Ministry of Home Affairs/गृह मंत्रालय  
Police Modernization Division/पुलिस आधुनिकीकरण प्रभाग  
Prov-I/संभरण-I

26, Mansingh Road,  
Jaisalmer House, New Delhi

**Subject: Formulation of new Indian Standard on ballistic Shield, meant for personnel security.**

Reference is invited to Bureau of Indian Standards' DO letter No.MED 24:171-1 dated 24.11.2020 on the subject mentioned above. Ballistic Security Products Sub-Committee MED 24:1 of BIS, which is responsible for formulation of Indian Standards on Ballistic Security Products has recently published the IS 17435:2020 Ballistic Shield-Specification. The standard prescribes the minimum performance requirements of ballistic shields for protection against small arms ammunition and provides procedures for their evaluation

2. All CAPFs/NIA are hereby informed about the finalization of Specifications for Ballistic Shield by BIS IS 17435:2020 for taking necessary action.

Encl. As above.

*Prabhat Nigam*  
(Prabhat Nigam)  
Section Officer (Prov-I)  
Tel:23386034

DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, NSG, SSB and NIA.  
MHA U.O. Note No. 19/24011/02/2017-Prov-I dated 21-11-2020

No.99021/1/2020/Prov Coord)/HQ NSG/11/2020

Dated - 4 Dec 2020

Copy forwarded to Ord/Proc/CTS of Prov. Br. for needful please.

*S. S. S.*  
स्क्रीन कमान्डर (समन्वय)  
संभरण शाखा, मु० रासुगा



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Bureau of Indian Standards  
(Government of India)  
Manak Bhawan  
9, Bahadur Shah Zafar Marg  
New Delhi - 110 002

Our Ref: MED 24:1/T-1

24-11-2020

Subject: Formulation of new Indian standard on Ballistic Shield,  
meant for personnel security regarding.

Dear Sir,

Bureau of Indian Standards is the National Standards Body of India working under the aegis of Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India. Indian Standards in various areas of science and technology are developed by relevant technical committees consisting of representatives of various stakeholders, such as industry, academia, government organizations, consumers etc.

2. Ballistic shields are used primarily by law enforcement agencies in situations, where there is an expected ballistic threat, including high-risk warrant entry, tactical entry, barricaded subject response, officer/victim rescue, active shooter response, and negotiations. It was felt necessary, therefore, to set minimum performance requirements, for ballistic shield and ensure quality control during production, so that product of acceptable quality reach the personnel of the security forces.

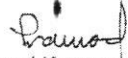
3. Ballistic Security Products Subcommittee MED 24:1 of BIS, under the umbrella of Security Equipment Sectional Committee MED 24, which is responsible for formulation of Indian Standards on 'Ballistic Security products', has recently published the IS 17435:2020 **Ballistic Shield - Specification**. The standard prescribes the minimum performance requirements of ballistic shields for protection against small arms ammunition and provides procedures for their evaluation.

4. I take this opportunity to place on record the contribution made by you and the Ministry to the formulation of this standard and request you to ensure its use by the security forces.

With regards,

Dir (Prov) - US (Prov. I)

Yours Sincerely,

  
(Pramod Kumar Tiwari)

Shri Vivek Bharadwaj,  
Additional Secretary (Police Modernisation),  
Ministry of Home Affairs  
Jaisalmer House  
New Delhi-110001

Another copy of  
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under submission.  
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Sec (Prov)

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04 Jan 2020

Bov

Government of India/भारत सरकार  
Ministry of Home Affairs/गृह मंत्रालय  
Police Modernization Division/पुलिस आधुनिकीकरण प्रभाग  
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26, Man Singh Road,  
Jaisalmer House, New Delhi

**Subject: Formulation of new Indian Standard on ballistic Shield, meant for personnel security.**

Reference is invited to Bureau of Indian Standards DO letter No.MED 24:1/T-1 dated 24.11.2020 on the subject mentioned above. Ballistic Security Products Sub-Committee MED 24:1 of BIS, which is responsible for formulation of Indian Standards on Ballistic Security Products has recently published the IS 17435:2020 Ballistic Shield-Specification. The standard prescribes the minimum performance requirements of ballistic shields for protection against small arms ammunition and provides procedures for their evaluation.

2. All CAPFs/NIA may kindly note for further necessary action/utilization.

Encl: As above.

R.K.  
10/12/2020

(Ritesh Kumar)

Under Secretary to the Government of India  
Tel/Fax:23381278

DsG: AR (through LOAR), BSF, CISE, CRPF, ITBP, NSG, SSB and NIA.  
MHA U.O. Note No. IV-24011/02/2017-Prov-I - 1020 dated 0-12-2020

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प्राक्षेपिकी कवच — विशिष्टि

Ballistic Shields — Specification

ICS 13.310

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November 2020

Price Group 6

#### FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Security Equipments Sectional Committee had been approved by the Mechanical Engineering Divisional Council.

The Indian Armed Forces, Central Armed Police Forces (CAPF) and other law enforcement agencies face threats from small arms ammunition during the flushing out operations, room interventions and other similar type of operations. It is therefore important to set minimum performance requirement of ballistic shield and also ensure quality control during production so that only acceptable quality reaches the user, which eventually leads to reduction in fatal casualties to the security forces.

Ballistic shields are used primarily by law enforcement agencies in situations, where there is an expected ballistic threat, including high-risk warrant entry, tactical entry, barricaded subject response, officer/victim rescue, active shooter response, and negotiations. The shield is carried until the ballistic threat is eliminated, and then the shield is discarded, due to its weight, until the mission is completed.

Multiple test agencies in the country are involved in physical and ballistic testing of ballistic shields. However at present, there is no common procedure in place to ensure inter-laboratory correlation of test results.

Many types of ammunition defined in international standards are not relevant in Indian context. The weapons and ammunition handled (and faced) by Indian forces need to be categorized into specific threat levels.

Operating and environmental protocols for the ballistic materials vary over the Indian sub-continent. These can affect shelf life as well as active life of ballistic shield.

In the formulation of this standard, considerable assistance has been derived from the following BPR&D (OR) 2016 'Qualitative Requirements and Trial Directives of Ballistic Hit-Plate Shields'.

The composition of the Committee responsible for the formulation of this standard is given in Annex E.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## Indian Standard

## BALLISTIC SHIELDS — SPECIFICATION

## 1 SCOPE

1.1 This standard prescribes the minimum performance requirements of ballistic shields for protection against small arms ammunition and provides procedures for their evaluation. The scope of the standard is limited to physical and ballistic evaluation of ballistic shields against in service small arms ammunition used by the Indian Armed Forces, central armed police forces and other law enforcement agencies.

1.2 This standard covers only the basic design of ballistic shields and provides guidelines for its evaluation. Specific requirement in terms of design, protection area, additional attachments, storage arrangements etc. are entirely dependent upon the user/purchaser.

## 2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subjected to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

## 3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

**3.1 Penetration** — Penetration will be defined as the entry of the penetrator into any region of the target.

**3.2 Perforation** — Perforation means that the penetrator has caused failure of the target as specified in 7.4.

## 4 MATERIAL

4.1 The recommended, but not restricted to, materials for ballistic shield are aramid, polyethylene and or composite materials

4.2 If the shield has provision for view port, it shall be of transparent bullet resistant glass. However, modern ballistic shields have the provision of high resolution camera (with recording system) and display screen

to get the frontal view under varied functional and climatic conditions.

## 5 CONSTRUCTION AND WORKMANSHIP

## 5.1 Restriction of Movement

5.1.1 The total weight and weight distribution of the shield shall be designed ergonomically so that it must not negatively impact the user's ability to perform tasks required during tactical operations.

5.1.2 Grips and supports of ballistic shield shall allow the user to comfortably hold and position the shield.

## 5.2 Design Parameters

5.2.1 Ballistic shield shall have an ambidextrous design.

5.2.2 Ballistic shield shall be provided with shock absorbing support system with quick release attachment

5.2.3 Ballistic shield shall have a quick detachable carrier and load bearing integrated system for easy movement and it should allow the user to keep the hands free for holding and firing the weapon without any discomfort to the user.

5.2.4 Ballistic shield shall have weapon barrel rising ports on both left and right side (see dimension 'D' in Fig. 1).

5.2.5 The ballistic shield shall be designed in such a way that user should be able to change the ammunition magazine from weapon without losing the ballistic shield protection in front.

## 5.3 Workmanship

Ballistic shield shall be free from wrinkles, blisters, cracks, fabric tears, crazing, chipping, sharp corners or other evidence of inferior workmanship.

## 5.4 Dimensions and Weight

Recommended dimensions and maximum weight of ballistic shield are given in Table 1. Typical front view and rear view of ballistic shield are shown in Fig. 1 and Fig. 2

However, user may define their own design, dimension and weight for the ballistic shield considering their functional and operational requirements.

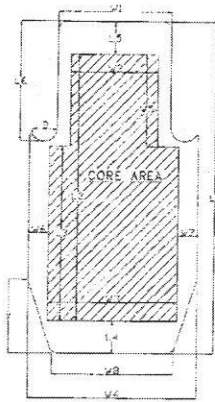


Fig. 1A Small Size

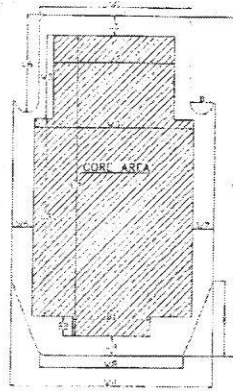


Fig. 1B Large Size

NOTES:

- 1 Location of camera is suggestive. Same can be fixed by the user organization as per their requirement.
- 2 Shaded area (CORE AREA) shall provide the protection against 7.62 x 54R APF.
- 3 Unshaded area (Boundary Area) shall provide the protection against 7.62 x 39 mm (HSC).
- 4 Dimension 'D' is showing the weapon resting part.

ALL DIMENSIONS ARE IN MILLIMETRES.

FIG. 1 FRONT VIEW OF BALLISTIC SHIELD

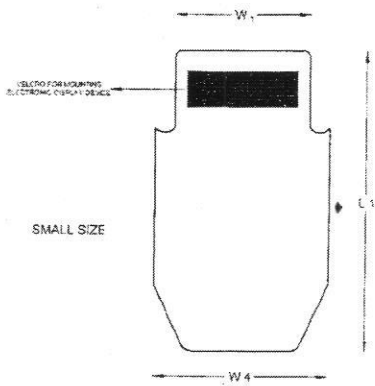


Fig. 2A Small Size

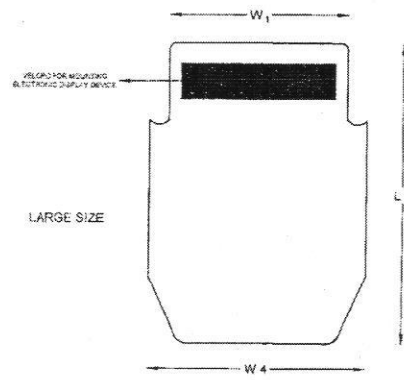


Fig. 2B Large Size

FIG. 2 BACK VIEW OF BALLISTIC SHIELD



**Table 1 Recommended Dimensions and Maximum Weight of Ballistic Shield**  
( Clause 5.4 )

Sl No.	Dimensions	Small Size	Large Size
(1)	(2)	(3)	(4)
i)	L <sub>1</sub>	760	850
ii)	L <sub>2</sub>	610	760
iii)	L <sub>3</sub>	490	590
iv)	L <sub>4</sub>	75	50
v)	L <sub>5</sub>	75	50
vi)	W <sub>1</sub>	260	390
vii)	W <sub>2</sub>	200	310
viii)	W <sub>3</sub>	300	430
ix)	W <sub>4</sub>	290	320
x)	W <sub>5</sub>	210	210
xi)	W <sub>6</sub>	45	55
xii)	W <sub>7</sub>	45	55
xiii)	D	60	60
xiv)	B1	NA	200
xv)	B2	NA	50
xvi)	X	160	190
xvii)	L <sub>6</sub>	250	245
xviii)	W <sub>8</sub>	280	370
xix)	Weight	14 Kg/19 Kg for small and large shield (Inclusive of all accessories fixed on shield)	

## NOTES

1. See Fig. 1 for description of dimensions.
2. All dimensions in millimetres.
3. Negative dimensional dimension is not permissible.
4. Weight is calculated using areal density of 30 kg/m<sup>2</sup>.
5. Areal density shall be calculated as weight of the panel (in kg) divided by protection area (in m<sup>2</sup>).

5.5 Operational aids of ballistic shield shall have following provisions:

- a) High resolution camera with capability to function effectively during day and night.
- b) Display screen on the rear side facing the user to get the real time frontal view.
- c) Camera should have the facility to record the real time video with minimum storage capacity for 45 min with the resolution of 5 megapixels.

- d) Infrared illuminator may also be provided.
- e) Self-standing capability for example shield with kickstand may also be provided.

## 6 PERFORMANCE REQUIREMENT

6.1 Major ballistic threats faced by the Indian armed forces, central armed police forces, state police forces and other law enforcement agencies have been classified into 6 threat levels as given in Table 7 of IS 17051.

The ballistic shield shall meet the protection levels as specified in Table 2.

## 7 BALLISTIC TESTING

## 7.1 Weapon Systems

Weapon systems shall preferably be test barrels. However, conventional weapons may also be used to achieve velocities specified in Table 2. Weapon systems shall be aligned to ensure normal impact on the target from the specified stand-off distance.

## 7.2 Velocity Measurement

Non-contact velocity measurement system (optical, laser, Doppler based systems etc.) shall be used. Velocity of projectile at 2.5 m from the front face of target shall be reported as impact velocity.

## 7.3 Fair Hit Criteria

Unless specified otherwise, an impact is considered a fair hit, if it meets the criteria specified in Table 3. However, under following conditions, even unfair shot shall be considered a valid shot for ballistic evaluation:

- a) Impact velocity is higher than specified limit, but acceptance criteria are complied.
- b) Impact velocity is lower than specified limit, but acceptance criteria are not complied.
- c) Inter-shot/Edge to shot distance are less than specified limit, but acceptance criteria are complied.

Any shot that does not meet the above criteria will be considered invalid and an additional shot will be fired. Unless specified otherwise, maximum 04 additional shots may be fired on ballistic shield sample depending upon the area available and possibility of fair hit. Out

**Table 2 Protection Level for Ballistic Shield**  
( Clause 6.2 )

Sl No.	Threat level as per IS 17051	Ammunition	Bullet Weight	Bullet type	Impact Velocity	Stand-off Distance	Remark
i)	5	7.62 × 39 mm	7.45-8.03	HSC	700 ± 15	10 ± 0.5	For Boundary Area <sup>1)</sup>
ii)	6	7.62 × 54 R API	10.3-10.5	API	830 ± 15	10 ± 0.5	For Core area <sup>1)</sup>

<sup>1)</sup> In addition shall be compliance with threat level 3.

NOTE — API: Arm our Piercing Incendary, HSC: Hard Steel Core.

of these 04 shots, two shots each may be fired on core area and boundary area. In case of the additional hits being unfair, the sample shall be discarded and a fresh sample shall be taken for ballistic testing.

**Table 3 Parameters for Fair Hit Criteria**  
( Clause 7.3 )

Sl No.	Parameter	Core Area	Boundary Area
(1)	(2)	(3)	(4)
i)	Ammunition	7.62 × 54 R AP1	7.62 × 39 HSC
ii)	Impact velocity (m/s)	830 ± 15	700 ± 15
iii)	Edge to shot distance (minimum)	51 mm	25 mm
iv)	Inter shot distance (minimum)	51 mm	51 mm

**7.4 Acceptance Criteria**

A witness plate of Aluminium alloy AA 2024 T3 (or T4) with thickness  $0.5 \pm 0.05$  mm shall be placed at a stand-off distance of  $150 \pm 10$  mm behind and parallel to the back face surface of the target at the aim point. The witness system should extend over a sufficient area (equal to or larger than the target size) such that all significant projectile or target debris can be detected.

The level of damage on the aluminium witness plate shall constitute the acceptance criterion for the evaluation of success or failure of a target against a particular projectile. After each ballistic impact, the witness plate shall be visually examined for damage and evidence of penetration by the projectile or target materials. A perforation shall be recorded when light is observed to pass through the damage in the witness plate.

**7.5 Number of Fair Shots per Test Sample**

**7.5.1 Number of Fair Shots on Core Area**

Unless specified otherwise, core area of ballistic shield shall be impacted with 06 number of fair shots as per the protection level and impact conditions specified in Table 2 and Table 3 respectively. The location of the impact location shall be decided by the testing agency to exploit the potential weak areas of the target.

**7.5.2 Number of Fair Shots on Boundary Area**

Unless specified otherwise, boundary area of ballistic shield shall be impacted with 04 number of fair shots as per the protection level and impact conditions specified in Table 2 and Table 3 respectively. It is recommended

to impact one shot each on top, bottom, left and right side of ballistic shield. The location of the impact location shall be decided by the testing agency to exploit the potential weak areas of the target.

**8 MULTI HIT BALLISTIC TESTING (OPTIONAL)**

**8.1** Multi hit ballistic testing is optional and it shall be performed on core area with ammunition and number of shots specified as per Table 4. Multi hit ballistic testing shall be conducted as per 8.1.1 and acceptance criteria will be same as specified in 7.4.

NOTE -- This test is optional and to be categorically defined by user, if required.

**8.1.1 Multi Shot Testing Methodology**

The multi-hit test methodology is representative of a burst fire attack. The multi-hit pattern is two pairs of shots repeated at a prescribed distance as described below.

- a) **Shot 1:**  
The first projectile (#1) is fired at any chosen position in the main area as shown in Fig. 3A.
- b) **Shot 2:**  
The possible positions for the second shot (#2) are then determined by tracing concentric circles of minimum radial distance N and maximum radial distance N+T onto the target (Fig. 3B). Once shot 2 is completed of the defined zone (Fig. 3C), the allowed area for the third shot (#3) can be defined. The size of N and T is defined in Table 5.
- c) **Shot 3:**  
Two concentric circles centred on the midpoint between shots 1 and 2, of minimum radial distance L and maximum radial distance L+T can be traced on the target. From the midpoint, an angle of  $\pm 60$  degree is traced in the directions perpendicular to shot 1 and to shot 2. The zone formed by the concentric circles and the angles is the allowed area for shot 3 (see Fig. 3D and Fig. 3E). The size of L is defined in Table 5.
- d) **Shot 4:**  
The fourth shot shall be aimed in the zone formed by concentric circles at distances of N and N+T from the impact point #3, but not closer to the midpoint of shots 1 and 2 than the distance L, as illustrated in Fig. 3F.

On completion of shot #4 (see Fig. 3G), the resultant four shot pattern is as illustrated in Fig. 3H.

**Table 4**  
( Clause 8.1 )

Sl No.	Protection Level	Ammunition	No. of Shots	Stand-off Distance m	Impact Velocity m/s
i)	3	7.62 × 39 mm (HSC)	8	10 ± 0.5	700 ± 15

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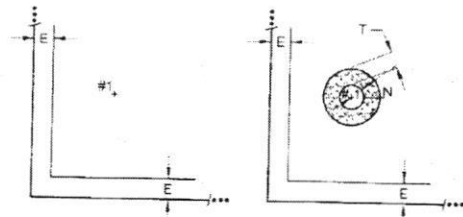


Fig 3A

Fig 3B

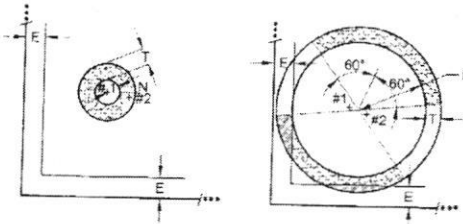


Fig 3C

Fig. 3D

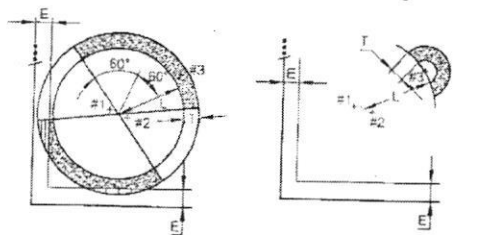


Fig 3E

Fig 3F

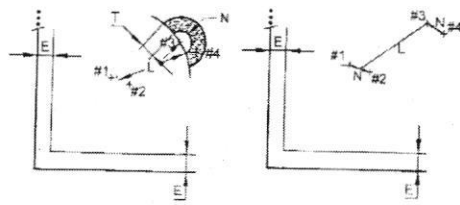


Fig. 3G

Fig. 3H

FIG. 3 MULTI HIT TESTING PROCEDURE FOR OPAQUE ARMOUR

**Table 5 Shot Separation and Impact Tolerances for Opaque Armour**  
( Clause 8.1.1 )

Sl No.	Dimension Definition	Value	Size mm
(1)	(2)	(3)	(4)
01	Distance (perpendicular) between shot points (#1 & #2, #3 & #4)	N	25
02	Distance (perpendicular) from midpoint of shots #1 and #2 to shot 3	L	100
03	Maximum tolerance on shot impact position	T	-6 -20
04	EZ (Minimum distance to contour target edge boundary)	F	25

## 9 WET TESTS APPLICABLE FOR POLYMER MATERIAL (OPTIONAL)

The wet test is optional in nature and shall be carried out for the core area of ballistic shield with ammunition as described in Table 2 and Table 3.

### 9.1 Sample Preparation

Before the ballistic shield is tested it shall be fully submerged in water (at 15 °C to 20 °C) for a period of 1 h. It shall then be removed and allowed to dry for 3 min in a room held at a temperature of approximately 21 ± 5 °C, and 50 percent to 70 percent humidity.

### 9.2 Method of Test

The first shot shall be impacted within 10 min of the completion of the drying period and the final shot shall be impacted within 1h.

## 10 EXTREME TEMPERATURE TEST (OPTIONAL)

The extreme temperature test is optional in nature and shall be carried out for the core area of ballistic shield with ammunition as described in as described in Table 2 and Table 3.

### 10.1 Sample Preparation

Before the sample is tested it shall be heated to 50 ± 3 °C for a period of 1 h.

### 10.2 Method of Test

The first shot shall be impacted within 10 min and last shot shall be impacted within 1 hour of removal of ballistic shield from the heating chamber.

## 11 SAMPLING PLAN

### 11.1 Type of Samples

#### 11.1.1 R&D Sample

Panels at developmental stage submitted by R&D agency/manufacturer are designated as R&D sample. These shall be tested as per the test procedures given in this standard. The user can select physical evaluation parameters, operating conditions and other requirements for stringent testing of their samples and testing carried out accordingly. However decisions regarding conformity/non-conformity may not be given in test results.

#### 11.1.2 Tender Sample

Samples invited by procuring agency from different manufacturers / suppliers for performance evaluation in the beginning of procurement are designated as tender samples. These shall be tested as per the test procedures given in this standard or any specific requirement of purchasing agency. No deviation shall be permitted during tender sample evaluation. In the event of failure, subsequent tests on the same model shall be decided by the user. The user shall specify the requirements of optional tests as per their requirements.

#### 11.1.3 Lot Testing Sample

Samples selected from lot offered by vendor during the course of supply are designated as lot samples. These shall be tested as per the test procedures given in this standard or any specific requirement of purchasing agency. Sampling plan as per standards shall be followed during lot testing. Only one size of ballistic shield shall be offered in one lot. Non-conformities as per 11.4 shall be considered for lot samples. The user shall specify the requirements of optional tests as per their requirements.

#### 11.2 Sample Size and Acceptance Quality Limit

Special inspection level S-4 as given in IS 2500 (Part 1) shall be used for ballistic evaluation during lot testing. Acceptance Quality Limit (AQL) of 2.5 percent shall be considered for ballistic evaluation (see Annex B for determination of sample size, acceptance number and rejection number). Decision on critical and major defects during lot testing shall be taken based on Non-conformities specified in 11.4.

#### 11.3 Quantity of Samples

Quantity of samples required for testing shall be as given in Table 6.

#### 11.4 Non-conformities

Non-conformity observed during ballistic evaluation is classified into two types as given in 11.4.1 and 11.4.2.

##### 11.4.1 Critical Defect

Perforation of the witness plate as specified in 7.4.

**11.4.1.1 Decision on critical defect**

Complete lot shall be rejected in case of any critical defect.

**11.4.2 Major Defect**

- a) Indentation of the witness plate but light is not able to pass through the witness plate  
Or  
b) Detachment of any fragment, nut, bolt, handle or any other part of the shield from the rear surface of the ballistic shield.  
Or  
c) Presence of any bulge / crack on the rear surface of ballistic shield, which allows the passage of kerosene from the impact surface

**11.4.2.1 Decision on major defect**

Lot shall be rejected, if the non-conformities are more than the rejection number corresponding to AQL of 2.5 percent (see Annex B).

NOTE — Examples of calculation of samples for lot testing, acceptance and rejection number are given in Annex D.

**Table 6 Quantity of Samples Required for Ballistic Evaluation**  
( Clause 11.3 )

Sr.No.	Sample Type	Number of samples	Size
(i)	(2)	(3)	(4)
a)	R&D	01 protection level operating condition	Minimum: 100 mm 200 mm
b)	Tender	02 size operating condition	As per RFP / User requirements
iii)	Lot Testing	As per Sampling Plan 02 standby	As per Contract / Purchase Order

NOTE — Examples of number of samples required for ballistic evaluation during tender evaluation and production lot testing are given in Annex C and Annex D respectively

**12 SHELF LIFE**

The recommended shelf life of ballistic shield shall be 5 years from the date of manufacture.

**STORAGE**

Ballistic shield should be stored at normal room temperature either hung on brackets or leaned against a

vertical surface. In any condition, no weight or pressure should be acting on the striking face of the ballistic shield. The ballistic shield should not be placed in such a manner that the striking face of the shield is touching the floor/ground.

**14 USER MANUAL**

User manual should be provided by a supplier with each ballistic shield containing the following information:

- Identification and description of the type of threat protection provided.
- Design and drawing mentioning all the dimensions and weight
- Complete construction details.
- Area of coverage, curvature, and shape of shields.
- Complete details of all accessories and their usability.
- Care and maintenance guidance.
- Accessory wise warranty period.
- Any other relevant information.

**15 MARKING**

15.1 The 'Ballistic shield' shall be legibly and indelibly marked with the following information on the product itself or on durable and securely attached labels:

- Name of the product;
- Manufacturer's name, initials or trade-mark;
- Size designation;
- Instructions for storage and care;
- Batch number;
- Date of manufacture; and
- Any other information required by the law in force and/or by the buyers.

**15.2 BIS Certification Marking**

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

## ANNEX A

( Clause 2 )

## LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
17051 : 2018	Textiles — Bullet Resistant Jackets — Performance requirements	2500 (Part 1) : 2000	Sampling procedure for inspection by attributes: Part 1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection ( <i>third revision</i> )

## ANNEX B

( Clause 11.2 )

## SAMPLING PLAN AND AQL FOR BALLISTIC EVALUATION

Table 7

( Clause 11.4.2.1 )

Lot Size	Special Inspection Levels				General Inspection Levels		
	S-1	S-2	S-3	S-4	I	II	III
(Lot Size)	(S-1)	(S-2)	(S-3)	(S-4)	(I)	(II)	(III)
1 to 8	A	A	A	A	A	A	B
9 to 15	A	A	A	A	A	B	C
16 to 25	A	A	B	B	B	C	D
26 to 50	A	B	B	C	C	D	E
51 to 90	B	B	C	C	C	E	F
91 to 150	B	B	C	D	D	F	G
151 to 280	B	C	D	E	E	G	H
281 to 500	B	C	D	E	F	H	J
501 to 1 200	C	C	E	F	G	J	K
1 201 to 3 200	C	D	E	G	H	K	L
3 201 to 10 000	C	D	F	G	J	L	M
10 001 to 35 000	C	D	F	H	K	M	N
35 001 to 1 50 000	D	E	G	J	L	N	P
1 50 001 to 5 00 000	D	E	G	J	M	P	Q
5 00 001 and over	D	E	H	K	N	Q	R



**ANNEX C**

( Clause 11.3 )

**CALCULATION OF NUMBER OF SAMPLES**

**C-1 EXAMPLE 1 (TENDER SAMPLE)**

**C-1.1 Requirements**

- a) Size : Small and Large
- b) Operating Conditions : Single shot testing  
Multi shot testing  
Wet test  
Extreme temperature test

**Table 9 Calculation of Number of Samples**  
( Table 6 )

Sl No.	Size	Operating Condition	No. of Samples	Total Number of Samples
(1)	(2)	(3)	(4)	(5)
i)	Small	Single shot testing	01 + 01 standby	04 + 04 Standby
		Multi shot testing	01 + 01 standby	
		Wet test	01 + 01 standby	
		Extreme temperature test	01 + 01 standby	
ii)	Large	Single shot testing	01 + 01 standby	04 + 04 Standby
		Multi shot testing	01 + 01 standby	
		Wet test	01 + 01 standby	
		Extreme temperature test	01 + 01 standby	
Total Samples for ballistic evaluation as per 11.4.1				06 + 06 Standby

**ANNEX D**

( Clause 11.4.2 )

**CALCULATION OF SAMPLES FOR LOT TESTING, ACCEPTANCE AND REJECTION NUMBER**

- a) *Example 1:* Lot 1 = 100 Shields, Inspection Level S-4 and Acceptance Quality Limit 2.5 percent. As per Table 7, for lot size 1 000 and Inspection Level S-4, sample size code letter will be F.  
As per Table 7, for lot size 100 and Inspection Level S-4, sample size code letter will be D. As per Table 8, Sample size code letter F, Sample Size 20, Acceptance Quality Limit 2.5, Acceptance Number 1, Rejection Number 2.  
As per Table 8, Sample size code letter D, Sample Size 8, Acceptance Quality Limit 2.5, Acceptance Number 0, Rejection Number 1.  
Since acceptance number is zero in this case, no major defect is acceptable and entire lot will be rejected if any major defect specified in 11.4.2 is observed during ballistic evaluation.
- b) *Example 2:* Lot 1 = 1000 Shields, Inspection Level S-4 and Acceptance Quality Limit 2.5 percent. As per Table 8, Sample size code letter F, Sample Size 20, Acceptance Quality Limit 2.5, Acceptance Number 1, Rejection Number 2.  
Since acceptance number is 1 in this case, one major defect shall be acceptable and entire lot shall be rejected if two major defects as specified in 11.4.2 are observed during ballistic evaluation.

NOTE -- Acceptance number and rejection number values are not valid for critical defects as specified in 11.4.1. Entire lot shall be rejected if any perforation in witness plate is observed.



## ANNEX E

(Forward)

## COMMITTEE COMPOSITION

Security Equipments Sectional Committee, MED 24

Organization	Representative (s)
Reserve Bank of India, Mumbai	SHRI J. JAYAPRAKASH ( <i>Chairman</i> )
Bank of India, Mumbai	CAPT RAKESH PAIWEY CAPT VERINDER MENDAS ( <i>Alternate</i> )
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Voluntary Organization in Interest of Consumer Education, New Delhi	SHRI M. A. U. KHAN
In personal capacity (Plot No. 41, Block No. 5, Mehta Cottage, Dr Raut Road, Shivaji Park, Dadar, Mumbai)	SHRI ART G. NARAYANI
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