Doc. No. : PGD 28 (19826)
IS 10994 (Part 1) : 2023

भारतीय मानक मसौदा

शॉट गन के कार्ट्रिज के लिए विशिष्टि
भाग 1 सामान्य अपेक्षाएं

(*IS 10994 भाग 1 का पहला पुनरीक्षण*)

Draft Indian Standard

SPECIFICATION FOR CARTRIDGES FOR SHOT GUNS
PART 1 GENERAL REQUIREMENTS

(*First revision of IS 10994 Part 1*)

UDC 623.455.6

Arms and Ammunition for Civilian Use Sectional Committee PGD 28	Last Date for Comments: XXX

NATIONAL FOREWORD

This Indian Standard (First Revision) will be adopted by the Bureau of Indian Standards after the draft finalized by the Arms and Ammunition for Civilian Use Sectional Committee will be approved by the Production and general Engineering Division Council.

This Indian Standard originally published by the Indian Standards Institution on 1984, The first revision of this standard has been taken up to include the last methods for Arms and Ammunition for Civilian Use being practiced across the globe.

This standard covers the dimensional, material and testing requirements for Cartridges for Shot Guns. Shot guns are required by civilians for games and hunting purposes.

This Indian Standard IS : 10994 is being issued in the following parts, part 1 covering general requirements for shot gun cartridges and subsequent parts covering the components

Part 1 General requirements
Part 2 Blank cartridges
Part 3 Case empty
Part 4 Cap filled
Part 5 Anvil
Part 6 Propellant
Part 7 Discs
Part 8 Air cushion
Part 9 Lead shots

In this revision, the following changes have been made:

a) New figures have been added;
b) Practices of fitting removal and cleaning have been updated; and
c) Structure of the document has been updated.

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 : 2022 ‘Rules for rounding off numerical values (*second revision*).’ 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

SPECIFICATION FOR CARTRIDGES FOR SHOT GUNS

PART 1 GENERAL REQUIREMENTS

1 SCOPE

Covers the general requirements (sampling, inspection and performance testing) for shot gun cartridges for general purpose for use at -20°C to ± 50°C.

This specification covers the requirements of cartridges for general purpose use only that is for hunting, protection of crop and animals and is not intended to cover cartridge for competition shooting like trap/skeet shooting.

2 REFERENCES

IS No.	*Title*
IS 2500 (Part 1) : 2000	Inspection by attributes and by count of defects (*first revision*)
IS 10994 (Part 9) : 1984	Cartridges for shot guns Part 9 lead shots

3 COMPONENTS NOMENCLATURE AND CONFORMITY

A typical assembly illustration for guide line showing names of components is given in Fig. 1 and list of components indicating their conformity to relevant part of this Indian Standard is given below.

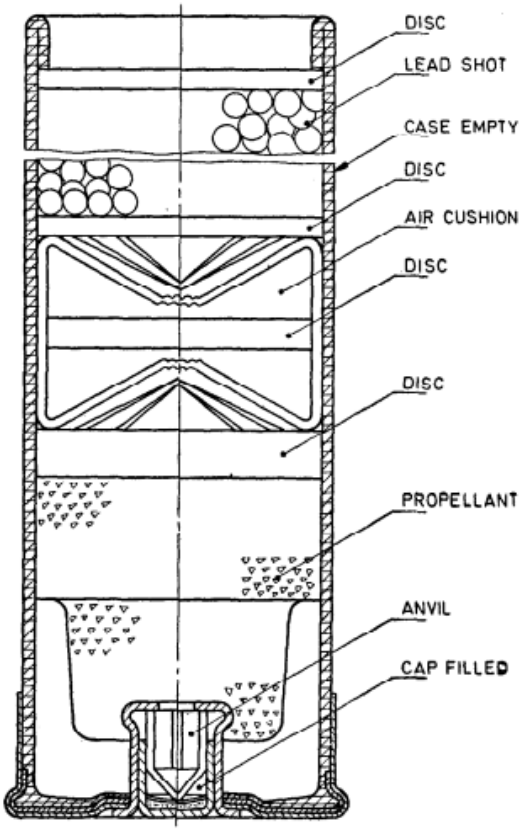

FIG. 1 CARTRIDGE FOR SHOT GUNS

Sl. No.	Component	Ref. to Part IS 10994
1	Case, empty: a) Body b) Head c) Cup where used d) Cap chamber e) Base wad	Part 3
2	Cap filled: a) Cap empty b) Initiatory composition c) Disc	Part 4*
3	Anvil	Part 5*
4	Propellant	Part 6*
5	Disc	Part 7*
6	Air Cushion	Part 8*
7	Lead Shots	Part 9*

4 SAMPLING

The acceptance inspection of cartridges shall be in accordance with IS 2500 (Part 1) : 2000 'Inspection by attributes and by count of defects (*first revision*)'. A list showing classification of defects and AQLs to be adopted is given in Annex A.

5 TESTS

5.1 Drop Test

Ten capped cases shall be dropped through a distance of 244 cm in a suitable drop test apparatus. The capped cases should be securely held in adopter in a 30 kg block with mouths of half the cases downward and remaining with mouth upward. No cap shall function after dropping.

5.2 Sensitivity Test

Twenty five capped cartridge cases from each lot shall be tested for sensitivity in cap test apparatus, using a carbon steel ball weighing exactly 113.4 g and adjusted to give a drop of 30.48 cm. All the caps sensitivity tested shall fire satisfactorily under these conditions.

5.3 Insensitivity Test

Twenty proof samples shall be selected from each lot and assembled into cartridge cases. Then these cases shall be tested for insensitivity in the sensitivity test apparatus using suitable adapter and carbon steel ball weighing 113.4 g to give a drop of 10.16 cm; none of the cap should function.

5.4 Pull Out Test

Five cartridges from each lot shall be tested for strength of turnover by cutting open as near to the head as possible and the contents removed from the rear (without disturbing turnover) and the turnover tested, which shall not be less than 177.93 N at 8 to 10 percent moisture content. This shall also cover the breakdown tests to ascertain the correctness of construction of the cartridges. The mean of the charge mass of 5 cartridges shall be within the specified limits.

5.5 Proof Test

The cartridges shall be proved in accordance with the proof test given in Annex B.

5.6 Lead shots shall be tested for (a) roundness and diameter and (b) No. of shots per 28.35 g according to the requirements of various types of shot numbers given in IS 10994 (Part 9) : 1984 Cartridges for shot guns Part 9 lead shots.

5.7 Wads and cartridge cases when tested for functioning trial shall function correctly.

6 RESUBMISSION OF REJECTED BATCHES

Rejected batches may be resubmitted with the approval of the purchaser. Where re-submission is permitted and the manufacturer elects to re-submit, the manufacturer shall first inspect the rejected batch, either for the particular types or classes of defects that caused the batch to be rejected, or for all types and classes of defects, as directed by the purchaser. The manufacturer shall repair or remove all defectives of these types of classes. The purchaser shall inspect a re-submitted batch for the types or classes of defects, using normal or tightened inspection at this discretion.

7 PROTECTIVE TREATMENT

The body of finished cartridge shall be coated with Lacquer.

8 PACKING AND MARKING

8.1 Twenty cartons containing 25 cartridges per carton shall be packed in one box or as specified in the contract or order but overall mass of one packed box shall not exceed 35 kg for safety in handling. The cartridges shall be delivered in lots of 10 000 cartridges plus 20 for proof. Each lot is to be filled preferably with one batch of propellant.

8.2 Cartridges and Boxes shall be marked/stencilled suitably with cartridge length, name and/or trade mark and the words ‘shot gun cartridge’ and ‘Made in India’.

8.3 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 thereunder, and the products may be marked with the standard mark.

9 SAFETY

Responsibility for the safety of operation rests with the manufacturer if the instructions and guidelines for safe usage provided by manufacturer are followed properly.

ANNEX A

(*Clause* 4)

QUALITY ASSURANCE PROVISIONS FOR VISUAL & DIMENSIONAL ACCEPTANCE QUALITY LEVELS

A-1 DEFINITIONS

A-1 .1 Defect — Non-conformance of the unit of product to specified requirements.

A-1.2 Critical Defect — Which according to judgement and experience indicate is likely to result in hazardous or unsafe condition for individuals using, maintaining or depending upon the product, or which is likely to prevent performance of the tactical function of a weapon.

A-l.3 Major Defect — That is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose, excludes critical defects.

A-1.4 Minor Defect — That is not likely to reduce materially the usability of unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

A-2 EXAMINATION

A-2.1 Critical Defects — One hundred percent examination shall be performed for critical defects. All cartridges components containing such defects shall be rejected. be rejected if it fails in a test classified as critical. Similarly a batch or a lot shall

A-2.2 Major and Minor Defects — Examination for major and minor defects shall be performed on a class basis in accordance with classification of defects using applicable sampling plans and acceptance criteria in accordance with IS 2500 Part 1 : 2000 'Specification for sampling inspection tables Part 1 Inspection by attributes and by count of defects (*first revision*)'.

A-3 ACCEPTANCE QUALITY LEVELS

A-3.1 The acceptable quality levels for defectives have been given below:

AQL	: Critical	— 0
	Major	— 1.0 percent
	Minor	— 2.5 percent

A-3.2 Sampling inspection plan for acceptance of cartridges.

Lot size	*Sample size*	*Major*		*Minor*	
		AC*	RE†	AC*	RE†
1 001 – 3 000	125	3	4	5	6

3 001 – 10 000	200	5	6	7	8
100 001 - 35 000	315	7	8	10	11
35 001 - 150 000	500	10	11	14	15

A-4 CLASSIFICATION OF DEFECTS

The visual and dimensional defects shall be classified as follows (AQLs for major and minor defects are applicable group wise).

Store	Classification and Feature
Cartridge for shot guns	*Major Defects* AQL 1.0 percent defective applies to the group Visual (a) Missing/Loose cap (b) Head loose (c) Damaged cap (d) Damaged head (e) Without Index disc, where used (f) Defective shots *Gauging and Weighing* (a) Charge mass more than the maximum limit (b) Charge mass less than the minimum limit (c) External diameter (d) Length (e) Cap intrusion Minor Defects AQL 2.5 percent defectives applies to group *Visual* (a) Defective/deep turnover (b) Wrinkles on body (c) Bulged body (d) Tarnished/dirty head (e) Without inner disc, where used (f) Illegible stamping/shaby printing

ANNEX B
(*Clause* 5.5)
PROOF TEST

B-1 Type of Proof

B-l .l Cartridges for shot guns, shall be subjected to following proofs:

Proof	No. of Rounds
Pressure	5
Velocity	10
Accuracy	10
Function and casualty	25
	50

Accept*
Reject†

B-2 METHOD OF PROOF AND PROOF REQUIREMENTS

B-2.1 Pressure Proof — Five cartridges shall be tested for pressure as follows:

a) At 2.54 cm from chamber the mean pressure shall be 42 to 54 MPa. A standard pressure of 48 MPa is desirable.

b) At 15.24 cm chamber, the mean pressure shall be 20.0 to 29.5 MPa. A standard pressure of 25 MPa is desirable.

B-2.2 Velocity Proof — Ten cartridges shall be fired for velocity. The mean observed velocity at 9.44 m from the muzzle shall be within the specified limit of 320 f 15.24 m/s.

B-2.3 Accuracy Proof — Ten cartridges shall be fired for accuracy from the correct chamber gun with true cylinder bore (amount of choke between ‘000 to ‘0762 mm) and the percentage of pellets obtained in a circle of diameter of 76.2 cm shall not be less than 56 and 40 percent at 27.5 m and 36.5 m respectively.

B-2.4 Functioning and Casualty Proof — Twenty five cartridges shall be fired from old gun (10 rounds) and new gun (15 rounds). The fired cases shall be free from the defects. The acceptance criteria for these defects is appended below:

Defects	Acceptance Quality Levels, percent		
	Critical	Major	Minor
Pierced cap	0	0.65	1.5
Pierced cap	@		
Burst case	@		
Collapsed case	@		

Case separation	@	
Gas escape		@
Stretching		@
Cap blown out	@	
Misfire		@
Head loose		@
Hard to load and extract		@
Air cushion remains in the bore		@
Poor audibility (for blank amn)		@

B-3 Sentencing

B-3.1 The lot shall be sentenced subject to satisfactory performance at pressure, accuracy and functioning and casualty proofs according to the acceptance criteria given below:

AQLS	
Critical	0
Major	1.0 percent
Minor	2.5 percent
First sample size	50
Critical	0
Major	0 AC* 3 Re†
Minor	2 AC* 5 Re†
Second sample size	50
Critical	0
Major (cumulative)	3 AC* 5 Re†
Minor (cumulative)	6 AC* 5 Re†

*Accept
†Reject

B-4 Failure of the cartridges in any sample to comply with the applicable requirement shall be cause for rejection of the lot subject to testing of a second sample consisting of same quantity of cartridges used in initial test at which the failure occurred. Failure of the cartridges to comply with the applicable requirements at reproof shall be the cause for rejection of the lot.