भारत सरकार
GOVERNMENT OF INDIA
रक्षा मंत्रालय
MINISTRY OF DEFENCE

संयुक्त सेवा विनिर्देश
JOINT SERVICES SPECIFICATION

ON

LEAD ALLOY RODS FOR BULLET CORES

मानकीकरण निदेशालय
रक्षा उत्पादन विभाग, रक्षा मंत्रालय
'एच' - ब्लॉक, निर्माण भवन डाकघर
नई दिल्ली-११००११

DIRECTORATE OF STANDARDISATION
DEPARTMENT OF DEFENCE PRODUCTION
MINISTRY OF DEFENCE
'H' BLOCK, NIRMAN BHAWAN PO
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LIST OF MEMBERS ASSOCIATED WITH REVISION OF THIS SPECIFICATION

1. The revision of this Joint Services Specification has been approved by Dr. N. Eswara Prasad, Sc. 'H', Outstanding Scientist, Director, DMSRDE, Chairman, Material Standardisation Sub Committee by circulation.

2. The representatives of following organisations were consulted in approving the document:

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2.	Sh UK Singh, Dy Controller	CQA(ME), Pune
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22.	-	Dte of P&C, New Delhi

RECORD OF AMENDMENTS

Amendment		Amendment pertains to S. No./Para No./ Column No.	Authority	Amended by	Signature & Date
No.	Date			Name & Appointment (In Block Letters)	

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0. FOREWORD

0.1 This Joint Services Specification has been prepared by the Material Standardisation Sub Committee on the authority of the Standardisation Committee, Ministry of Defence.

0.2 This Joint Services Specification has been approved by the Ministry of Defence and is mandatory for use by the Defence Services.

0.3 This JSS 9530-02 : 2020 (Fourth Revision):

a) was prepared in the year 1981.

b) was revised in the year 1991, 1996 & 2014.

c) was reaffirmed in the year 2002 & 2008.

d) is revision of JSS 9530-02 : 2014 (Second Revision) and supersedes the same.

0.4 This Joint Services Specification would be used to guide design, manufacture, quality assurance and procurement of the item.

0.5 Quality Assurance Authority for the item covered by this specification is the Controller, Controllerate of Quality Assurance (Metals), PO Ichapur-Nawabganj, 24 Parganas (North), West Bengal-743144 (Email : cqametichapur-dgqa@nic) for Army, the Directorate of Quality Assurance (Naval), New Delhi for Navy and the Director General, Directorate General of Aeronautical Quality Assurance, New Delhi for Air Force. Enquiries regarding this specification relating to any contractual condition should be addressed to Quality Assurance Authority mentioned in the contract. Other enquires should be referred to:

The Director,
Directorate of Standardisation,
Ministry of Defence,
'H' Block, Nirman Bhawan PO,
New Delhi-110011.
Email : mssc.defstand@gov.in

0.6 Non-registered users can obtain the following on payment:

a) Copies of IS from:

Bureau of Indian Standards
Manak Bhawan
9, Bahadur Shah Zafar Marg
New Delhi-110002.
or
their regional/branch offices.

b) Copies of JSSs/JSGs from:

The Director
Directorate of Standardisation
Standardisation Documentation Centre
Room No. 05 'J' Block, Nirman Bhawan PO
New Delhi-110011.

0.7 Indian Standards (IS) which are related to this specification are available on:

Directorate of Standardisation Website,
www.ddpdos.gov.in
For registration visit our website.

0.8 This specification holds good only for the supply order for which it is issued.

0.9 Directorate of Standardisation Website - All the approved JSSs/JSGs are available on the Directorate of Standardisation Website ***www.ddpdos.gov.in***. Defence Organisations desirous of accessing a copy of this document are requested to approach the Directorate of Standardisation for obtaining user id/password to access the website.

1. SCOPE

This specification covers the requirements of six types of Lead Antimony Alloy rods used in the manufacture of bullet cores for small arms ammunition.

2. RELATED SPECIFICATIONS

References are made in this specification to:

Table 1 Related Specifications

S. No.	Specification No. & Year	Nomenclature
a)	IS 403 : 1964 Reaffirmed 2016	Methods of Chemical Analysis of Lead and Antimonial Lead
b)	IS 1387 : 1993 (Second Revision) Reaffirmed 2018	General Requirements for the Supply of Metallurgical Materials
c)	IS 1654 : 1992 (Third Revision) Reaffirmed 2019	Lead Antimony Alloys-Specification
d)	IS 4905 : 2015 (First Revision)	Random Sampling and Randomisation Procedure

3. MATERIAL

3.1 The six types of lead-antimony alloy rods shall conform to the following chemical composition:

Elements	PbSb1 %		PbSb2 %		PbSb5 %		PbSb6 %		PbSb8 %		PbSb10 %	
	Min	***Max***	***Min***	***Max***	***Min***	***Max***	***Min***	***Max***	***Min***	***Max***	***Min***	***Max***
Antimony	0.8	1.2	1.3	2.2	4.5	5.5	5.5	6.5	7.5	8.5	9.5	10.5
Tin	-	0.10	-	0.10	-	0.10	-	0.10	-	0.10	-	0.10
Copper	-	0.05	-	0.05	-	0.05	-	0.05	-	0.05	-	0.05
Arsenic	-	0.01	-	0.01	-	0.01	-	0.01	-	0.01	-	0.01
Zinc	-	0.001	-	0.001	-	0.001	-	0.001	-	0.001	-	0.001
Lead	Rem		Rem		Rem		Rem		Rem		Rem	
Bismuth	-	0.06	-	0.06	-	0.02	-	0.02	-	0.02	-	0.02
Iron	-	0.005	-	0.005	-	0.005	-	0.005	-	0.005	-	0.005
Silver	-	0.02	-	0.02	-	0.008	-	0.008	-	0.008	-	0.008

Rem = Remainder

3.2 The total elements other than Lead and Antimony shall not exceed 0.15%.

4. SUPPLY CONDITIONS

4.1 The general requirements relating to the supply of Lead Alloy rods shall be as laid down in IS 1387.

4.2 The purchaser shall state on his order the type of alloy required and the dimensions and tolerances of the rods.

5. MANUFACTURE

The rod shall be rolled/extruded from ingot conforming to IS 1654 Grades PbSb1, PbSb2, PbSb5, PbSb6, PbSb8 and PbSb10 to the dimensions and tolerances as stated on the order.

6. WORKMANSHIP AND FINISH

The rods shall be free from laminations, flaws, pronounced extrusion marks or other internal or external defects.

7. MARKING

Manufacturer's name or trademark, year of manufacture, batch number and the type of material shall be stamped on all accepted rods where practicable or otherwise legibly marked on a metal tag, to be securely fixed to the package/bundle.

8. PRE-INSPECTION OF STORES/CONSIGNMENT

8.1 Manufacturers/suppliers must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specifications by carrying out a thorough pre-inspection of each lot before actually tendering the same for inspection to the Quality Assurance Officer nominated under the terms of the contract. A declaration by the manufacturer/supplier that necessary pre-inspection has been carried out on the stores tendered, will be submitted along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked/tested and will have the test certificate attached to the challan/declaration.

8.2 If the Quality Assurance Officer finds that the pre-inspection of the consignment as required above has not been carried out, the consignment is liable for rejection.

9. QUALITY ASSURANCE

The material when analysed in accordance with IS 403 shall conform to the chemical composition as given in Clause **3**.

10. SAMPLING

10.1 Formation of Lot

10.1.1 The delivery shall be visually inspected by the Quality Assurance Officer at the spot in the first instance to ascertain its homogeneity in respect of size, shape and manufacturing batch. Separate lot should be formed as per manufacturing batch number and all the bars with the same batch number should be treated as one lot for the purpose of sampling.

10.1.1 The supplier shall arrange the units of each homogeneous lot in such a way that all the units are easily accessible to the Quality Assurance Officer to enable him to draw samples from any portion of the homogeneous lot.

10.2 Sampling Procedure

Sampling of stores shall be done adopting the technique of 'Simple Random Sampling' as per IS 4905.

10.3 Scale of Sampling

The number of sample units drawn for assessing the quality of stores would be in accordance with Table 3 for laboratory testing (Chemical tests) and Table 2 for dimensional/non-destructive/visual inspection.

Table 2 Lot Wise Sample Sizes and Acceptance Number for Dimensional/Non-Destructive/Visual Inspection

Lot Size	Sample Size	AQL 4 % No. of Defectives Permissible
2 to 8	2	0
9 to 15	3	0
16 to 25	5	0
26 to 50	8	0
51 to 100	13	1
101 to 150	20	2
151 to 300	32	3
301 and above	50	5

Table 3 Lot Wise Sample Size for Laboratory Testing (Chemical Composition)

Lot Size	Sample Size
2 to 8	2
9 to 15	2
16 to 25	3
26 to 50	3
51 to 100	5
101 to 150	5
151 to 300	8
301 and above	13

10.4 Sampling for Inspection (Dimensional/Non-Destructive/Visual)

The Quality Assurance Officer shall draw samples as per Table 2 of Clause **10.3** for dimensional/non-destructive/visual inspection to assess the quality of the lot. If the quality of the lot indicates conformity to the standard as laid down in Table 2 of Clause **10.3**, sampling for laboratory test shall be done. Otherwise the lot shall be straightway rejected.

10.5 Sampling for Laboratory Testing

If the lot is considered conforming to the quality standard as specified in Table 2 of Clause **10.3** sampling for laboratory testing shall be carried out as per Table 3 of Clause **10.3** and sample shall be subjected to the laboratory testing.

10.6 Bulk Inspection

If the laboratory test report indicates that the lot does not conform to the standard as specified in Clause **3.1** when tested as per Table 3 of Clause **10.3**, the whole lot shall be rejected. Otherwise the lot shall be inspected hundred percent thoroughly for workmanship and finish, dimensions and other critical and visual defects. All bars found defectives shall be rejected.

11. CRITERIA FOR CONFORMITY

If all the samples tested meet the laid down requirement of chemical composition as specified in Clause **3.1** and the laid down the standard of the visual inspection/non destructive testing/ dimensional inspection as given in Table 2, the lot shall be accepted. Otherwise the lot shall be rejected.

12. WARRANTY

The stores against this specification shall be deemed to bear warranty of the manufacturer/ contractor against defective material for a period of 12 months from the date of receipt of stores at consignee end. If during this period, the stores supplied are found to be defectives, the same shall be replaced immediately with the serviceable stores by the manufacturer/ contractor at site, free of any charges or cost or the manufacturer/contractor supplying such defective stores shall accept a suitable price penalty for the defective stores as may be decided by the purchasing officer or the Quality Assurance Authority.

13. PACKAGING

All accepted rods shall be packed and marked in accordance with instructions as stipulated in the order/contract.

14. SUGGESTIONS FOR IMPROVEMENT

Any suggestion for improvement in this document may be forwarded to:

The Director,
Directorate of Standardisation,
Ministry of Defence,
'H' Block, Nirman Bhawan PO,
New Delhi-110011.