IS 1654 (1992): Lead antimony alloys [MTD 9: Lead, Zinc, Cadmium, Tin, Antimony and their Alloys]

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IS 1654 : 1992
(Reaffirmed 2003)

भारतीय मानक

सीसा-एन्टीमनी मिश्र धातुएँ — विशिष्टि

(तीसरा पुनरीक्षण)

Indian Standard

LEAD-ANTIMONY ALLOYS — SPECIFICATION

(Third Revision)

UDC 669·45·75

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 1992

Price Group 1

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Lead, Zinc, Cadmium, Tin, Antimony and Their Alloys Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1960 and subsequently revised in 1966 and 1978. In this revision the clauses on chemical analysis, sampling and marking have been modified.

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.

AMENDMENT NO. 1 DECEMBER 2010
TO
IS 1654 : 1992 LEAD-ANTIMONY ALLOYS — SPECIFICATION

(Third Revision)

(*Page* 1, *Table* 1) — Substitute the following for the existing table:

Table 1 Chemical Composition of Lead-Antimony Alloys
(*Clauses* 5.1 *and* 9)

(Percentages are in maximum unless shown otherwise)

Grade % (1)	**Antimony** % (2)	**Arsenic** % (3)	**Tin** % (4)	**Copper** % (5)	**Bismuth** % (6)	**Iron** % (7)	**Zinc** % (8)	**Silver** % (9)	**Lead** % (10)
PbSb 1	0.8-1.2	—	—	0.05	0.03	0.003	0.001	0.02	Balance
PbSb 2	1.8-2.2	—	—	0.05	0.03	0.003	0.001	0.02	Balance
PbSb 5	4.5-5.5	—	—	0.05	0.03	0.003	0.001	0.04	Balance
PbSb 6	5.5-6.5	—	—	0.05	0.03	0.003	0.001	0.04	Balance
PbSb 8	7.5 - 8.5	—	—	0.05	0.03	0.003	0.001	0.04	Balance
PbSb 10	9.5 - 10.5	—	—	0.05	0.03	0.003	0.001	0.04	Balance
PbSb 5Sn	5.2 - 5.8	0.05 - 0.25	1.7 - 1.9	0.05	0.03	0.003	0.001	0.04	91-92

NOTES

1 The limits of arsenic and tin shall be subject to agreement between the supplier and the purchaser for all grades except grade PbSb 5Sn.

2 Other impurities do not preclude the possible presence of any other unnamed elements. However, analysis shall regularly be made only for the impurities listed in the table.

(MTD 9)

Reprography Unit, BIS, New Delhi, India

Indian Standard

LEAD-ANTIMONY ALLOYS — SPECIFICATION

(Third Revision)

1 SCOPE

This standard covers the requirements for lead-antimony alloys.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
403 : 1964	Methods of chemical analysis of lead and antimonial lead (*revised*)
1387 : 1967	General requirements for the supply of metallurgical materials (*first revision*)
8439 : 1973	Method for sampling lead and lead alloys

3 GRADES

This standard covers seven grades of lead-antimony alloys, namely, PbSb1, PbSb2, PbSb5, PbSb6, PbSb8, PbSb10 and PbSb5Sn.

4 SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of lead-antimony alloys shall conform to IS 1387 : 1967.

4.2 Unless otherwise specified by the purchaser lead-antimony alloys shall be supplied in the from of pigs.

5 CHEMICAL COMPOSITION

5.1 The lead-antimony alloys shall conform to the chemical composition as specified in Table 1.

5.2 The chemical composition, shall be determined either by the method specified in IS 403 : 1964 or any other established instrumental/chemical method. In case of dispute the procedure specified in IS 403 : 1964 shall be the referee method.

6 FREEDOM FROM DEFECTS

The pigs shall be of uniform composition, clean and free from foreign matter, inclusions slag or dross.

Table 1 Chemical Composition of Lead-Antimony Alloys

(*Clauses* 5.1 *and* 9)

(Percentage are in maximum unless shown otherwise)

Grade	Antimony	Lead	Arsenic	Tin	Copper	Bismuth	Iron	Zinc	Silver
	%	%	%	%	%	%	%	%	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PbSb 1	0·8-1·2	Remainder	—	—	0·05	0·06	0·005	0·001	0·02
PbSb 2	1·8-2·2	Remainder	—	—	0.05	0·06	0·005	0·001	0·02
PbSb 5	4·5-5·5	Remainder	—	—	0·05	0·02	0·005	0·001	0·008
PbSb 6	5·5-6·5	Remainder	—	—	0·05	0·02	0·005	0·001	0·008
PbSb 8	7·5-8·5	Remainder	—	—	0·05	0·02	0·005	0·001	0·008
PbSb 10	9·5-10·5	Remainder	—	—	0·05	0·02	0·005	0·001	0·008
PbSb 5Sn	5·2-5·8	91-92	0·8-1·0	1·7-1·9	0·05	0·02	0·005	0·001	0·008

NOTES

1 The limits of arsenic and tin shall be subject to agreement between the supplier and the purchaser for all grades except grade PbSb 5 Sn.

2 Other impurities do not preclude the possible presence of other unnamed elements. However, analysis shall regularly be made only for the impurities listed in the table.

7 MASS

7.1 The mass of each pig shall not be more than 50 kg.

7.1.1 In case the lead-antimony alloys are supplied in some other form to meet the purchaser's requirements, the mass shall be as agreed to between the purchaser and the manufacturer.

8 SAMPLING

The lead antimony alloys shall be sampled in accordance with IS 8439 : 1977.

9 RETEST

If the sample prepared under **8** and tested fails to meet the requirements of chemical composition specified under **5.1** (Table 1), two more tests shall be conducted on the same sample in order to conform that the analysis has been done properly. If both the test results satisfy the relevant requirements, the lot shall be accepted. Should either of the retest fail, the lot represented shall be deemed as not complying with this standard.

10 INSPECTION

10.1 All inspection and testing of lead-antimony alloys covered in this standard shall be carried out by the manufacturer unless otherwise agreed to between the manufacturer and the purchaser. The inspections requirements shall be stated in the enquiry and order.

10.2 The purchaser shall notify the supplier which placing the order, if it is his intention to inspect lead-antimony alloys at the supplier's end. The supplier shall offer the purchaser all the necessary facilities for inspection and testing of the lead-antimony alloys in accordance with this standard. For this purpose the purchaser or his representative may, by prior arrangement, attend to inspect lead-antimony alloys to select and identify the test samples and witness the testing.

11 MARKING

11.1 Each pig shall be legibly marked with the following details:

a) Cast/lot number,

b) Grade of the lead-antimony alloy, and

c) Indication of the source of manufacture.

11.2 Standard Marking

Lead-antimony alloy pigs may also be marked with the Standard Mark.

12 TEST CERTIFICATE

The supplier shall provide test certificate for each consignment giving information like cast/lot number and corresponding chemical composition, etc.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

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