

IS 27 : 1992

(Reaffirmed 1997)

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भारतीय मानक
पिग सीसा — विशिष्टि
(चौथा पुनरीक्षण)

Indian Standard
PIG LEAD — SPECIFICATION
(*Fourth Revision*)

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

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Price Group 1

Lead, Zinc, Cadmium, Tin, Antimony and Their Alloys Sectional Committee, MTD 9

FOREWORD

This Indian Standard (Fourth 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 1950 and subsequently revised in 1958, 1965 and 1977. In this revision following modifications have been made:

- a) A separate clause on references has been incorporated;
- b) Clauses on chemical analysis, sampling and marking have been modified; and
- c) Requirements for test certificate have been incorporated.

Typical uses of various grades of pig lead have been given in Annex for information and guidance.

For the purposes of deciding whether a particular requirements 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 APRIL 1998
TO
IS 27 : 1992 PIG LEAD — SPECIFICATION
(Fourth Revision)**

(Page 1, clause 1) — Substitute the following for the existing clause:

‘1 SCOPE

1.1 This standard covers the requirements of lead in the form of pigs.’

(Page 1, clause 3) — Substitute the following for the existing clause:

‘3 GRADES

This standard covers three grades of pig lead, namely, Pb 99.99, Pb 99.97 and Pb 99.90 Cu.’

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

**‘Table 1 Chemical Composition of Pig Lead
(Clause 6.1)**

Constituent	Requirements, Percent by Mass		
	Grade Pb 99.99	Grade Pb 99.97	Grade Pb 99.90 Cu
(1)	(2)	(3)	(4)
Lead, <i>Min</i>	99.99	99.97	99.90
Copper, <i>Max</i>	0.003 <i>Max</i>	0.003 <i>Max</i>	0.04 to 0.08
Antimony, <i>Max</i>	0.002	0.005	0.002
Bismuth, <i>Max</i>	0.005	0.02	0.01
Iron, <i>Max</i>	0.003	0.003	0.003
Silver, <i>Max</i>	0.002	0.002	0.002 5
Zinc, <i>Max</i>	0.002	0.002	0.002
Arsenic, <i>Max</i>	0.002	0.002	0.002
Total impurities, <i>Max</i>	0.01	0.03	0.1

NOTE — The possible presence, of other unnamed elements is not precluded. However, analysis should regularly be made only for the elements (except lead) listed in the table. The lead content should be determined by difference between the sum of total elements analyzed and 100 percent, by agreement between the manufacturer and the purchaser, limits may be established for elements not specified in the table.

**AMENDMENT NO. 2 DECEMBER 2010
TO
IS 27 : 1992 PIG LEAD — SPECIFICATION**

(Fourth Revision)

[Page 5, Table 1, Grade Pb 99.99 (see also Amendment No. 1)] — Substitute the following for the existing:

	Percent
Lead, <i>Min</i>	99.99
Copper, <i>Max</i>	0.000 5
Antimony, <i>Max</i>	0.002
Bismuth, <i>Max</i>	0.005
Iron, <i>Max</i>	0.000 5
Silver, <i>Max</i>	0.002
Zinc, <i>Max</i>	0.000 5
Arsenic, <i>Max</i>	0.001
Cadmium, <i>Max</i>	0.000 5
Nickel, <i>Max</i>	0.000 5
Tin, <i>Max</i>	0.000 5
Total impurities, <i>Max</i>	0.01

(MTD 9)

Reprography Unit, BIS, New Delhi, India

Amend No. 1 to IS 27 : 1992

(*Page 2, clause 12.2*) — Substitute the following for the existing clause:

‘12.2 Standard Marking

The material may also be marked with Standard Mark.

12.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.’

(*Page 2, Annex, headed under Grades*) — Substitute ‘Pb 99.97’ for ‘Pb 99.94’.

(MTD 9)

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Indian Standard

PIG LEAD — SPECIFICATION

(Fourth Revision)

1 SCOPE

1.1 This standard covers the requirements of virgin lead in the form of pigs.

1.2 The requirements for reclaimed lead are not covered in this standard and are covered in IS 3717 : 1977 'Refined secondary lead (first revision)'.

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 requirement for supply of metallurgical materials (first revision)
8439 : 1977	Methods for sampling of lead and lead alloys

3 GRADES

This standard covers three grades of pig lead, namely, Pb 99.99, Pb 99.94 and Pb 99.90 Cu.

4 SUPPLY OF MATERIAL

General requirements relating to the supply of pig lead shall conform to IS 1387 : 1967.

5 MANUFACTURE

Pig lead shall be produced by smelting and refining of ores.

6 CHEMICAL COMPOSITION

6.1 The chemical composition of the three grades of pig lead shall conform to the requirements as given in Table 1.

6.2 The chemical analysis shall be done either by the methods specified in IS 403 : 1964 or any other established instrumental/chemical method. However, in case of dispute the procedure specified in IS 403 : 1964, shall be the referee method.

7 FREEDOM FROM DEFECTS

Pigs shall be reasonably free from dross, slag and other foreign inclusions and shall have a clean surface.

Table 1 Chemical Composition of a Pig Lead
(Clause 6.1)

Constituents (1)	Requirement		
	Grade Pb 99.99 (2) Percent	Grade Pb 99.94 (3) Percent	Grade Pb 99.90 Cu (4) Percent
Lead*, Min	99.99	99.94	99.90
Copper, Max	0.003	0.005	0.04 to 0.08
Antimony, Max	0.002	0.005	0.002
Bismuth, Max	0.005	0.05	0.01
Iron, Max	0.003	0.005	0.003
Silver, Max	0.002	0.002	0.002 5
Zinc, Max	0.002	0.002	0.002
Arsenic, Max	0.002	0.003	0.002
Tl, Max	0.01	0.06	0.1

*To be found by difference.

NOTE — 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. The major element shall be determined by difference between the sum of total elements analysed and 100 percent, by agreement between the manufacturer and the purchaser, analysis may be required and limits established for elements not specified.

8 MASS

Unless specified otherwise, the mass of each pig shall be not more than 50 kg.

9 SAMPLING

Pigs shall be sampled in accordance with IS 8439 : 1977.

10 RETEST

If the sample prepared under 9 fails to meet the requirements specified under 6.1, two more tests shall be conducted on the same sample in order to confirm that the analysis has been done properly. If both the retest results satisfy the relevant requirements, the lot shall be accepted.

11 INSPECTION

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

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11.2 The purchaser shall notify the supplier while placing the order, if he intends to inspect the pig lead at the supplier's end. The supplier shall provide the purchaser all the necessary facilities for inspection and testing of the pig lead in accordance with this standard. For this purpose the purchaser or his representative may by prior arrangement, attend to inspect the pig lead, to select and identify the test samples for testing and to witness the test being made.

12 MARKING

12.1 Each pig shall be legibly marked with the following:

- a) cast/lot number;

- b) grade of the pig lead; and

- c) indication of the source manufacture.

12.2 Standard Marking

Each pig may also be marked with the Standard Mark.

13 TEST CERTIFICATE

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

ANNEX

(*Foreword*)

TYPICAL USES OF PIG LEAD

<i>Grades</i>	<i>Typical Uses</i>	<i>Grades</i>	<i>Typical Uses</i>
Pb 99-99	Manufacture of red lead, white lead, litharge, optical glasses, accumulator plates, lead sheet, lead tubes and lead wire for the chemical industry. Chemical apparatus according to specific requirements	Pb 99-94	Basic material for the production of alloys
		Pb 99-90 Cu	Chemical apparatus in the sulphuric acid industry

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