भारतीय मानक

IS 3717 : 2024

Indian Standard

परिष्कृत द्वितीयक सीसा — विशिष्टि

(दूसरा पुनरीक्षण)

Refined Secondary Lead — Specification

(Second Revision)

ICS 77.120.60

भारतीय मानक ब्यूरो
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February 2024 Price Group 4

Ores and Feed Stock for Non-Ferrous (Excluding Aluminium and Copper) Industry, their Metals/ Alloys and Products Sectional Committee, MTD 09

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Ores and Feed Stock for Non-Ferrous (Excluding Aluminium and Copper) Industry, their Metals/ Alloys and Products Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1966 and was subsequently revised in 1977 in order to revise the limits of impurity in different grades of lead. In this revision, the following modifications have been made:

a) The scope has been modified to cover refined secondary lead from scrap or secondary lead bearing materials through any refining process;
b) The Amendments issued to the previous versions of the standard have been incorporated in the standard and the impurity percentage in grade SPb99.97 earlier designated as Grade 1 has been modified for Ag, Bi, Sb and Zn;
c) Clause **3** on terminology has been added;
d) Clause **4** on grades has been included in the standard which designates the grades of lead in accordance with their minimum lead content and a prefix S to identify the secondary refined lead. Grade 1, Grade 2, Grade 3 and Grade 4 have been re-designated as SPb99.97, SPb99.9, SPb99.8 and SPb99.98 respectively;
e) Clause **5** on supply of material has been modified to include basis for order/enquiry;
f) Clause **6** on chemical composition has been modified to allow for use of methods mutually agreed between the purchaser and the supplier. The referee method has also been included;
g) Clause **8** on mass has been modified to keep open the shape, size and mass of the ingot as agreed between the purchaser and the supplier;
h) Clause **9** on sampling has been modified to include the definition of lot; and
j) Clause **11** on packaging has been added.

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

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.

Indian Standard

REFINED SECONDARY LEAD — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard specifies the requirements for refined secondary lead ingots produced from scrap or secondary lead bearing materials through any refining process.

1.2 The requirements for refined primary lead produced from ore or similar raw materials by any smelting and refining process are not covered in this standard and are separately covered in IS 27.

2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	*Title*
IS 27 : 2023	Primary lead — Specification (*fifth revision*)
IS 403 : 1964	Methods of chemical analysis of lead and antimonial lead (*revised*)
IS 1387 : 1993	General requirements for the supply of metallurgical materials (*second revision*)
IS 8439 : 1977	Methods for sampling of lead and lead alloys

3 TERMINOLOGY

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

3.1 Ingot — Cast product intended for remelting and/or processing.

NOTE — Usually the shape of the ingot is a rectangular trapezoid with a flat bottom or grooves/notches at the bottom and with or without protruding ears/lugs at both ends (*see* IS 1817). Generally, the nominal mass of each ingot is not more than 50 kg.

3.2 Melt or Cast — It is the product of one furnace or crucible melt. Sometimes the furnace contents are tapped into two or more ladles where the product of each ladle may be called a separate cast.

NOTE — All the ingots from the same cast have the same identifying mark.

3.3 Refined Secondary Lead — Lead produced by any smelting and refining process from lead bearing scrap materials.

3.4 Bundle — Collection of ingots taken from a single cast and secured if necessary, for the purpose of handling, shipment and storage.

4 GRADES

This standard covers four grades of refined secondary lead ingots, designated as follows, in accordance with their minimum lead content in each grade:

a) SPb99.98;
b) SPb99.97;
c) SPb99.9; and
d) SPb99.8.

5 SUPPLY OF MATERIAL

5.1 General requirements relating to the supply of refined secondary lead shall conform to IS 1387.

5.2 Unless otherwise agreed, the material shall be supplied in the form of ingots.

5.3 Information to be Given by the Purchaser

5.3.1 *Basis for Order/Enquiry*

While placing an order/enquiry for the purchase of material covered by this specification, the purchaser should specify the following information in order to facilitate the enquiry, order and confirmation of order procedures between purchaser and the supplier:

a) The number of this Indian Standard;
b) The grade designation of the secondary refined lead required, for example, SPb99.97; (*see* Table 1 and accompanying notes);
c) Chemical composition of each grade (*see* Note 1 of Table 1);
d) Quantity of product required (mass);

e) Nominal mass of an ingot (in kg) or a bundle (in tonnes);

f) When a specific ingot shape and size is required (*see* 8); and

g) Specific marking and packaging requirements (*see* 11.2).

6 CHEMICAL COMPOSITION

6.1 The chemical composition of refined secondary 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 or by any other established instrumental/wet chemical method. In case of dispute, the procedure specified in IS 403 shall be the referee method. However, if the method of analysis for a particular element is not given in IS 403, the referee method for the analysis shall be as mutually agreed to between the purchaser and the supplier.

Table 1 Chemical Composition of Refined Secondary Lead

(*Clauses* 5.3.1 *and* 6.1)

Sl No.	Element	Limits of Elements, Percent (m/m)			
		SPb99.98	SPb99.97	SPb99.9	SPb99.8
(1)	(2)	(3)	(4)	(5)	(6)
i)	Lead, *Min*	99.98	99.97	99.9	99.8
ii)	Impurities, *Max:*	–	–	–	–
iii)	Silver	0.003	0.003	0.003	0.005
iv)	Arsenic	0.0 005	0.001	0.005	0.005
v)	Bismuth	0.015	0.025	0.05	0.05
vi)	Calcium	0.0 010	–	–	–
vii)	Cadmium	0.0 005	0.001	–	–
viii)	Copper	0.001	0.003	0.02	0.100
ix)	Iron	0.001	0.002	0.005	0.005
x)	Nickel	0.0 005	0.001	–	–
xi)	Sulphur	0.0 005	–	–	–
xii)	Antimony	0.0 005	0.001	0.02	0.06
xiii)	Selenium	0.0 015	–	–	–
xiv)	Tin	0.001	0.001	–	–
xv)	Tellurium	0.0 005	–	–	–
xvi)	Zinc	0.001	0.001	0.005	0.005
xvii)	Aluminium	0.0 001	–	–	–
xviii)	Chromium	0.001	–	–	–
xix)	Manganese	0.0 005	–	–	–
xx)	Total impurities, *Max*	0.02	0.03	0.1	0.2

NOTES

1 The possible presence of other unnamed/incidental elements is not precluded. However, analysis shall regularly be made only for the elements (except lead) listed in the table. The major element (lead) shall be determined by difference between the sum of total elements analysed and 100 percent. By agreement between manufacturer and the purchaser, analysis may be required and limits established for elements not specified.

2 For some applications, the purchaser may require individual elements to be specified at lower levels than the maximum given Table 1 and in addition, elements other than those in the table can also be specified.

7 FREEDOM FROM DEFECTS

There shall be no dross, slag, granular oxide, inclusions and foreign contaminations on the surface of the ingots and shall have a clean surface.

8 SHAPE, SIZE AND MASS

The shape, size and mass of the ingots and bundles shall be at the discretion of the supplier, unless otherwise agreed between the purchaser and the supplier.

9 SAMPLING AND CRITEREON FOR CONFORMITY

9.1 Lot

In any consignment, all the lead ingots of the same type, and grade produced from same cast/melt under uniform conditions of manufacture and offered for inspection at one time but shall not exceed 20 tones. A lot may consist of the whole or a part of the quantity ordered for.

9.2 Method of Sampling

Unless otherwise agreed between the purchaser and the manufacturer, the number of ingots to be selected and method for preparing samples from the lot of ingots for chemical analysis shall be in accordance with IS 8439.

10 RETEST FOR CHEMICAL ANALYSIS

If the sample prepared under 9.2 fails to meet the requirements specified under 6.1; unless otherwise agreed to between the purchaser and the supplier, two new samples shall be taken from the same lot of metal and tested for chemical analysis. If the analysis on both samples satisfy the requirements specified under 6.1, the lot represented shall be accepted. If either of the sample fails, the material shall be taken as not complying with this standard.

11 PACKAGING

11.1 Each bundle of lead ingots should be bundled with a corrosion resistant tape/string of appropriate strength.

11.2 When the purchaser has any special requirement for the packaging of lead ingots, it shall be as agreed between the purchaser and the supplier.

12 MARKING

12.1 Each ingot shall be legibly marked with the following indelible markings:

a) Cast number;

b) Grade of the material; and

c) Manufacturer’s initials or recognized trade-mark.

12.2 Each bundle of lead ingots shall be provided with marking which is legible and indelible, indicating manufacturer name, product name, grade of primary lead, cast/lot number and net weight.

12.3 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 product(s) may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Ores and Feed Stock for Non-Ferrous (Excluding Aluminium and Copper) Industry, their Metals/ Alloys and Products Sectional Committee, MTD 09

Organization	*Representative(s)*
CSIR – National Metallurgical Laboratory, Jamshedpur	DR ABHILASH **(*Chairperson*)**
Arya Alloys Private Limited, New Delhi	SHRI AMRENDRA K. JHA
Bhabha Atomic Research Centre, Mumbai	DR DHRUVA KUMAR SINGH DR BHASKAR PAUL (*Alternate*)
BT Solders Private Limited, Bengaluru	SHRI S. RAMESH
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National Mineral Development Corporation, Hyderabad	SHRI G. VENKATESWARA RAO

Organization	*Representative(s)*
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SHRI SAAQIB RAAHI
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Exide Industries Limited, Kolkata	DR SAGAR SENGUPTA
Indian Lead Zinc Development Association, New Delhi	SHRI K. SRIDHAR
Nile Limited, Hyderabad	SHRI K. H. K. SRINIVAS

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in

This Indian Standard has been developed from Doc No.: MTD 09 (23327).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi