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“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

AMENDMENT NO. 2 DECEMBER 2010
TO
IS 209 : 1992 ZINC INGOT — SPECIFICATION

(Fourth Revision)

[Page 1, Table 1, col 3, line 4 (see also Amendment No. 1)] — Substitute ‘0.01’ for ‘0.005’.

(Page 1, Table 1, col 1) — Add ‘Aluminium, Max’ after ‘Copper, Max’.

(Page 1, Table 1, col 2 and 3) — Add ‘—’ against ‘Aluminium, Max’.

(Page 1, Table 1, col 1) — Add a new col 2 and renumber the subsequent columns as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Zinc, Min</th>
<th>Lead, Max</th>
<th>Cadmium, Max</th>
<th>Iron, Max</th>
<th>Tin, Max</th>
<th>Copper, Max</th>
<th>Thallium, Max</th>
<th>Indium, Max</th>
<th>Aluminium, Max</th>
<th>Total Impurities, Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>99.995</td>
<td>0.003</td>
<td>0.003</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>0.01</td>
<td>0.000 5</td>
<td>0.001</td>
<td>0.005</td>
</tr>
</tbody>
</table>

(MTD 9)

Reprography Unit, BIS, New Delhi, India
AMENDMENT NO. 1 APRIL 2003
TO
IS 209 : 1992 ZINC INGOT — SPECIFICATION
(Fourth Revision)

(Page 1, Table 1, col 3, line 4) — Substitute ‘0.005’ for ‘0.01’.

(MTD 9)
FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by 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 was subsequently revised in 1956, 1966 and 1979. In this revision the requirements if chemical analysis and marking have been modified and a new clause on inspection has been added.

For the purpose of deciding whether a particular requirments 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.
Indian Standard

ZINC INGOT — SPECIFICATION
( Fourth Revision )

1 SCOPE

1.1 This standard covers the requirements for virgin zinc in the form of ingot.

1.2 It does not cover the requirements of secondary zinc and zinc for galvanizing which are covered in IS 4699 : 1984 'Refined secondary zinc ( first revision )' and IS 13229 : 1991 'Zinc for galvanising' respectively.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1387 : 1967</td>
<td>General requirements for the supply of metallurgical materials ( first revision )</td>
</tr>
<tr>
<td>1817 : 1961</td>
<td>Method of sampling non-ferrous metals for chemical analysis</td>
</tr>
<tr>
<td>2599 : 1983</td>
<td>Spectrographic analysis of high purity zinc and zinc base alloys for die casting ( first revision )</td>
</tr>
<tr>
<td>2600 : 1964</td>
<td>Methods of chemical analysis of high purity metals and zinc base alloys for die casting</td>
</tr>
<tr>
<td>8816 : 1978</td>
<td>Method for selection and preparation of samples for spectrographic analysis of zinc and zinc alloys</td>
</tr>
</tbody>
</table>

3 GRADES

This standard covers two grades of zinc namely Zn 99.99 and Zn 99.95.

4 SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of zinc shall conform to IS 1387 : 1967.

4.2 Zinc shall be supplied in the form of ingot. However if required by the purchaser, it may also be supplied in the form of slab, tile or plate.

5 MANUFACTURE

The virgin zinc shall be produced from the ore.

6 CHEMICAL COMPOSITION

6.1 The zinc shall conform to the chemical composition as specified in Table 1.

6.2 The chemical composition shall be determined either by the methods specified in IS 2600 : 1964 or IS 2599 : 1983 or any other established instrumental chemical method. In case of dispute, the procedure specified in IS 2600 : 1964 shall be the referee method.

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Grade Zn 99.99%</th>
<th>Grade Zn 99.95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc, Min</td>
<td>99.99</td>
<td>99.95</td>
</tr>
<tr>
<td>Lead, Max</td>
<td>0.003</td>
<td>0.025</td>
</tr>
<tr>
<td>Cadmium, Max</td>
<td>0.003</td>
<td>0.02</td>
</tr>
<tr>
<td>Iron, Max</td>
<td>0.003</td>
<td>0.01</td>
</tr>
<tr>
<td>Tin, Max</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Copper, Max</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>Thallium, Max</td>
<td>0.001</td>
<td>—</td>
</tr>
<tr>
<td>Indium, Max</td>
<td>0.0005</td>
<td>—</td>
</tr>
<tr>
<td>Total impurities, Max</td>
<td>0.01</td>
<td>0.05</td>
</tr>
</tbody>
</table>

NOTES

1 In the case of grade Zn 99.99 the impurity levels should be kept to the minimum to avoid intercrystalline corrosion particularly lead, cadmium, copper, indium and thallium.

2 Copper content shall not exceed 0.001 percent for the above grades when used for dry battery cans.

3 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 manufacturer and the purchaser, analysis may be required and limits established for elements not specified.

7 FREEDOM FROM DEFECTS

The surface of ingots slab, tile or plate shall not show oxide inclusions, slag or foreign matter and shall be clean. On fracture no inclusion or foreign matter shall appear at the sections of breakage.

8 MASS

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

8.2 When zinc is supplied in any form other than ingot, that is, slab, tile or plate, the mass of the same shall be mutually agreed to between the purchaser and the manufacturer.

9 SAMPLING

9.1 Unless otherwise agreed to between the purchaser and the manufacturer, five percent of
the ingots shall be selected from each consignment representing one grade of metal produced under uniform conditions of manufacture and offered for inspection at one time.

9.2 The method of preparing samples for chemical analysis and spectrographic analysis from ingots selected under 9.1 shall be in accordance with IS: 1817:1961 and IS 8816:1978 respectively.

10 RETEST

If the sample prepared under 9.2 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 test results satisfy the relevant requirements, the lot shall be accepted. Should either of the retest sample fail, the lot represented shall be deemed as not complying with this standard.

11 INSPECTION

11.1 All Inspection and testing of zinc 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.

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

12 MARKING

12.1 Each ingot, slab, tile or plate shall be legibly marked with:
   a) cast/lot number;
   b) grade of the material; and
   c) indication of source of manufacture.

12.2 Standard Marking

Each ingot, slab, tile or plate may also be marked with Standard Mark.

13 TEST CERTIFICATE

If required, the supplier shall provide test certificate for each consignment giving information like cast/lot number corresponding chemical composition, etc.
Bureau of Indian Standards

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This Indian Standard has been developed from Doc: No. MTD 9(3618).

Amendments Issued Since Publication

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<th>Date of Issue</th>
<th>Text Affected</th>
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<td>Eastern</td>
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<td>2337 8499, 2337 8561, 2337 8626, 2337 9120</td>
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<td>260 3843, 260 9285</td>
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<tr>
<td>Southern</td>
<td>C. I. T. Campus, IV Cross Road, CHENNAI 160 013</td>
<td>2254 1216, 2254 1442, 2254 2519, 2254 2315, 2832 7891, 2832 7892</td>
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<td>MUMBAI 1400 093</td>
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