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Indian Standard

SPECIFICATION FOR ZINC ANODES FOR ELECTROPLATING

(First Revision)

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

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0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 October 1985, after the draft finalized by the Metallic and Non-metallic Finishes Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This Indian Standard was first published in 1964. The present revision has been prepared keeping in view the latest developments in the field of electroplating and includes one more grade, on the basis of the nature of the bath.

0.2.1 In cyanide zinc baths, for bright dipped deposits, havy metal impurities in the zinc anodes are not suitable. Hence Grade I zinc anodes has been recommended.

0.3 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the requirements for zinc anodes used in electroplating.

2. CHEMICAL COMPOSITION

2.1 The zinc anodes, having any impurity present, shall not exceed the limits as given in Table 1, when determined in accordance with IS : 2599-1983† and IS : 2600-1964‡.

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*Rules for rounding off numerical values (*revised*).

†Methods of spectrographic analaysis of high purity zinc and zinc base alloys for die casting (*first revision*).

‡Methods of chemical analysis of high purity zinc and zinc base alloys for die casting.

TABLE 1 CHEMICAL COMPOSITION OF ZINC ANODES

(*Clause* 2.1)

GRADE I		GRADE II	
Constituent	Percent	Constituent	Percent
Zn	99·98 *Min*	Zn	99·95 *Min*
Pb	0·003 *Max*	Pb	0·03 *Max*
Hg	0·004 *Max*	Cd	0·02 *Max*
Cd	0·003 *Max*	Fe & Sn	0·01 *Max*
Pb+Cd+Hg+Fe	0·02 *Max*	Cu	0·006 *Max*

NOTE — Total impurities for Grade II shall not exceed 0·05 percent.

3. SHAPE AND SIZE

3.1 Zinc anodes shall be supplied in cast (preferably chill cast), rolled or extruded form or about 12 mm dia balls, as specified by the purchaser and of suitable shape and dimensions as agreed to between the manufacturer and the purchaser.

4. FREEDOM FROM DEFECTS

4.1 Anodes shall be clean, substantially free from cracks, wraps, inclusions, porosity, ragged edges, surface film such as rolling skin, and other defects which may adversely affect uniform dissolution while in use.

5. MARKING

5.1 Anodes shall be marked with grade, name, initials or trade-mark of the manufacturer, however, in case of anodes with hooks these markings shall be placed near the hooks.

5.1.1 Zinc anodes may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI 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 ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 Unless otherwise specified anodes shall be separated according to their sizes and shall be packed in such a manner as to ensure safe transportation to the point of delivery. Wherever practicable, one size of anodes shall be packed in a single container.

7. SAMPLING

7.1 Sampling of zinc anodes for chemical analysis shall be as agreed to between the manufacturer and the purchaser. A recommended sampling procedure for criterion for conformity is given in Appendix A.

APPENDIX A

(*Clause* 7.1)

SAMPLING PROCEDURE FOR ZINC ANODES FOR ELECTROPLATING

A-1. LOT

A-1.1 In any consignment, all the zinc anodes of the same type and manufactured under similar conditions of production shall be grouped together to constitute a lot.

A-2. SCALE OF SAMPLING

A-2.1 The number of anodes to be selected at random from the lot shall depend upon its size and shall be as given below:

No. of Anodes in the Lot	*No. of Anodes to be Selected*
Up to 25	2
26 „ 50	3
51 „ 100	4
101 „ 200	5
201 „ 300	7
301 and above	10

A-3. DRILLINGS

A-3.1 From each of the anodes selected in **A-2**, drillings shall be obtained from not fewer than three widely-spaced positions. These drillings shall be obtained as specified in **A-3.2** and drillings from each anode shall be stored separately.

A-3.2 Select a sharpened twist drill (6 to 10 mm drill should be suitable). Thoroughly clean the drill in light petroleum and wipe clean with muslin. Free the anode from any loose impurity by means of a steel wire brush. Bore the holes to approximately 10 percent of the thickness of the anode and discard the drillings therefrom. Place the anode on a clean tinned iron sheet and drill a further 80 percent of the thickness. Collect the drillings thus obtained and transfer to a clean container. If a larger quantity of drillings is required, more holes may be drilled as described above. Before analysing, the drillings shall be washed in light petroleum.

A-4. NUMBER OF TESTS

A-4.1 The drillings from each anode selected in accordance with **A-2.1** shall be separately tested for requirements mentioned in **2.**

A-5. CRITERION FOR CONFORMITY

A-5.1 From the test results, the average and the range shall be calculated for each of the characteristics, and the lot shall be considered as conforming to the requirements of this specification if the conditions mentioned below are satisfied for each characteristics:

a) If the maximum limit is specified, then (average + 0·6 range) shall be less than or equal to the limit specified.

b) If the minimum limit is specified, then (average — 0·6 range) shall be greater than or equal to the limit specified.

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