
INTERNATIONAL STANDARD



3816

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Zinc ingots — Selection and preparation of samples for spectrographic analysis

Zinc en lingots — Prélèvement et préparation des échantillons pour l'analyse spectrale d'émission

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3816 was drawn up by Technical Committee ISO/TC 18, *Zinc and zinc alloys*, and was circulated to the Member Bodies in July 1975.

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It has been approved by the Member Bodies of the following countries :

Austria	India	Romania
Belgium	Ireland	South Africa, Rep. of
Bulgaria	Japan	Spain
Czechoslovakia	Mexico	Turkey
France	Norway	United Kingdom
Germany	Poland	U.S.S.R.

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
Canada

Zinc ingots – Selection and preparation of samples for spectrographic analysis

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the requirements for the selection and preparation of samples for spectrographic analysis. Sampling may be carried out either by drilling or by sawing slices. Both methods of sampling provide a sample for possible analysis by other standardized methods.

This International Standard covers only the selection and preparation of samples from zinc ingots. Alternatively, the interested parties may agree to select samples of zinc in the liquid state during production.

2 REFERENCE

ISO/R 752, *Zinc ingots*.

3 SELECTION OF INGOTS

3.1 General

3.1.1 The samples shall be selected from batches, each batch being composed of ingots of the same composition, as specified in 3.1 of ISO/R 752.

3.1.2 Following agreement between the interested parties, each consignment may be divided into a series of batches, provided that they contain not less than 25 t. Any consignment of less than 25 t shall be regarded as a single batch.

3.2 Procedure

3.2.1 From each batch of ingots select, at random, one ingot from every 100 for 99,995 – 99,99 – 99,95 zinc and

one ingot from every 50 for 99,5 – 98,5 – 98 zinc. The number of ingots selected shall be not less than five.

NOTE – When the consignment is made up of less than five ingots, all shall be used in making the selection.

3.2.2 Carefully clean the surface of each ingot selected, to remove all dirt. Apply the consignee's mark by means of a die-stamp.

4 PROCEDURE FOR DRILLING, PELLETIZATION AND RECASTING

4.1 Sampling by drilling

Arrange the selected ingots flat, side by side, upside down with reference to the position occupied in the ingot mould, in groups of a maximum of ten ingots. Ensure that the casting marks are arranged in the same way for each of the ingots.

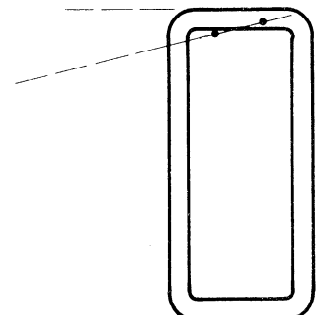
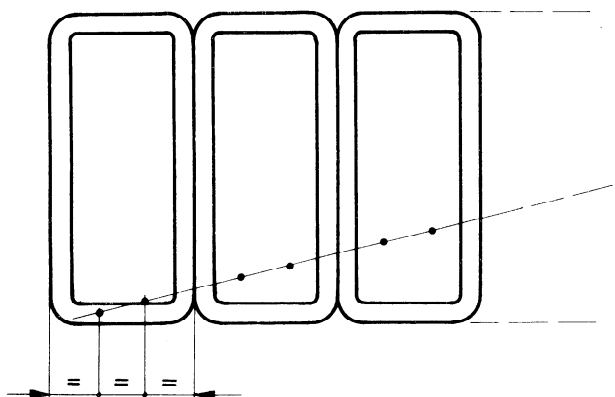
In each group, draw a diagonal across the rectangle thus formed.

With the aid of a tungsten carbide drill of approximately 15 mm diameter and without the use of a lubricant, drill each ingot right through at two points on the diagonal at distances from the long side of the ingot of one-third and two-thirds of the length of the short side (see the figure).

Carry out the drilling without heating the metal to the point of oxidation, in such a way as to obtain drillings of a thickness between 0,2 and 0,5 mm.

Collect all the drillings and break them up.

NOTE – In the case of batches less than 25 t, a sufficient number of drillings must be provided for the mass of the sample to amount to at least 1 kg.



4.2 Preparation and pelletization

Homogenize the sample by mixing, as completely as possible, all the drillings originating from the ingots from a single batch.

Take a mean sample having a mass of at least 1 kg.

Divide the mean sample into two portions, one of approximately 750 g, the other of approximately 250 g.

Place the 250 g portion in a suitable container. Close, label and seal the container. This portion is intended for the possible case of a check or arbitration analysis by other standardized methods.¹⁾

Compress the 750 g portion with the aid of a suitable press to form a small number of compact blocks. This operation shall be carried out within 24 h after the drilling.

4.3 Melting and casting

Melting may be carried out using a furnace heated by fuel oil, gas or electrical resistance or induction. In no case shall the temperature of the melt exceed 500 °C.

Melt in the shortest possible time, ensuring thorough mixing, and cast at least three samples immediately in appropriate moulds, in a form suitable for spectrographic analysis.

Remove from the moulds after cooling, fettle if necessary and mark the samples: one of these is given to each interested party, the third being kept for the check or arbitration analysis, in case this is required to be carried out using a spectrographic method.

5 PROCEDURE FOR SAWING SLICES, MELTING AND CASTING

5.1 Sampling by sawing slices

Arrange the selected ingots flat, side by side, upside down with reference to the position occupied in the ingot mould,

in groups of a maximum of ten ingots. Ensure that the casting marks are arranged in the same way for each of the ingots.

In each group, draw a diagonal across the rectangle thus formed.

Prepare a slice of metal by sawing through each ingot, following the line of this diagonal. The thickness of this slice shall be such that the total mass is at least 1 kg.

The saw shall first be cleaned and shall be free of adherent metal particles; the sawing shall be carried out without lubricant and without heating the metal to the point of oxidation.

5.2 Melting and casting

Melting of slices broken up appropriately may be carried out using a furnace heated by fuel oil, gas or electrical resistance or induction. In no case shall the temperature of the melt exceed 500 °C.

Melt in the shortest possible time, ensuring thorough mixing, and cast at least five samples immediately in appropriate moulds, in a form suitable for spectrographic analysis.

Remove from the moulds after cooling, fettle if necessary and mark the samples: two of these shall be given to each interested party, the fifth being kept for the check or arbitration analysis by a spectrographic method, if required.

5.3 Breaking up of the samples (5.2) with a view to possible analysis by other standardized methods

The sampling of chips for analysis by another standard method may be carried out by milling, turning or drilling to obtain a homogeneous and representative sample of mass not less than 50 g. In each case, a tungsten carbide-tipped tool shall be used.

1) ISO 3815, *Zinc and zinc alloys – Spectrographic analysis*, provides that if the specified criteria are not fully respected, either of the interested parties may reject the results obtained by spectrographic analysis and demand the use of other standardized methods.