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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1811

CHEMICAL ANALYSIS OF COPPER AND COPPER ALLOYS

SAMPLING OF COPPER REFINERY SHAPES

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1811, *Chemical analysis of copper and copper alloys – Sampling of copper refinery shapes*, was drawn up by Technical Committee ISO/TC 26, *Copper and copper alloys*, the Secretariat of which is held by the Detuscher Normenausschuss (DNA).

Work on this question led to the adoption of Draft ISO Recommendation No. 1811, which was circulated to all the ISO Member Bodies for enquiry in March 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Israel	Sweden
Canada	Italy	Switzerland
Chile	Korea, Rep. of	Turkey
Czechoslovakia	Netherlands	U.A.R.
France	New Zealand	United Kingdom
Germany	Norway	U.S.A.
Greece	Peru	Yugoslavia
Hungary	Poland	

The following Member Body opposed the approval of the Draft :

Finland

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

ISO Recommendation | R 1811 | August 1971

CHEMICAL ANALYSIS OF COPPER AND COPPER ALLOYS

SAMPLING OF COPPER REFINERY SHAPES

1. SCOPE

This ISO Recommendation relates to the preparation of samples of copper refinery shapes to determine whether the chemical composition of the latter complies with requirements as laid down in corresponding ISO Recommendations.

The refinery shapes covered in this ISO Recommendation are : cathodes, wire bars, cakes, slabs, billets, ingots and ingot bars.

2. CONSIGNMENTS AND LOTS

For the determination of the copper content, consignments up to a total mass of about 300 tons should be considered as a single lot, provided that the whole of the consignment is of the same charge and consists of uniform shapes. Consignments exceeding 300 tons in total mass should be divided into lots of approximately equal size.

If a consignment consists of several charges and/or different shapes, the consignment should be divided into lots according to charges and shapes.

The size of the lots depends on the charges and shapes forming the consignment concerned and/or on the arrangements made between the interested parties.

3. PROCEDURE

3.1 Conventional procedure

For sampling, take three pieces as gross samples from each of the lots (charges, shapes) according to section 2 unless otherwise agreed between the interested parties.

Remove surface contamination, if any, from the three pieces, and also remove any surface oxide layer from those areas where samples are to be taken. Drill holes completely through each piece, or, if the pieces are too thick, drill holes from two opposite sides to the centre. Do not use lubricants or similar substances. The drill should be of cemented carbide or other suitable hard metal*, and should not contain substantial quantities of iron. The drill should be 10 to 15 mm in diameter and be designed to produce drillings as small and short as possible. The drillings should have a metallic lustre and should be free of oxidation. Do not force the drilling to such an extent as to cause oxidation of the chips. If oxidised chips are obtained, reject all the chips from that hole and drill another hole adjacent to the original to provide an unoxidized sample.

Use a uniform hole pattern over the three pieces of the gross sample taken from each lot. In principle, distribute the holes in such a way that at least one hole is drilled within each 25 cm^2 of the surface area. Mix thoroughly the drillings obtained in this way.

If less than 2 kg (approximate value) of drillings are obtained per lot, increase the number of holes by whole multiples of the original number of holes. If, on the other hand, more than 2 kg (approximate value) of drillings are obtained per lot, reduce them to about 2 kg by quartering.

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* For example, bonded tungsten carbide drill or carbide tipped drill.

Divide the 2 kg sample into four samples for analysis of about 500 g each, place each in a bottle, and label, and seal. Send one sample to each of the interested parties, and retain one as a referee sample and another as a reserve sample, or distribute them according to the arrangements made between the interested parties.

In case no agreement can be reached when proceeding according to this clause, take the measures indicated in clause 3.2.

3.2 Procedure for investigation of claims

Each party should select a sample of three pieces from the consignment or lot to be investigated. Carry out the sampling in the presence of both parties by drilling five holes approximately 12 mm in diameter, at points equally distributed between the ends of the pieces. With wire bars, billets, ingots and ingot bars, these holes should be along a middle line, and with slabs and cakes, on a diagonal line drawn between opposite corners. Drill completely through each piece from top to bottom. Remove skin and any surface dirt. Do not use lubricant and do not force the drilling to such an extent as to cause oxidation of the chips. If oxidized chips are obtained, reject all the chips from that hole and drill another hole adjacent to the original to provide an unoxidized sample. In the case of sections more than 127 mm in thickness, drill from both top and bottom for a depth of not less than 51 mm in each direction instead of drilling completely through each piece, but in all other respects conduct the drilling as previously described. Cut up the resulting sample, mix and separate into four equal portions, and place each in a sealed package, one for the manufacturer, one for the purchaser, one for a referee, if necessary, and one as reserve.

Each party should make an analysis and if the results do not establish or dismiss the claim to the satisfaction of both parties, the third sample should be submitted to a referee laboratory, acceptable to both parties and whose decision should be taken as final.

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September 1971