INTERNATIONAL STANDARD

ISO 8007-1

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Carbonaceous materials used in the production of aluminium — Sampling plans and sampling from individual units —

Part 1:
Cathode blocks

Produits carbonés utilisés pour la production de l'aluminium — Plans d'échantillonnage et échantillonnage pour unités individuelles —

Partie 1: Blocs cathodiques

Reference number
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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8007-1 was prepared by Technical Committee, ISO/TC 47, *Chemistry*, Subcommittee SC 7, *Aluminium oxide, cryolite, aluminium fluoride, sodium fluoride, carbonaceous products for the aluminium industry*.

ISO 8007 consists of the following parts, under the general title, *Carbonaceous materials used in the production of aluminium — Sampling plans and sampling from individual units:*

— *Part 1: Cathode blocks*

— *Part 2: Prebaked anodes*

Part 3, which is in preparation, will give procedures for sampling sidewall blocks.

Introduction

Details of the sampling of shaped refractory products in general are given in ISO 5022, which gives the statistical basis for sampling plans for acceptance testing of a consignment or lot.

Cathode blocks used in the production of aluminium have specific requirements for sampling and, while the statistical basis for sampling given in ISO 5022 applies, further or modified requirements also apply.

Carbonaceous materials used in the production of aluminium — Sampling plans and sampling from individual units —

Part 1:
Cathode blocks

1 Scope

This part of ISO 8007 specifies procedures for sampling consignments of cathode blocks used in the production of aluminium and for taking test samples from individual blocks.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8007. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8007 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5022:1979, *Shaped refractory products — Sampling and acceptance testing.*

ISO 6206:1979, *Chemical products for industrial use — Sampling — Vocabulary.*

3 Definitions

For the purposes of this part of ISO 8007, the definitions given in ISO 5022 and ISO 6206 apply.

4 Apparatus

Use suitable core-drilling equipment with cutting edges preferably coated with diamond or another extremely hard material.

5 Taking test samples from individual cathodes

5.1 Procedure

Cathode blocks shall be sampled, by core drilling or sawing, in accordance with the provisions of ISO 5022 and with the additional requirements given in 5.2, 5.3 and 5.4 of this part of ISO 8007. Examples of sample locations are given in Figures 1 and 2.

Cathode blocks produced with a collector-bar slot shall be considered separately from those produced without a slot when determining the locations from which test sample(s) will be taken.

The locations from which test samples will be taken shall be agreed between the seller and buyer in accordance with 5.2 or 5.3.

5.2 Cathode blocks produced without a collector-bar slot

The positions from which test samples can be drilled from cathode blocks produced without a collector-bar slot are restricted because, after sampling, the cathode block will be used as part of an electrolysis cell. Test samples shall therefore be taken from the part of the cathode block that will be machined out as the slot. Sampling shall not weaken the cathode block or increase the likelihood of premature failure. Extreme care shall be exercised when taking vertically drilled samples. Examples of positions from which test samples can be taken are shown in Figure 1.

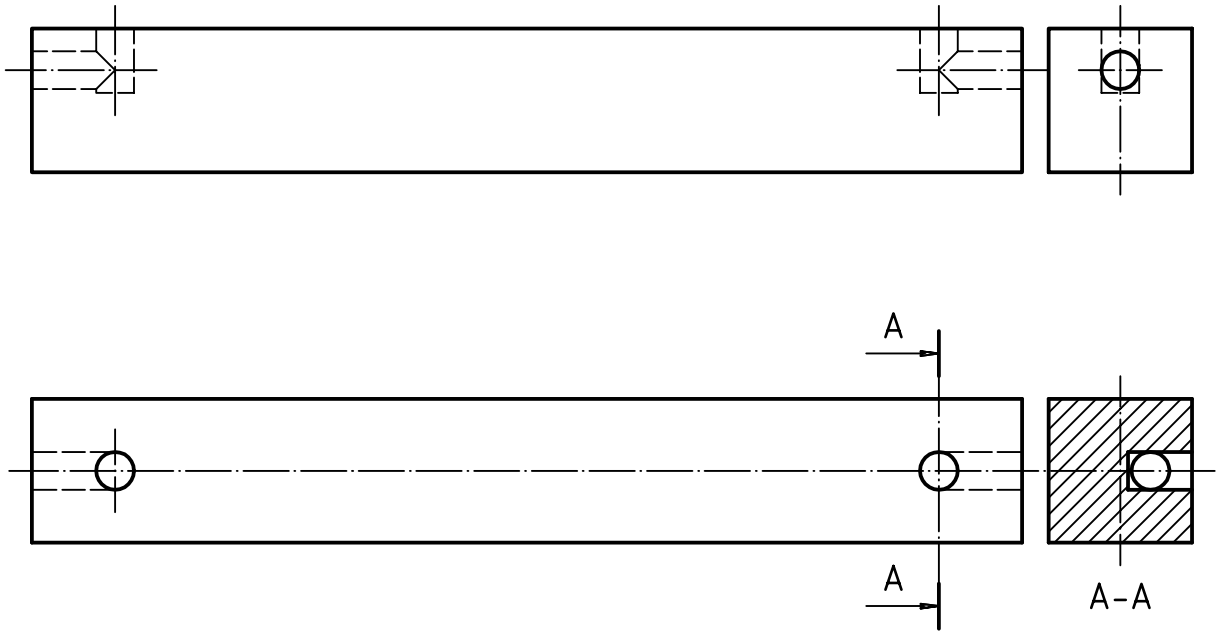


Figure 1 — Examples of sampling-point locations for cathode blocks without a slot

5.3 Cathode blocks produced with a collector-bar slot

Consignments may be delivered with a proportion of the cathode blocks manufactured to a length that is greater than that which will ultimately be required for use. This is indicated in Figure 2 as the "extra length". The seller and buyer shall agree on the proportion of extra-length cathode blocks in a consignment.

NOTE It is strongly recommended that such an agreement to supply a proportion with extra length is made. Sampling from the extra-length part of the cathode block is preferred because the part of the cathode block that has been drilled will ultimately be machined away when the block is cut to final length.

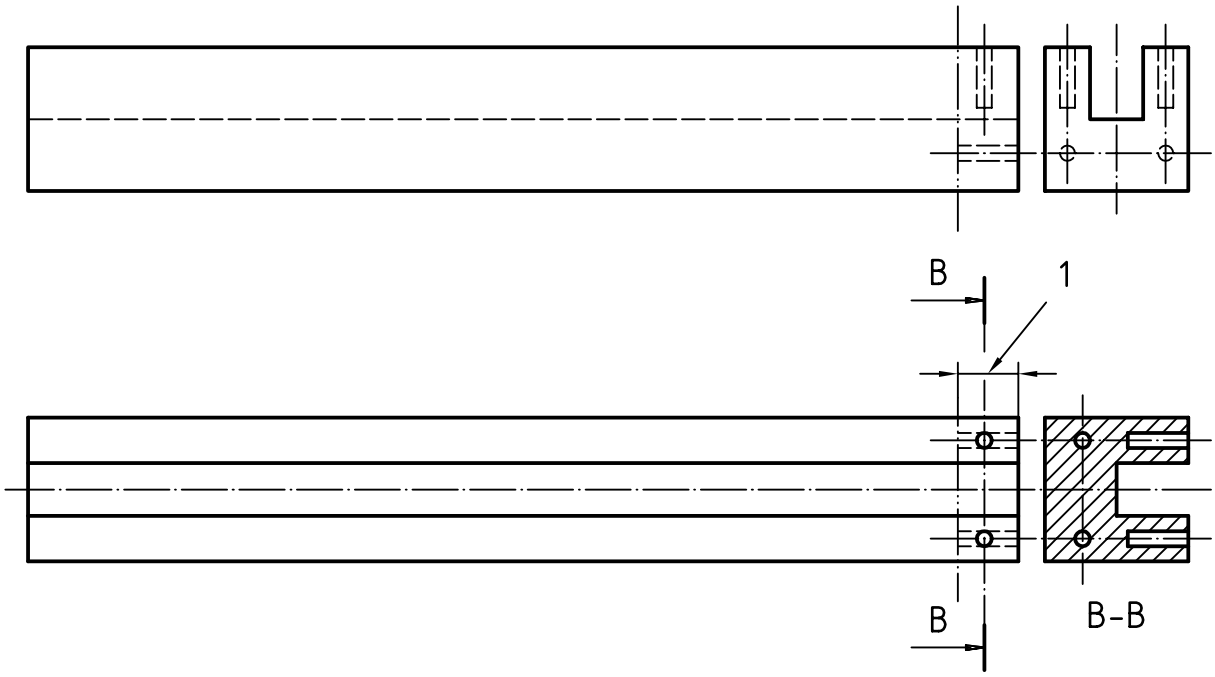
When sampling extra-length cathode blocks, test samples shall be taken horizontally and vertically, spreading the sampling locations evenly over the entire cross-section of the block.

When no extra-length cathode blocks are available, test samples shall be taken horizontally and vertically, but the options are more restricted.

Sampling shall not weaken, contaminate or cause the destruction of the block. Extreme care shall be exercised when taking vertically drilled samples.

The availability or non-availability of extra-length cathode blocks for sampling purposes shall be reported under item e) of the sampling report.

Examples of positions from which test samples can be taken are shown in Figure 2.



Key

1 Extra length

Figure 2 — Examples of sampling-point locations for cathode blocks with a slot

5.4 Dimensions of test samples

Choose the dimensions of each test sample according to the test to be carried out. The smallest dimension (usually the diameter) shall be at least three times the maximum particle size of the dry aggregate.

Refer to the International Standards relating to the tests to be carried out to ensure that the test samples taken from the cathode block are of suitable dimensions. Where a standard does not specify the dimensions of the test pieces, a diameter of 30 mm or 50 mm is recommended, as well as a length which is at least 1,5 times the diameter.

The cross-section of the test samples shall be circular. If parallel-sided test pieces are to be prepared from the test samples, the diameter shall be sufficient to allow this. Report the dimensions of the test samples under item g) of the sampling report.

6 Sampling report

The sampling report shall include the following:

a) the names of the producer and customer;

b) the number and reference marking of the batch(es);

c) a reference to this part of ISO 8007, i.e. ISO 8007-1;

d) the date and place of sampling;

e) complete details of the sampling plan operated;

f) the proportion and number of extra-length cathode blocks, if available for sampling;

g) a sketch showing the locations of the sampling points and the direction of sampling (horizontally or vertically) (examples are given in Figures 1 and 2);

h) the dimensions of the test samples;

i) details (name and job title) of the person(s) carrying out the sampling.

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