INTERNATIONAL STANDARD

ISO 8007-2

First edition
1999-08-01

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

Part 2:
Prebaked anodes

Produits carbonés utilisés pour la production de l'aluminium — Plans d'échantillonnage et échantillonnage pour unités individuelles — Partie 2: Anodes précuites

Reference number
ISO 8007-2:1999(E)

Contents

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Printed in Switzerland

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 8007-2 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.

Annex A of this part of ISO 8007 is for information only.

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

Part 2:
Prebaked anodes

1 Scope

This part of ISO 8007 specifies procedures for the creation and execution of a sampling plan for prebaked anodes from a large consignment or from a batch.

NOTE The term "batch" can be substituted by the term "lot" if desired.

This part of ISO 8007 also specifies the preferred locations for taking test samples from individual anodes.

Cathode blocks and prebaked anodes are considered separately. Procedures for sampling cathode blocks are given in ISO 8007-1.

For advice on safety, the reader is referred to ISO 3165:1976, *Sampling of chemical products for industrial use — Safety in sampling.*

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 3534 (all parts), *Statistics — Vocabulary and symbols*.

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

3 Definitions

For the purposes of this part of ISO 8007, the definitions given in ISO 3534 (all parts) and ISO 5022 apply.

4 Sampling plans for large consignments or for batches

4.1 General

The sampling plan may be defined in terms of an acceptable quality level (AQL). It may be applied when the parties concerned have agreed to do so and have therefore, by common consent, made a choice between the various options described in this part of ISO 8007. The parties shall also agree on the various properties to be measured (for example, density and electrical resistivity) so that the sampling plan is suitable for its ultimate purpose of providing representative samples for subsequent testing.

It is also possible to apply the procedures given in this part of ISO 8007 while modifying, by prior agreement between the parties concerned, the recommended values given in the sampling plans (see Tables 1, 2, 3 and 4).

The efficiency of a sampling plan depends solely on the number of sampled units, n, whatever the size of the batch, N, provided that n/N is less than 10 %. Tables 1, 2, 3 and 4 shall be used to determine, on the basis of the required efficiency, what the sample size, n, shall be.

If experience shows that the quality of the manufacturer's production corresponds to the agreements, it is possible, when batches of the same quality are frequently subjected to acceptance procedures, that a plan with lower efficiency be chosen. This would imply the use of a smaller sample size, n.

If later experience shows that the quality of production fails to correspond to the agreements when judged against pre-set criteria, then it is necessary to return to the original, higher efficiency, sampling plan.

Alternatively, a sampling plan may be defined in terms of average test values together with a limitation on the range of test values instead of, or in addition to, acceptable quality levels (AQLs).

Statistical process control (SPC) or statistical quality control (SQC) charts are recommended tools when operating the sampling plan.

4.2 Single unit of product

The single unit of product shall be agreed between seller and buyer. It may be a single prebaked anode or it may be 1 t of anodes.

4.3 Drawing up a sampling plan based on acceptable quality level (AQL)

Before the sampling plan can be drawn up from the tables, it is necessary to agree on the parameters given below:

a) The acceptable quality level, i.e. the the poorest quality that can be considered acceptable as the process average.

b) Whether normal or tightened inspection is to be used. This is decided by studying the sampling results for the last few batches. The rules for switching from one kind of inspection to another are given in 4.5.2.

c) The batch size, which may be the amount produced in a production batch (or lot) or, preferably, the amount produced or received in a one-month time period.

4.4 Operating the sampling plan based on acceptable quality level (AQL)

4.4.1 Table 1 gives suitable values for the three parameters described in 4.3. Buyer and seller may replace the recommended values with their own values if required. This shall be included in the sampling report [see 6 c)].

Table 1 — Recommended values for operating the sampling plan

Acceptable quality level (AQL)	2,5
Normal or tightened inspection	Normal
Batch size	Tonnes per month of production or number of units of product in batch or lot

4.4.2 Refer to Table 2 and, using the agreed values from Table 1, find the correct sample-size code-letter (SSCL).