
**Carbonaceous materials used in the
production of aluminium — Cathode
— Cathode abrasion testing**



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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 226, *Materials for the production of primary aluminium*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Wear of carbon lining materials is encountered in any application in which there are moving parts. Abrasive wear is the process whereby a hard-rough surface contacts and moves over another surface, so that one or both are subjected to attrition. This effect is of importance to cathodes as it may reduce the life of an aluminium pot.

Carbonaceous materials used in the production of aluminium — Cathode — Cathode abrasion testing

1 Scope

This document specifies a method for the determination of the resistance to physical abrasion of a cathode sample.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8007-1, *Carbonaceous materials used in the production of aluminium — Sampling plans and sampling from individual units — Part 1: Cathode blocks*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Principle

A cathode core sample is placed in a grinding or polishing apparatus equipped with abrasive paper for 30 s or 60 s, depending on the cathode grade. The opposite direction of rotation of the head and the base of the apparatus causes the sample to be abraded. The height of the sample is measured before and after the test and then the abrasion is calculated from the loss of sample height. The result is given in per cent.

5 Apparatus

5.1 Caliper, with a measuring range of 0 mm to 150 mm and an accuracy of 20 µm for dimensions ≤ 100 mm.

5.2 Grinding or polishing apparatus, equipped with a sample holder and a powerhead. It should be capable of maintaining the abrasive disc speed at 200 rpm and the head speed at 100 rpm. The head force applied on each sample is 50 N.

5.3 Abrasive disc, silicon carbide SiC type, grit size 60.

6 Sampling

Sample the cathode blocks in accordance with ISO 8007-1. In order to achieve representative test results, a core sample with diameter $(50 \pm 0,2)$ mm and length $(20 \pm 0,2)$ mm shall be taken.