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**Abrasive grains and crude — Chemical  
analysis of silicon carbide**

*Abrasifs en grains ou en roche — Analyse chimique du carbure de  
silicium*



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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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# Contents

Page

Foreword.....	iv
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms and definitions.....</b>	<b>1</b>
<b>4 Analysis of surface impurities.....</b>	<b>1</b>
4.1 General.....	1
4.2 Sampling.....	1
4.3 Preparation of sample.....	1
4.3.1 Fine grains.....	1
4.3.2 Coarse Grains.....	2
4.3.3 Crude.....	2
4.4 Determination of surface carbon ( $C_{\text{surf/free}}$ ).....	3
4.4.1 Principle.....	3
4.4.2 Detection by gravimetric method.....	3
4.4.3 Detection by infrared absorption (IR).....	5
4.5 Determination of surface silicon dioxide ( $\text{SiO}_{2\text{surf}}$ ).....	6
4.5.1 General.....	6
4.5.2 Detection by HF/KF dissolving reactions.....	6
4.5.3 Hydrofluoric acid loss.....	8
4.5.4 Molybdenum blue spectrophotometry.....	9
4.6 Determination of surface silicon ( $\text{Si}_{\text{surf}}$ ).....	11
4.6.1 General.....	11
4.6.2 Hydrogen gas volumetric method.....	12
4.6.3 Silver displacement method.....	14
4.6.4 Molybdenum blue spectrophotometry.....	16
4.7 Determination of loss on acid treatment (LAT).....	17
4.7.1 Principle.....	17
4.7.2 Reagents.....	17
4.7.3 Apparatus.....	17
4.7.4 Procedure.....	17
4.7.5 Expression of results.....	17
4.8 Determination of total carbon ( $C_{\text{total}}$ ).....	18
4.8.1 Principle.....	18
4.8.2 Detection by gravimetric method.....	18
4.8.3 Detection by infrared absorption (IR).....	19
4.9 Determination of surface iron ( $\text{Fe}_{\text{surf}}$ ), surface aluminium ( $\text{Al}_{\text{surf}}$ ), surface calcium ( $\text{Ca}_{\text{surf}}$ ) and surface magnesium ( $\text{Mg}_{\text{surf}}$ ).....	19
4.9.1 Principle.....	19
4.9.2 Atomic absorption spectrometry method (AAS).....	19
4.9.3 Induced coupled plasma method (ICP).....	19
4.10 Calculation of the content of residual silicon carbide ( $\text{SiC}_R$ ).....	19
4.10.1 Residual SiC from LAT.....	19
4.10.2 Residual SiC from analysed impurities.....	20
4.10.3 Residual SiC from total and free carbon.....	20
<b>5 Test report.....</b>	<b>21</b>

## 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.

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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This second edition cancels and replaces the first edition (ISO 9286:1997), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the Scope has been shortened so that it only contains the subject of the document and the aspects covered;
- the structure of document has been revised in its entirety due to several new subclauses;
- new [Clause 3](#) "Terms and definitions" has been added;
- [4.3](#) (former 3.2) "Preparation of sample" has been revised;
- [4.4](#) (former 3.4) "Determination of surface carbon ( $C_{\text{surf/free}}$ )" has been revised, consisting of [4.4.2](#) "Detection by gravimetric method" and [4.4.3](#) "Detection by infrared absorption (IR)" with direct and indirect method;
- [4.5](#) (former 3.6) "Determination of surface silicon dioxide ( $\text{SiO}_{2\text{surf}}$ )" has been revised, consisting of [4.5.2](#) "Detection by HF/KF dissolving reactions" and [4.5.3](#) "Hydrofluoric acid loss"; and [4.5.4](#) "Molybdenum blue spectrophotometry" has been added;
- [4.6](#) (former 3.3) "Determination of surface silicon ( $\text{Si}_{\text{surf}}$ )" has been revised; and [4.6.3](#) "Silver displacement method" and [4.6.4](#) "Molybdenum blue spectrophotometry" have been added;
- former 3.7 "Calculation of the content of residual silicon carbide ( $\text{SiC}_R$ )" has been moved to [4.10](#);
- former 3.8 and 3.9 for the determination of surface iron have been revised and moved to [4.9](#), consisting of the following detection methods: atomic absorption spectrometry (AAS) and induced coupled plasma (ICP);

- former 3.10 and 3.11 for the determination of surface aluminium oxide have been deleted; and determination of surface aluminium has been added to [4.9](#);
- former 3.12 for the determination of surface calcium oxide and surface magnesium oxide has been deleted; and determination of surface calcium and surface magnesium has been added to [4.9](#);
- former 4.3 "Determination of total carbon" has been revised by adding the detection by infrared absorption (IR) and has been moved to [4.8](#);
- former Annexes A and B have been deleted.

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](http://www.iso.org/members.html).



# Abrasive grains and crude — Chemical analysis of silicon carbide

## 1 Scope

This document specifies the chemical analysis of silicon-carbide-based abrasive grains and crudes. It is applicable for the determination of the surface impurities of abrasives grains and the determination of the SiC content of crushed crude when the silicon carbide content is greater than 95 % (mass fraction).

## 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 9138, *Abrasive grains — Sampling and splitting*

## 3 Terms and definitions

No terms and definitions are listed in this document.

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

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

## 4 Analysis of surface impurities

### 4.1 General

This clause applies to the determination of the surface impurities of abrasive grains and crude in their original grain size and state.

All reagents used for the analysis specified in this document shall be of minimum p.a. (pro analysis) quality.

### 4.2 Sampling

The sample shall be taken from the batch of SiC grains to be analysed according to the method specified in ISO 9138.

### 4.3 Preparation of sample

#### 4.3.1 Fine grains

This applies to the determination of the surface impurities of abrasive grains in their original grain size and state for grain sizes F500 and finer as well as for grain sizes P1500 and finer. The surface chemical analysis shall be carried out on unprocessed abrasive grains.

The sample shall be dried at  $(110 \pm 5) ^\circ\text{C}$  until constant mass is obtained.