INTERNATIONAL STANDARD

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Abrasive grains — Determination of bulk density —

Part 1: Macrogrits

Grains abrasifs — Détermination de la masse volumique apparente — Partie 1: Macrograins

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Foreword

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The main task of technical committees is to prepare International Standards. 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.

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.

ISO 9136-1 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This first edition of ISO 9136-1 cancels and replaces ISO 9136:1989, the contents of which have been technically revised.

ISO 9136 consists of the following parts, under the general title *Abrasive grains — Determination of bulk density*:

— *Part 1: Macrogrits*

— *Part 2: Microgrits*

Abrasive grains — Determination of bulk density —

Part 1: Macrogrits

1 Scope

This part of ISO 9136 specifies a test method for the determination of the bulk density of bonded and coated abrasive macrogrits.

2 Normative references

The following referenced documents are indispensable for the application 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 6344-1, *Coated abrasives — Grain size analysis — Part 1: Grain size distribution test*

ISO 8486-1, *Bonded abrasives — Determination and designation of grain size distribution — Part 1: Macrogrits F4 to F220*

ISO 9136-2, *Abrasive grains — Determination of bulk density — Part 2: Microgrits*

3 Definitions

For the purposes of this document, the definitions given in ISO 6344-1, ISO 8486-1 and ISO 9136-2 apply.

4 Apparatus

4.1 General

The test apparatus is illustrated in Figure 1 and Annex A. It consists of the elements listed in 4.2 to 4.6.

4.2 Stand

An exact description of the stand is not necessary. The only requirement is that it be capable of holding the funnel in a vertical position so that the dimension between the outlet of the funnel and the bottom of the measuring cylinder is 138 ± 1 mm.

4.3 Funnel

The slope of the funnel shall be such that fine grains will not adhere to the sides. By preference, the funnel shall be made of stainless steel with smooth inside seams. Its dimensional characteristics (see also Figure 1) shall be as follows:

— total height of funnel: 240 mm;

— diameter of top: 160 mm;

— inside diameter of the cylindrical outlet: 20 mm ± 0,5 mm;

— height of the cylindrical outlet area: 40 mm ± 1 mm.

4.4 Funnel release valve

An exact description of the funnel release valve is not necessary. The only requirement is that quick opening of the valve be ensured. Figure 1 illustrates an example of a swinging stopper release valve.

4.5 Measuring cylinder

The measuring cylinder is cylindrical with a polished inner surface and features a volume V of (200 ± 0,5) cm^3; this volume is determined by an inner diameter of 64 mm and an inner height of 62,2 mm. The measuring cylinder is placed centrally under the stream emmanating from the vibration channel.

The height of fall of the macrogrits to be tested (from the upper edge of the channel bottom to the bottom of the measuring cylinder) shall be (138 ± 1) mm.

4.6 Overspill tray

The overspill tray with a flat bottom serves as a collector for overflowing macrogrits. The measuring beaker is placed in the drip tray.

5 Calibration of the measuring cylinder

Calibration of the measuring cylinder can be achieved by the following two methods.

The volume of the measuring cylinder shall be checked regularly.

Method A

The dry, empty measuring cylinder is weighed together with a flat glass plate. The measuring cylinder is filled with water and the glass plate placed on the cylinder in such a way that no air bubbles are present. The glass plate is held in this position, the surplus water removed and the total weight determined.

The volume is calculated as follows:

$$V = \frac{m_0}{\rho_{H_2O}} \qquad (1)$$

where

V is the volume of the measuring cylinder, in cubic centimetres;

m_0 is the mass of water, in grams;

ρ_{H_2O} is the density of water, in grams per cubic centimetre, at the measuring temperature, see Table 1.

Method B

The volume is calculated by measuring the internal dimensions of the cylinder (margin of error 0,001 mm).