
Abrasive products — Checking the grain size of superabrasives

*Produits abrasifs — Vérification de la dimension des grains de
superabrasifs*

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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 2.

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 6106 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 5, *Grinding wheels and abrasives*.

This third edition cancels and replaces the second edition (ISO 6106:2005), which has been technically revised.

Significant changes against the previous edition are the following:

- a) the English title has been editorially improved;
- b) the requirements for the sampling techniques in [4.3](#) have been specified in more detail;
- c) there has been a minor technical change in the requirements for the sieving procedure in [6.3](#);
- d) an editorial error in [Table 2](#) and [Table 3](#) was corrected;
- e) in [Table 2](#), smaller grain designations, i.e. 39 and 33, have been included;
- f) in [Table 3](#), larger grain designations, i.e. 302, 357 and 712, have been included;
- g) in [Table 2](#), undersize limiting sieves have been changed for grain designations 46 and 54.

Abrasive products — Checking the grain size of superabrasives

1 Scope

This International Standard specifies a method for determining or checking the grain size of superabrasives (diamond or cubic boron nitride) as used for the manufacture of industrial products, such as grinding wheels and saws. It is applicable to grain size designations as defined in [Tables 2](#) and [3](#).

This International Standard describes the grain size designations, the size limits, the sieves for use in determining them and the procedure to be adopted for checking the grain size exclusive of any coating.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 grain

product whose size is defined by sieving

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3.2 grain size

designated on-size fraction located between the upper and a lower control sieve as specified

Note 1 to entry: The grain may include oversize and undersize factors as specified.

4 Apparatus

4.1 Sieving machine

The test shall only be carried out with test-sieving machines giving reproducible and comparable results, e.g. test-sieving machines in accordance with ISO 9284.

4.2 Sieves

Electroformed sieves with standard 200 mm or 75 mm diameter stainless frame nested sieves, half-height (nominal 25 mm) shall be used. A cover and pan are required. The precision electroformed sieves with square apertures, which shall be used in the size checking procedure described in this International Standard, shall have a supporting grid of 2,2 lines per centimetre bonded to the top surface of the sieve. Unless this is done, the superabrasive slides over the smooth top surface of the sieve and sieving efficiency is drastically reduced. It is the user's responsibility to ensure continuous compliance of the test sieve to the aperture sizes which shall be in accordance with [Table 1](#).

Table 1 — Aperture sizes and ruling lines of electroformed sieves

Aperture size	Ruling line		Aperture size	Ruling line
µm	cm		µm	cm
1 830	4,97		227	30,3
1 530	5,8		213	30,3
1 280	6,5		197	35,8
1 080	7,9		181	35,8
915	8,5		165	39,4
850	9,2		151	43,7
770	10,9		139	46,3
710	11,8		127	49,2
645	12,2		116	49,2
600	13,4		107	59,1
541	15,0		97	65,6
505	15,7		90	65,6
455	16,4		85	71,6
425	17,9		75	78,7
384	18,7		65	78,7
360	20,3		57	87,5
322	21,9		49	98,4
302	24,6		41	98,4
271	26,2		32	98,4
255	26,2		28	98,4

4.3 Sampling the batch

Appropriate sampling techniques shall be used to ensure that the sample taken is representative of the batch tested.

CAUTION — Care should be taken not to pour or scoop sample the material without first ensuring that the material is thoroughly blended. Sample splitters like riffing may be used for small samples, but this might not always be viable for very large batches as the entire would need to be riffled (numerous times) before the required sample size is obtained.

4.4 Balance

A laboratory balance shall be used which has a precision of at least 0,01 g if using 200 mm sieves or at least 0,001 g if using 75 mm sieves.

4.5 Timer

A timer with an accuracy of ± 1 % in 15 min shall be used.