
**Preparation of steel substrates before
application of paints and related
products — Test methods for non-
metallic blast-cleaning abrasives —**

Part 2:

**Determination of particle size
distribution**

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*Préparation des subjectiles d'acier avant application de peintures
et de produits assimilés — Méthodes d'essai pour abrasifs non
métalliques destinés à la préparation par projection —
Partie 2: Analyse granulométrique*

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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.

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).

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).

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.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 12, *Preparation of steel substrates before application of paints and related products*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paint and Varnishes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11127-2:2011), which has been technically revised.

The main changes to the previous edition are as follows:

- the use of a sample divider or riffler has been introduced in [Clause 6](#);
- [Annex A](#) has been updated.

A list of all parts in the ISO 11127 series can be found on the ISO website.

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.

Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives —

Part 2: Determination of particle size distribution

1 Scope

This document specifies a method for the determination of the particle size distribution of non-metallic blast-cleaning abrasives by sieving.

This document is a part of the ISO 11127 series dealing with the sampling and testing of non-metallic abrasives for blast-cleaning.

The types of non-metallic abrasive and requirements for each are contained in the ISO 11126 series.

The ISO 11126 and ISO 11127 series have been drafted as a coherent set of International Standards on non-metallic blast-cleaning abrasives. Information on all parts of both series is given in [Annex A](#).

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 565:1990, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 11127-1, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 1: Sampling*

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 Apparatus

Ordinary laboratory apparatus and glassware, together with the following.

4.1 Test sieves, circular, with a height of between 25 mm and 50 mm and a sieving area approximately 200 mm in diameter, made of woven metal wire cloth. The frame of the test sieves shall be made of metal. The range of nominal mesh apertures depends on the specification for the product to be tested and shall comply with the requirements of ISO 565:1990, Table 2, as indicated in [Table 1](#). The sieves shall have square openings. A lid and a residue pan shall also be provided.

NOTE Smaller-diameter sieves might not produce accurate separation of the sample.
Sieves shall be regularly checked for calibration and freedom from retained abrasive.

Table 1 — List of sieve mesh apertures to be used

| mm | mm | mm | mm |
|-------|-------|-------|------|
| 0,036 | 0,112 | 0,355 | 1,18 |
| 0,040 | 0,125 | 0,400 | 1,25 |
| 0,045 | 0,140 | 0,450 | 1,40 |
| 0,050 | 0,160 | 0,500 | 1,60 |
| 0,056 | 0,180 | 0,560 | 1,80 |
| 0,063 | 0,200 | 0,630 | 2,00 |
| 0,071 | 0,224 | 0,710 | 2,24 |
| 0,080 | 0,250 | 0,850 | 2,50 |
| 0,090 | 0,280 | 0,900 | 2,80 |
| 0,100 | 0,300 | 1,00 | 3,15 |

SOURCE: ISO 565:1990, R20/3 and R20 sizes.

4.2 Rotating sieve machine, for agitating the sieves with the sample at a frequency of rotation of approximately 300 min⁻¹ and provided with a timer for time periods of up to 30 min in 1 min intervals.

NOTE Other sieve machines can be used provided the same results are obtained.

4.3 Balance, capable of weighing to an accuracy of 0,1 g.

4.4 Sample divider, riffler or other equipment suitable for splitting a sample into parts.

5 Sampling

Take a representative sample of the product to be tested, as described in ISO 11127-1.

6 Procedure

6.1 Carry out the determination in duplicate.

6.2 Using the sample divider (4.4), obtain a test portion of 100 g to 200 g.

NOTE Increased test portion mass could lead to inaccurate separation.

6.3 Using a balance (4.3), weigh the test portion to the nearest 0,1 g (m_0).

6.4 Use all the test sieves listed against the grade under test as given in the grade and screening specification table in the appropriate part of the ISO 11126 series (see Annex A) or, in the case of materials not covered by the ISO 11126 series, as otherwise agreed between the interested parties.

6.5 Arrange the test sieves (4.1) with the largest aperture on the top, progressing to the smallest aperture at the bottom, with a pan to catch any abrasive that falls through the finest sieve.

6.6 Place the test portion in the top sieve.

6.7 Place a cover over the top sieve.

6.8 Place the stack of sieves with the test portion in the rotating sieve machine (4.2) and operate the sieve machine for 15 min.

6.9 Carefully remove the top sieve from the stack and transfer any retained abrasive on to the balance pan. Brush the sieve clean of any trapped abrasive and add this to the balance pan. Weigh to the nearest 0,1 g and record this result (m_1). Repeat for all the sieves in the stack, including the retaining pan.

7 Expression of results

For each test sieve used, and for the residue in the pan, calculate the percentage of material retained, R , expressed as a percentage by mass, using [Formula \(1\)](#).

$$R = \frac{m_1}{m_0} \times 100 \quad (1)$$

where

m_0 is the mass, in grams (g), of the test portion;

m_1 is the mass, in grams (g), of the residue on the sieve (or in the pan).

If the duplicate determinations differ by more than 10 % (relative to the higher result), repeat the procedure described in [Clause 6](#).

Calculate the mean of two valid determinations and report the result to the nearest 1 %.

8 Test report

The test report shall contain at least the following information:

- a) all details necessary to identify the product tested, in accordance with the appropriate part of the ISO 11126 series (see [Annex A](#)), if applicable;
- b) a reference to this document (i.e. ISO 11127-2:2020);
- c) the result of the test;
- d) any deviation from the test method specified;
- e) any unusual features observed;
- f) the date of the test;
- g) the name of the person who carried out the test.

Annex A (informative)

International Standards for non-metallic blast-cleaning abrasives

Requirements and test methods for non-metallic blast-cleaning abrasives are contained in the ISO 11126 series and the ISO 11127 series, respectively.

The ISO 11126 series consists of the following parts under the general title:

Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives

- *Part 1: General introduction and classification*
- *Part 3: Copper refinery slag*
- *Part 4: Coal furnace slag*
- *Part 5: Nickel slag*
- *Part 6: Iron and steel slags*
- *Part 7: Fused aluminium oxide*
- *Part 8: Olivine*
- *Part 9: Staurolite*
- *Part 10: Almandite garnet*

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The ISO 11127 series consists of the following parts under the general title:

Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives

- *Part 1: Sampling*
- *Part 2: Determination of particle size distribution*
- *Part 3: Determination of apparent density*
- *Part 4: Assessment of hardness by a glass slide test*
- *Part 5: Determination of moisture*
- *Part 6: Determination of water-soluble contaminants by conductivity measurement*
- *Part 7: Determination of water-soluble chlorides*
- *Part 8: Field determination of water-soluble chlorides*

Bibliography

- [1] ISO 11126(all parts), *Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives*
- [2] ISO 11127(all parts), *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives*

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