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

Part 2 (ISO 11127-2:1993)

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



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.

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.

International Standard ISO 11127-2 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*.³

ISO 11127 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: *Determination of abrasive mechanical properties*

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At the time of publication of this part of ISO 11127, part 8 was in course of preparation.

Annex A of this part of ISO 11127 is for information only.

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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 is one of a number of parts of ISO 11127 dealing with the sampling and testing of non-metallic abrasives for blast-cleaning.

The types of non-metallic abrasive and requirements on each are contained in the various parts of ISO 11126.

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.

This part of ISO 11127 specifies a method for the determination of the particle size distribution of non-metallic blast-cleaning abrasives by sieving.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11127. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11127 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 11127-1:1993, *Preparation of steel substrates before application of paints and related products —*

Test methods for non-metallic blast-cleaning abrasives

Part 1: Sampling.

3 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

3.1 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 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 table 2 in ISO 565:1990 as indicated in table 1. The sieves shall have square openings. A lid and a residue pan shall also be provided.

NOTE 1 Smaller-diameter sieves may 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 (from ISO 565:1990; R20/3 and R20 sizes)

mm	mm	mm	mm
0,036	0,112	0,355	1,12
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	0,800	2,50
0,090	0,280	0,900	2,80
0,100	0,315	1,00	3,15

3.2 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 2 Other sieve machines may be used provided the same results are obtained.

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

4 Sampling

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

5 Procedure

Carry out the determination in duplicate.

5.1 Weigh out, to the nearest 0,1 g, a test portion of approximately 300 g of the sample (m_0).

5.2 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 ISO 11126 (see annex A) or, in the case of materials not covered by ISO 11126, as otherwise agreed between the interested parties.

5.3 Arrange the test sieves (3.1) with the largest-aperture sieve on the top and progress to the smallest aperture at the bottom, with a pan to catch any abrasive that falls through the finest sieve.

5.4 Place the test portion in the top sieve.

5.5 Place a cover over the top sieve.

5.6 Place the stack of sieves with the test portion in the rotating sieve machine (3.2) and operate the sieve machine for 15 min.

5.7 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.

6 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 the equation

$$R = \frac{m_1}{m_0} \times 100$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, 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 5.

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

7 Test report

The test report shall contain at least the following information:

- all details necessary to identify the product tested, in accordance with the appropriate part of ISO 11126 (see annex A), if applicable;
- a reference to this part of ISO 11127 (ISO 11127-2);
- the result of the test;
- any deviation from the test method specified;
- the date of the test;
- 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 ISO 11126 and ISO 11127 respectively.

ISO 11126 will consist 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 2: Silica sand
- Part 3: Copper refinery slag
- Part 4: Coal furnace slag
- Part 5: Nickel refinery slag
- Part 6: Iron furnace slag
- Part 7: Fused aluminium oxide
- Part 8: Olivine sand
- Part 9: Staurolite
- Part 10: Garnet

ISO 11127 will consist 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
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