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

**Part 2:**

Determination of particle size distribution

*Préparation des subjectiles d'acier avant application de peintures et de  
produits assimilés — Méthodes d'essai pour abrasifs 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 11125-2 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*.

ISO 11125 consists of the following parts, under the general title *Preparation of steel substrates before application of paints and related products* — *Test methods for metallic blast-cleaning abrasives*:

- Part 1: *Sampling*
- Part 2: *Determination of particle size distribution*
- Part 3: *Determination of hardness*
- Part 4: *Determination of apparent density*
- Part 5: *Determination of percentage defective particles and of microstructure*
- Part 6: *Determination of foreign matter*
- Part 7: *Determination of moisture*
- Part 8: *Determination of abrasive mechanical properties*

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International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

At the time of publication of this part of ISO 11125, part 8 was in course of preparation.

Annex A of this part of ISO 11125 is for information only.

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

## Part 2:

## Determination of particle size distribution

### 1 Scope

This is one of a number of parts of ISO 11125 dealing with the sampling and testing of metallic abrasives for blast-cleaning.

**The types of metallic abrasive and requirements on each are contained in the various parts of ISO 11124.**

The ISO 11124 and ISO 11125 series have been drafted as a coherent set of International Standards on metallic blast-cleaning abrasives. Information on all parts of both series is given in annex A.

This part of ISO 11125 specifies a test method for the determination of particle size distribution of 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 11125. 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 11125 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 11125-1:1993, *Preparation of steel substrates before application of paints and related products — Test methods for metallic blast-cleaning abrasives — Part 1: Sampling.*

### 3 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

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

**3.2 Test sieves**, circular, with a height of 25 mm to 50 mm and a sieving area approximately 200 mm 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 R40/3 sizes)**

mm	mm	mm
0,045	0,355	1,40
0,053	0,425	1,70
0,063	0,500	2,00
0,075	0,600	2,36
0,125	0,710	2,80
0,180	0,850	3,35
0,250	1,00	4,00
0,300	1,18	4,75

**3.3 Rotating and tapping machine,** to agitate the sample. Sieving shall be carried out in a suitable type of sieving machine having both a rotatory movement and a vertical movement producing a sharp jolting or tapping action. The machine shall be placed on a solid base.

NOTE 2 Hand sieving, or other mechanical systems based on vibration or rotation only, will not produce accurate separation of the sample.

**3.4 1/1 sample divider.**

## 4 Sampling

Take a representative sample of the product to be tested, as described in ISO 11125-1.

## 5 Procedure

Carry out the determination in duplicate.

**5.1** Using the 1/1 sample divider (3.4), obtain a sample of approximately 100 g.

**5.2** Weigh out, using the balance (3.1), (100 ± 0,5) g of the sample ( $m_0$ ).

NOTE 3 Increased test-portion mass may lead to inaccurate separation.

**5.3** 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 11124 (see annex A) or, in the case of materials not covered by ISO 11124, as otherwise agreed between the interested parties.

**5.4** Arrange the test sieves (3.2) 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.

**5.5** Place the test portion in the top sieve.

**5.6** Place a cover over the top sieve.

**5.7** Place the stack of sieves with the test portion in the rotating and tapping machine (3.3) and agitate for a minimum of 10 min for round abrasives and a minimum of 15 min for angular abrasives.

NOTE 4 The agitation time is chosen so that increasing it by 5 min will result in no more than a 0,5 % change in the cumulative mass retained for any sieve in the stack.

**5.8** 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, adding each fraction retained to that previously weighed. Calculate and record the cumulative percentage retained for each sieve. If less than 99 % of the original mass is re-captured, retest.

## 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 of cumulative material retained for each test sieve differ by more than 10 % (relative to the higher result), repeat the procedure described in clause 5.

Calculate the mean of two valid determinations of cumulative material retained.

Report the result to the nearest 1 %.

## 7 Precision

Variation of sieve openings within the limits allowable in ISO 565 can cause major differences in results on the same material. Where deviation is experienced, an exchange of samples or sieves between customer and supplier is strongly recommended.

## 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 ISO 11124 (see annex A), if applicable;
- b) a reference to this part of ISO 11125 (ISO 11125-2);
- c) the result of the test;
- d) any deviation from the test method specified;
- e) the date of the test;
- f) the name of the person who carried out the test.

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## Annex A (informative)

### International Standards for metallic blast-cleaning abrasives

Requirements and test methods for metallic blast-cleaning abrasives are contained in ISO 11124 and ISO 11125, respectively.

ISO 11124 will consist of the following parts, under the general title:

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

- Part 1: General introduction and classification
- Part 2: Chilled-iron grit
- Part 3: High-carbon cast-steel shot and grit
- Part 4: Low-carbon cast-steel shot
- Part 5: Cut steel wire

ISO 11125 will consist of the following parts, under the general title:

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

- Part 1: Sampling
- Part 2: Determination of particle size distribution
- Part 3: Determination of hardness
- Part 4: Determination of apparent density
- Part 5: Determination of percentage defective particles and of microstructure
- Part 6: Determination of foreign matter
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