

INTERNATIONAL
STANDARD

ISO
11125-4

First edition
1993-12-15

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

Part 4:
(standards.iteh.ai)

Determination of apparent density

ISO 11125-4:1993

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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 4: Détermination de la masse volumique apparente

INTERNATIONAL

ISO



Reference number
ISO 11125-4:1993(E)

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 11125-4 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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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 4: Determination of apparent density

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 the apparent density of metallic blast-cleaning abrasives.

The purpose of the test is to establish the soundness of the metallic abrasive. Significant levels of internal shrinkage or hollow particles will reduce the apparent density.

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 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

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 Definition

For the purposes of this part of ISO 11125, the following definition applies.

3.1 apparent density: The mass of a given volume of metallic abrasive, as determined by the pycnometer method described in this part of ISO 11125.

4 Materials

4.1 Distilled or deionized water, of at least grade 3 purity as specified in ISO 3696.

5 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

5.1 Pycnometer, Gay-Lussac type, of capacity 50 ml, with a capillary stopper.

5.2 Balance, capable of weighing to an accuracy of 0,01 g.

6 Sampling

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

7 Procedure

Carry out the determination in duplicate.

7.1 Weigh, using the balance (5.2), the clean, dry pyknometer (5.1) to an accuracy of 0,01 g (m_1).

7.2 Add approximately 100 g of the test sample and reweigh (m_2).

7.3 Add distilled or deionized water (4.1) to the pyknometer until it is completely filled. Replace the stopper and gently shake the pyknometer to displace air adhering to the test portion. Remove the stopper, fill with water and then replace the stopper, forcing excess water out through the capillary tube. Carefully dry the outside of the pyknometer. Ensure there are no air bubbles present. Reweigh the pyknometer and its contents (m_3).

7.4 Empty the pyknometer of water and test portion. Rinse several times to remove all traces of abrasive. Refill with distilled or deionized water, replace the stopper and ensure that there are no air bubbles present. Dry the outside of the pyknometer and weigh (m_4).

NOTE 1 Care should be taken that the pyknometer is handled as little as possible in order to prevent warming by hand. Pyknometer, test portion and water should as far as possible be at the same room temperature.

8 Expression of results

Calculate the apparent density ρ_A of the product tested, expressed in kilograms per cubic metre (kg/m^3), using the equation

$$\rho_A = \frac{m_2 - m_1}{(m_4 - m_1) - (m_3 - m_2)} \times \rho_W \times 10^3$$

where

- m_1 is the mass, in grams, of the pyknometer;
- m_2 is the mass, in grams, of the pyknometer and test portion;
- m_3 is the mass, in grams, of the pyknometer, test portion and water;
- m_4 is the mass, in grams, of the pyknometer and water;
- ρ_W is the density, in kilograms per cubic decimetre of water, at the temperature of the determination.

If the duplicate determinations differ by more than 10 % (relative to the higher result), repeat the procedure described in clause 7.

Calculate the mean of two valid determinations and report the result to the nearest 100 kg/m^3 .

9 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 11125-4);
- 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.

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
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