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

**Part 5:
Determination of percentage defective
particles and of microstructure**

*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 5: Détermination du pourcentage de particules défectueuses et
de la microstructure*



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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).

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For an explanation on 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 the following URL: 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*.

This second edition cancels and replaces the first edition (ISO 11125-5:1993), which has been technically revised.

The main changes compared to the previous edition are as follows:

— [Annex A](#) has been technically revised.

A list of all parts in the ISO 11125 series can be found on the ISO website.

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

Part 5:

Determination of percentage defective particles and of microstructure

1 Scope

This document specifies test methods for the determination of the percentage of defective particles and of the microstructure of metallic blast-cleaning abrasives.

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](#).

2 Normative references

There are no normative references in this document.

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 Metallurgical microscope**, having a magnification of up to $\times 500$.
- 4.2 Binocular microscope**, having a magnification of up to $\times 50$.

5 Sampling

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

6 Preparation of the sample

Prepare and mount the sample as described in ISO 11125-3.

7 Procedure

7.1 Determination of cracks, voids and shrinkage

NOTE 1 Since the number of particles in a field of view will vary by particle size, it can be necessary to examine more than one field.

NOTE 2 Definitions of defects are given in the part of ISO 11124 appropriate to the material under test.

7.1.1 Examine the mounted sample (see [Clause 6](#)) using the binocular microscope ([4.2](#)) at an appropriate magnification of up to $\times 50$. Select the field of view randomly. Examine 50 particles.

7.1.2 Count the number of particles with:

- a) cracks;
- b) voids;
- c) shrinkage defects.

Particles with more than one defect shall only be counted once.

7.1.3 Calculate the percentage of each type of defect and the total percentage of defects.

7.2 Determination of defectively shaped shot particles

7.2.1 Place approximately 2 g of shot, one layer deep, on a glass microscope slide or in a dish. Examine the shot using the binocular microscope ([4.2](#)) at an appropriate magnification. Select the field of view randomly. Examine 50 particles.

NOTE 1 Since the number of particles in a field of view will vary by particle size, it can be necessary to examine more than one field.

NOTE 2 For particle sizes of S200 and above, it can be necessary to use more than one sample to allow 50 particles to be examined.

7.2.2 Count the number of particles with a length greater than twice the maximum particle width.

7.2.3 Calculate the percentage of defective particles.

7.3 Determination of defectively shaped grit particles

7.3.1 Place approximately 2 g of grit, one layer deep, on a glass microscope slide. Examine the grit using the binocular microscope ([4.2](#)) at an appropriate magnification. Select the field of view randomly. Examine 50 particles.

NOTE 1 Since the number of particles in a field of view will vary by particle size, it can be necessary to examine more than one field.

NOTE 2 For particle sizes of G200 and above, it can be necessary to use more than one sample to allow 50 particles to be examined.

7.3.2 Count the number of round and half-round particles, taking particular care to note the particle orientation so as to avoid misjudging the particle shape.

7.3.3 Calculate the percentage of defective particles.

7.4 Determination of defectively shaped cylindrical particles

7.4.1 Place approximately 2 g of cylindrical particles, one layer deep, on a glass microscope slide. Examine the particles using the binocular microscope (4.2) at an appropriate magnification. Select the field of view randomly. Examine 50 particles.

NOTE Since the number of particles in a field of view will vary by particle size, it can be necessary to examine more than one field.

7.4.2 Count the number of misshapen particles, taking particular care to note the particle orientation so as to avoid misjudging the particle shape.

7.4.3 Calculate the percentage of defective particles.

7.5 Determination of microstructure

7.5.1 Etch a representative sample (see Clause 6) with 2 % nital or picral to reveal the microstructure so that it can be examined metallurgically. Examine the microstructure of 50 randomly selected particles using the metallurgical microscope (4.1) at an appropriate magnification.

7.5.2 Count the number of particles having unacceptable structures.

7.5.3 Calculate the percentage of particles having an undesirable microstructure.

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 document, i.e. ISO 11125-5:2018;
- c) the result of each test;
- d) any deviation from the test method specified;
- e) the date of each test;
- f) the name of the person who carried out each 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 consists 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 wire¹⁾*

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 9: Wear testing and performance²⁾*

1) Under preparation. (Stage at the time of publication ISO/DIS 11124-5:2018.)

2) Under preparation. (Stage at the time of publication ISO/NP 11125-9:2018.)