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

**Part 5:  
Nickel slag**

*Préparation des subjectiles d'acier avant application de peintures et  
de produits assimilés — Spécifications pour abrasifs non métalliques  
destinés à la préparation par projection —*

*Partie 5: Scories de nickel*



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Published in Switzerland

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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](http://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](http://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 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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://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 11126-5:1993), which have been technically revised.

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

- The Scope has been expanded to include ferronickel slags. [Tables 1](#) and [2](#) have been technically revised.

A list of all parts in the ISO 11126 series can be found on the ISO website.

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

## Part 5: Nickel slag

**WARNING — Equipment, materials and abrasives used for surface preparation can be hazardous. It is important to ensure that adequate instructions are given and that all required precautions are exercised.**

### 1 Scope

This document specifies requirements for nickel slag abrasives, as supplied for blast-cleaning processes. It specifies ranges of particle sizes and values for apparent density, Mohs hardness, moisture content, conductivity of aqueous extract and water-soluble chlorides.

The requirements specified in this document apply to abrasives supplied in the "new" condition only. They do not apply to abrasives either during or after use.

Test methods for non-metallic blast-cleaning abrasives are given in the various parts of ISO 11127.

**NOTE** Although this document has been developed specifically to meet requirements for preparation of steelwork, the properties specified will generally be appropriate for use when preparing other material surfaces, or components, using blast-cleaning techniques. These techniques are described in ISO 8504-2.

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

ISO 11127-2, *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*

ISO 11127-3, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 3: Determination of apparent density*

ISO 11127-4, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 4: Assessment of hardness by a glass slide test*

ISO 11127-5, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 5: Determination of moisture*

ISO 11127-6, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 6: Determination of water-soluble contaminants by conductivity measurement*

ISO 11127-7, *Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 7: Determination of water-soluble chlorides*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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 <https://www.electropedia.org/>

#### 3.1

##### **nickel slag**

synthetic mineral blast-cleaning abrasive manufactured, by granulation in water or atomization in the air, drying and sieving, with or without mechanical crushing processes, from slag originating from nickel smelting

Note 1 to entry: It is basically iron silicate.

Note 2 to entry: Slags manufactured by atomization in air instead of granulation in water are generally more rounded.

Note 3 to entry: Slags manufactured by air cooling instead of granulation in water are generally of a different mineral structure and are therefore not covered by this document.

#### 3.2

##### **ferronickel slag**

synthetic mineral blast-cleaning abrasive manufactured, by granulation in water or air atomization, drying, if required, and sieving, with or without mechanical crushing processes, from slag originating from ferronickel smelting

Note 1 to entry: It is basically magnesium silicate.

Note 2 to entry: Slags manufactured by atomization in air instead of granulation in water are generally more rounded.

### 4 Designation of abrasives

Nickel slag abrasives shall be identified by "Abrasive ISO 11126" and the abbreviation N/N11 indicating non-metallic, nickel refinery slag abrasive and N/N12 indicating non-metallic, ferronickel slag abrasive. This shall be followed, without spaces, by an oblique stroke and then by the symbol G or S to indicate the required particle shape of the abrasive, when purchased, as grit or shot. The designation shall be completed by numbers denoting the particle size range, in millimetres, required (see [Table 1](#)).

#### EXAMPLE 1

Abrasive ISO 11126 N/N11/G 0,2-1

This denotes an abrasive of the non-metallic nickel refinery slag type, complying with the requirements of this document, of initial particle shape grit and particle size range 0,2 mm to 1 mm.

#### EXAMPLE 2

Abrasive ISO 11126 N/N12/S 0,2-2

This denotes an abrasive of the non-metallic ferronickel slag type, complying with the requirements of this document, of initial particle shape shot and particle size range 0,2 mm to 2 mm.

This full product designation shall be quoted on all orders.

**Table 1 — Particle size distribution**

Particle size range <sup>a</sup>		mm	0,2 to 0,5	0,2 to 1	0,2 to 1,4	0,2 to 2	0,2 to 2,8	0,5 to 1	0,5 to 1,4	1,0 to 2	1,4 to 2,8
Oversize	Sieve size	mm	0,5	1	1,4	2	2,8	1	1,4	2	2,8
	Residue % (mass fraction)	max.	10	10	10	10	10	10	10	10	10
Nominal size	Sieve size	mm	0,2	0,2	0,2	0,2	0,2	0,5	0,5	1	1,4
	Residue % (mass fraction)	min.	85	85	85	85	85	85	85	85	85
Undersize	Sieve size	mm	0,2	0,2	0,2	0,2	0,2	0,5	0,5	1	1,4
	Through-flow % (mass fraction)	max.	5	5	5	5	5	10	10	10	10

<sup>a</sup> By agreement between the interested parties, abrasives of different particle size ranges may be mixed together. Details of proportions of nominal size, oversize and undersize shall be specified. The maximum particle size shall not exceed 3,15 mm and the proportion of particles less than 0,2 mm shall not exceed 5 % (mass fraction).

## 5 Sampling

Sampling procedures shall be as specified in ISO 11127-1.

## 6 Requirements

### 6.1 General requirements

Nickel slag abrasives shall be vitreous amorphous materials that absorb no water but can be wetted on the surface only.

Silica in nickel slag abrasives shall be present as bonded silicate. The content of free crystalline silica (such as quartz, tridimite or cristobalite) shall not exceed 1 % mass fraction, as determined by X-ray diffraction.

The material shall be free from corrosive constituents and adhesion-impairing contaminants.

### 6.2 Particular requirements

Particular requirements for nickel slag abrasives shall be as specified in [Table 2](#).

**Table 2 — Particular requirements for nickel slag abrasives**

Property	Requirement	Test method
Particle size range and distribution	See <a href="#">Table 1</a>	ISO 11127-2
Apparent density	kg/m <sup>3</sup> (kg/dm <sup>3</sup> ) (2,8 to 3,9) × 10 <sup>3</sup> (2,8 to 3,9)	ISO 11127-3
Mohs hardness <sup>a</sup>	min. 6	ISO 11127-4
Moisture	% (mass fraction) max. 0,2	ISO 11127-5
Conductivity of aqueous extract	µS/cm max. 250	ISO 11127-6
Water-soluble chlorides	% (mass fraction) max. 0,002 5	ISO 11127-7

<sup>a</sup> Another method for assessing hardness may be used, together with an appropriate minimum requirement, by agreement between the interested parties.

## 7 Identification and marking

All supplies shall be clearly marked or identified using the appropriate designation as specified in [Clause 4](#), either directly or by the accompanying delivery note.

## 8 Information to be supplied by the manufacturer or supplier

The manufacturer or supplier shall supply, if requested, a test report detailing results for any relevant property as determined by the appropriate method specified in [Table 2](#).

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