

CONFIRMED  
DECEMBER 1998

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

## Part 3: Copper refinery slag

The European Standard EN ISO 11126-3:1997 has the status of a British Standard

ICS 87.020

## Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Surface Treatments and Coatings Standards Policy Committee (STC/-) to Technical Committee STC/21, upon which the following bodies were represented:

Association of Consulting Engineers  
 British Chemical Engineering Contractors' Association  
 British Coatings Federation Ltd.  
 British Constructional Steelwork Association Ltd.  
 British Grit Association  
 British Railways Board  
 British Steel Industry  
 Department of Transport  
 Electricity Association  
 Institute of Corrosion  
 National Federation of Painting and Decorating Contractors  
 Oil and Colour Chemists' Association  
 Paint Research Association  
 Royal Society of Chemistry

This British Standard, having been prepared under the direction of the Surface Treatments and Coatings Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 March 1994

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The following BSI references relate to the work on this standard:  
 Committee reference STC/21  
 Draft for comment 92/50242 DC

ISBN 0 580 23059 7

### Amendments issued since publication

Amd. No.	Date	Comments
9843	February 1998	Indicated by a sideline in the margin

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## National foreword

This British Standard has been prepared by Technical Committee STI/21 and is the English language version of EN ISO 11126-3:1997 *Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives — Part 3: Copper refinery slag*, published by the European Committee for Standardization (CEN). It is identical with ISO 11126-3:1993, published by the International Organization for Standardization (ISO).

International Standard ISO 11126-3 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.

### Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, pages 2 to 5 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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ICS 87.020

Descriptors: Paints, varnishes, substrates, steel products, blast-cleaning, abrasives, non-metallic abrasives, specifications.

English version

Preparation of steel substrates before application  
of paints and related products —  
Specifications for non-metallic blast-cleaning abrasives —  
Part 3: Copper refinery slag

(ISO 11126-3:1993)

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 3: Scorées de raffinage du cuivre  
(ISO 11126-3:1993)

Vorbereitung von Stahloberflächen vor dem  
Auftragen von Beschichtungsstoffen —  
Anforderungen an nichtmetallische  
Strahlmittel —  
Teil 3: Strahlmittel aus Kupferhüttenschlacke  
(ISO 11126-3:1993)

This European Standard was approved by CEN on 1997-06-16. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

**Central Secretariat: rue de Stassart 36, B-1050 Brussels**

## Foreword

The text of the International Standard from Technical Committee ISO/TC 35, Paints and varnishes, of the International Organization for Standardization (ISO) has been taken over as a European Standard by Technical Committee CEN/TC 139, Paints and varnishes, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1998, and conflicting national standards shall be withdrawn at the latest by January 1998.

According to CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

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**WARNING** — Equipment, materials and abrasives used for surface preparation can be hazardous if used carelessly. Many national regulations exist for those materials and abrasives that are considered to be hazardous during or after use (waste management), such as free silica or carcinogenic or toxic substances. These regulations are therefore to be observed. It is important to ensure that adequate instructions are given and that all required precautions are exercised.

## 1 Scope

This part of ISO 11126 specifies requirements for copper refinery 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 part of ISO 11126 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 1 Information on commonly referenced national standards for non-metallic abrasives is given in Annex A.

NOTE 2 Although this part of ISO 11126 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 8504-2:1992, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 2: Abrasive blast-cleaning*.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11126. 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 11126 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 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*.

ISO 11127-2:1993, *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 11127-3:1993, *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 11127-4:1993, *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 11127-5:1993, *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 11127-6:1993, *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 11127-7:1993, *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 Definition

For the purposes of this part of ISO 11126, the following definition applies.

### 3.1 copper refinery slag

a synthetic mineral blast-cleaning abrasive manufactured, by granulation in water, drying and sieving, with or without mechanical crushing processes, from slag originating from copper smelting. It is basically iron silicate slag

NOTE 3 Slags manufactured by air cooling instead of granulation in water are generally of a different mineral structure and are therefore not covered by this part of ISO 11126.

## 4 Designation of abrasives

Copper refinery slag abrasives shall be identified by “Abrasive ISO 11126” and the abbreviation N/CU indicating non-metallic, copper refinery slag abrasive. This shall be followed, without spaces, by an oblique stroke and then by the symbol G to indicate the required particle shape of the abrasive, when purchased, as grit. The designation shall be completed by numbers denoting the particle size range, in millimetres, required (see Table 1).

EXAMPLE 1

**Abrasive ISO 11126 N/CU/G 0,5-1**

denotes an abrasive of the non-metallic copper refinery slag type, complying with the requirements of this part of ISO 11126, of initial particle shape grit and particle size range 0,5 mm to 1 mm.

It is essential that this full product designation is quoted on all orders.

**5 Sampling**

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

**6 Requirements**

**6.1 General requirements**

Copper refinery slag abrasives shall be vitreous amorphous materials that absorb no water but may be wetted on the surface only.

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

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

NOTE 4 Copper refinery slag abrasives as supplied have a predominantly angular shape. More spherical particle shapes are not excluded as their effect on the surface profile obtained corresponds generally to that produced by angular abrasive particles.

**6.2 Particular requirements**

Particular requirements for copper refinery slag abrasives shall be as specified in Table 2.

**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.

**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 % (m/m)	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 % (m/m)	min.	85	85	85	85	85	80	80	80	80
Undersize	Sieve size	mm	0,2	0,2	0,2	0,2	0,2	0,5	0,5	1	1,4
	Through-flow % (m/m)	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 % (m/m).

**Table 2 — Particular requirements for copper refinery slag abrasives**

Property	Requirement	Test method
Particle size range and distribution	See Table 1	ISO 11127-2
Apparent density	kg/m <sup>3</sup> [kg/dm <sup>3</sup> ]	(3,3 to 3,9) × 10 <sup>3</sup> [3,3 to 3,9]
Mohs hardness <sup>a</sup>	min. 6	ISO 11127-4
Moisture	% (m/m)	max. 0,2
Conductivity of aqueous extract	mS/m	max. 25
Water-soluble chlorides	% (m/m)	max. 0,002 5

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



## Annex A (informative)

### Bibliography

Commonly referenced national standards for non-metallic abrasives are as follows:

- [1] DIN 8200:1982, *Strahlverfahrenstechnik; Begriffe, Einordnung der Strahlverfahren* (Blasting; terms, classification of blasting techniques).
- [2] DIN 8201-1:1985, *Feste Strahlmittel; Einteilung, Bezeichnung* (Abrasives; classification, designation).
- [3] DIN 8201-5:1985, *Feste Strahlmittel, natürlich, mineralisch; Quarzsand* (Natural mineral abrasives; quartz sand).
- [4] DIN 8201-6:1985, *Feste Strahlmittel, synthetisch, mineralisch; Elektrokorund* (Synthetic mineral abrasives; electric corundum).
- [5] DIN 8201-9:1986, *Feste Strahlmittel, synthetisch, mineralisch; Kupferhüttenschlacke, Schmelzkammerschlacke* (Synthetic mineral solid abrasives; copper refinery slag, melting chamber slag).

## Annex ZA (normative)

### Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 11127-1	1993	<i>Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 1: Sampling</i>	EN ISO 11127-1	1997
ISO 11127-2	1993	<i>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</i>	EN ISO 11127-2	1997
ISO 11127-3	1993	<i>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</i>	EN ISO 11127-3	1997
ISO 11127-4	1993	<i>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</i>	EN ISO 11127-4	1997
ISO 11127-5	1993	<i>Preparation of steel substrates before application of paints and related products — Test methods for non-metallic blast-cleaning abrasives — Part 5: Determination of moisture</i>	EN ISO 11127-5	1997
ISO 11127-6	1993	<i>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</i>	EN ISO 11127-6	1997
ISO 11127-7	1993	<i>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</i>	EN ISO 11127-7	1997

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