BS EN 50632-2-3:2016

BSI Standards Publication

Electric motor-operated tools — Dust measurement procedure

Part 2-3: Particular requirements for concrete grinders and disk-type sanders

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National foreword

This British Standard is the UK implementation of EN 50632-2-3:2016.

The UK participation in its preparation was entrusted to Technical Committee CPL/116, Safety of motor-operated electric tools.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Electric motor-operated tools - Dust measurement procedure - Part 2-3: Particular requirements for concrete grinders and disk-type sanders

Outils électriques à moteur - Procédure de mesure de la poussière - Partie 2-3: Exigences particulières pour les rectifieuses à béton et les ponceuses à disque

Motorbetriebene Elektrowerkzeuge - Staubmessverfahren - Teil 2-3: Besondere Anforderungen für Betonschleifer und Schleifer mit Schleifblatt

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

European foreword

This document (EN 50632-2-3:2016) has been prepared by CLC/TC 116 “Safety of motor-operated electric tools”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2017-05-03
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2018-05-03

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This European Standard is divided into three parts:

Part 1: General requirements for the dust measurement which are common to electric motor-operated tools (for the purpose of this standard referred to simply as tools);

Part 2 or 3: Requirements for the dust measurement for particular types of tools, which either supplement or modify the requirements given in Part 1 to account for the particular characteristics of these specific tools.

This Part 2 is to be used in conjunction with EN 50632-1:2015.

This Part 2 supplements or modifies the corresponding clauses in EN 50632-1:2015.

This Part 2 was developed to set out requirements for the measurement of the concentration for inhalable and respirable dust emitted by concrete grinders or disc-type sanders.

Where a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as reasonable. When this standard states "addition", "modification" or "replacement", the relevant text in Part 1 is to be adapted accordingly.

Subclauses, tables and figures which are additional to those in Part 1 are numbered starting from 101.

This European Standard has been drafted in accordance with the CEN/CENELEC Internal Regulations, Part 3.

The following print types are used:
- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

The terms defined in Clause 3 are printed in **bold typeface**.

1 Scope

This clause of Part 1 is applicable except as follows:

Addition:

This part of EN 50632 applies to **concrete grinders** and **disc-type sanders**.

2 Normative references

This clause of Part 1 is applicable except as follows:

Addition:

EN 1339:2003, *Concrete paving flags — Requirements and test methods*

EN 12859:2011, *Gypsum blocks — Definitions, requirements and test methods*

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.101
concrete grinder
tool intended for smoothing and deburring concrete surfaces by means of diamond wheels

3.102
disc-type sander
tool driving a rotating spindle on which a sanding accessory is mounted

4 Test procedure

This clause of Part 1 is applicable except as follows:

4.3 Operating conditions

Addition:

Concrete grinders are tested under load observing the conditions shown in Table 101.

Table 101 — Operating conditions for concrete grinders

Material and set-up	Concrete slabs with minimum dimensions of 400 mm x 400 mm, maximum dimensions of 600 mm x 600 mm and a thickness of (50 ± 5) mm according to EN 1339:2003. The concrete slabs shall be stored for at least three weeks under dry conditions. During storing, the distance between the slabs shall be at least one slab thickness. The slabs shall have the following specifications in accordance with the following subclauses of EN 1339:2003: Class 3 (5.3.3.2), Class 4 (5.3.4.2), Class 70 (5.3.6.2) for 400 mm x 400 mm, Class 45 (5.3.6.2) for 400 mm x 600 mm and 600 mm x 600 mm. The slabs are placed on a A-support, see Figure 102, with 15° inclination and the lower workpiece support being (500 ± 50) mm above the floor. The slabs are arranged without gaps to achieve a plane area of approximately 2,0 m length and 1,2 m height, see Figure 101. For each tested machine, new slabs shall be used.
Orientation and operation	The concrete slabs are ground. During grinding, the grinding wheel shall be at least 50 mm away from the edges of the total area of concrete slabs. During grinding, the grinding area of the wheel shall be parallel to the surface of the concrete slabs.
Tool bit/settings	New or re-sharpened diamond wheel as specified by the manufacturer for grinding concrete at the beginning of the first test. If necessary, the wheel may be changed during a rest time. Speed setting devices, if any, shall be adjusted to the setting specified for grinding concrete.
Feed force	The forces applied to the tool shall be to achieve an average power consumption during the test of 70 % – 90 % of the rated input of the tool.
Test	During the entire test a minimum of 1 200 g of material shall be collected in the dust extraction unit. The weight of the material collected may be determined as the weight increase of the dust collection unit by means of scales.

Disc-type sanders intended to process mineral materials are tested under load observing the conditions shown in Table 102.

Table 102 — Operating conditions for disc-type sanders when sanding gypsum blocks

Material and set-up	Gypsum blocks made of 100 % calcium sulfate dihydrate ($CaSO_4$ $2H_2O$) with a density of minimum 1 250 kg/m^3 (high density, designation as D – dense) and a minimum hardness of 80 Shore C units in accordance to EN 12859:2011. The gypsum blocks shall be stored in a dry environment for at least 2 weeks prior to testing, with a distance of at least one block thickness between each of them. Gypsum blocks with suitable dimensions and a thickness of approximately 100 mm are placed on an A-support, see Figure 102, with 15° inclination and the lower workpiece support being (500 ± 50) mm above the floor. The blocks are arranged without gaps to achieve an area of approximately 4 m length and 1,5 m height, see Figure 103. For each tested tool new blocks of gypsum shall be used and replaced latest when either - the gypsum blocks are sanded down to the surface of the supporting plate; or - the gypsum blocks are broken; or - pieces of the gypsum blocks are thrown out.
Orientation and operation	The gypsum blocks are sanded. During sanding, the sanding paper shall be at least 50 mm away from the edges of the total block area. During sanding, the sanding paper shall be parallel to the surface of the gypsum block.
Tool bit/settings	Sanding paper with a grain P80, suitable for the material gypsum. The sanding paper is replaced after each test cycle. Speed setting devices, if any, shall be adjusted to maximum speed.
Feed force	The forces applied to the tool shall be to achieve an average power consumption during the test of 70 % – 90 % of the rated power of the tool.
Test	During the entire test a minimum of - 1 500 g, for **disc-type sanders** with a rated capacity up to and including 150 mm; - 2 000 g, for **disc-type sanders** with a rated capacity above 150 mm; material shall be collected in the dust extraction unit. The weight of the material collected may be determined as the weight increase of the dust collection unit by means of scales.

Disc-type sanders with sanding paper intended for sanding wood are tested under load observing the conditions shown in Table 103.

Table 103 — Operating conditions for disc-type sanders when sanding wood

Material and set-up	Beech wood, (500 ± 2) mm x (500 ± 2) mm, thickness sufficient for three complete tests. At the beginning of the test the wood shall have a humidity of maximum 12 %. The workpiece is mounted horizontally on a bench with a suitable working height (approximately 900 mm).
Orientation and operation	Uniform sanding of the complete surface.
Tool bit/settings	Sanding paper with a grain P80, suitable for beech. The sanding paper is replaced after each test cycle. Speed setting devices, if any, shall be adjusted to maximum speed.
Feed force	- 30 N ± 5 N, if the mass of the tool is less than 1,5 kg; - 50 N ± 5 N, if the mass of the tool is equal or greater than 1,5 kg.

Disc-type sanders with sanding paper, intended for sanding wooden floor, are tested under load observing the conditions shown in Table 104.

Table 104 — Operating conditions for disc-type sanders when sanding wooden floor

Material and set-up	Oak (strip parquet) on the floor of the test room: approximately 3 000 mm x 2 000 mm, thickness sufficient for three complete tests. Parquet surface pre-sanded, oak wood humidity maximum 12 %. **Disc-type sanders** intended for sanding along a wall: a three-sided moveable frame, (300 ± 2) mm high, size approximately 2 000 mm x 1 000 mm is prepared and used.
Orientation and operation	**Disc-type sanders** intended for surface sanding: uniform sanding of the complete working area by constant moving of the tool with a speed of 20 m/min to 25 m/min. **Disc-type sanders** intended for sanding along a wall: uniform sanding along the complete border (back and forth movement). The frame is moved after each test cycle to another area on the parquet to avoid excessive wear.
Tool bit/settings	Aluminium oxide sanding paper with a grain P80, suitable for oak parquet. The sanding paper is replaced after each test cycle. Speed setting devices, if any, shall be adjusted to maximum speed.
Feed force	The **disc-type sander** is moved without additional load.
Test	Uniform sanding during working time. If **disc-type sanders** with integral dust extraction units are used, the dust container shall be changed on one-way systems or emptied on multiple-use systems dependant on its capacity but latest after the third test cycle of each test. The emptying of multiple-use dust extraction units shall be done in the test room, in accordance with the manufacturers' instruction.

5 Instrumentation

This clause of Part 1 is applicable.

6 Information to be reported

This clause of Part 1 is applicable except as follows:

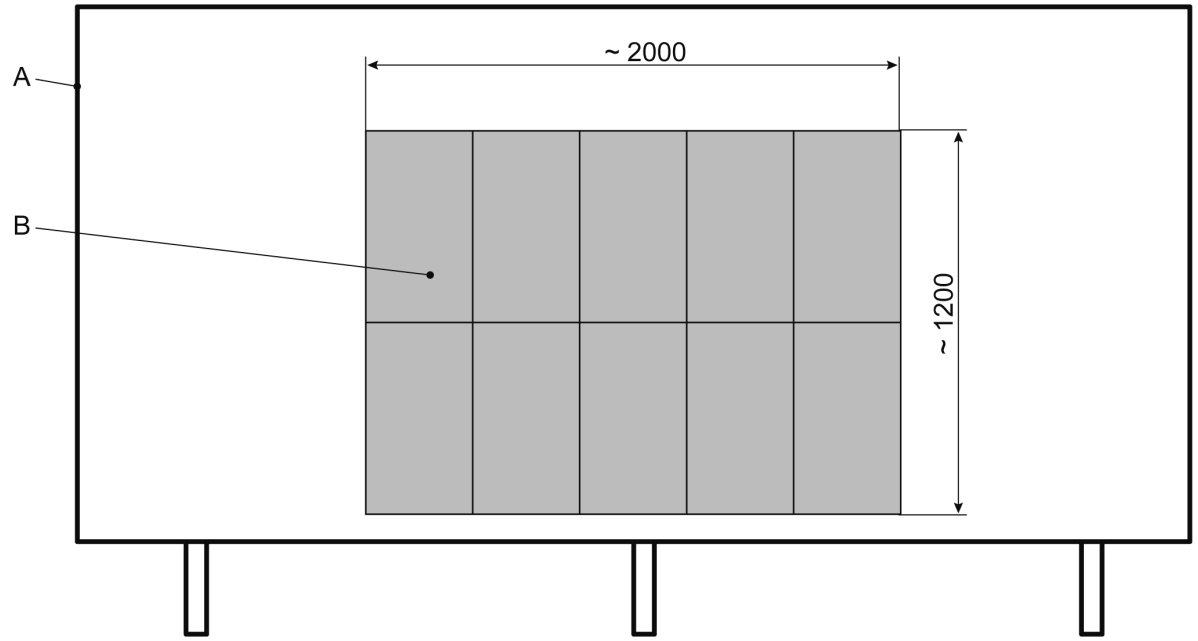
c) *Modification:*

Information about the material used for the test (such as type, manufacturer, composition, hardness);

k) *Modification:*

For tools tested in accordance with Table 101 or Table 102, the mean value for the concentration of the respirable dust is also required;

Dimensions in millimetres



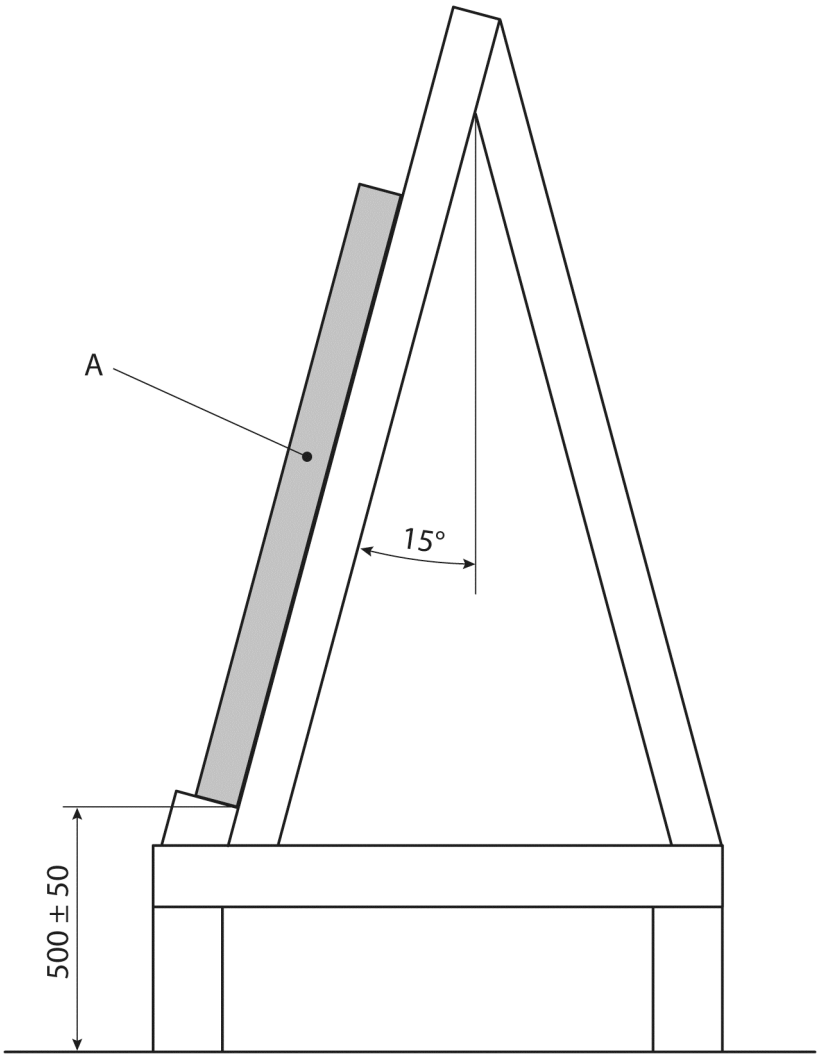
Key

A A-support

B workpiece (concrete slabs)

Figure 101 — Test set-up for concrete grinders

Dimensions in millimetres

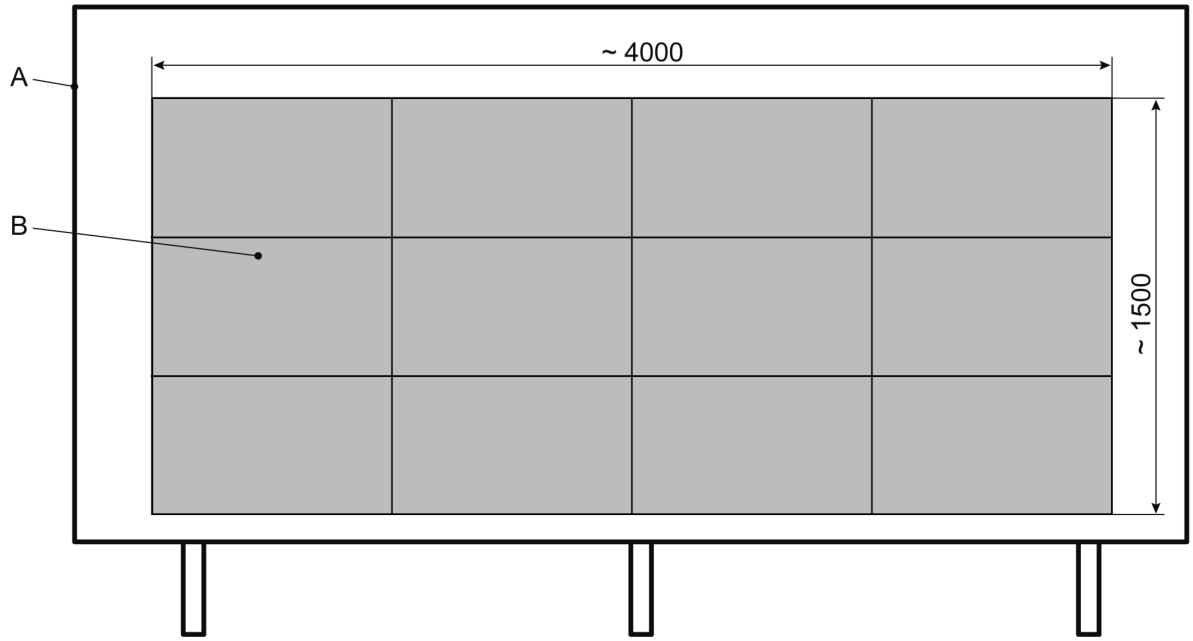


Key

A workpiece

Figure 102 — A-support

Dimensions in millimetres



Key

A A-support

B workpiece (gypsum blocks)

Figure 103 — Test set-up for sanding gypsum blocks

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