

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Electric motor-operated tools – Dust measurement procedure –  
Part 2-3: Particular requirements for hand-held concrete grinders and disc-type  
sanders**

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

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED TOOLS –  
DUST MEASUREMENT PROCEDURE –****Part 2-3: Particular requirements for hand-held concrete  
grinders and disc-type sanders**

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IEC 63241-2-3 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
116/787/FDIS	116/808/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts of the IEC 63241 series, under the general title: *Electric motor-operated tools – Dust measurement procedure*, can be found on the IEC website.

This document is to be used in conjunction with IEC 63241-1:2023.

This document supplements or modifies the corresponding clauses in IEC 63241-1, so as to convert it into the IEC Standard: Particular requirements for hand-held concrete grinders and disc-type sanders.

Where a particular subclause of IEC 63241-1 is not mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text in IEC 63241-1 is to be adapted accordingly.

The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- **terms defined in Clause 3: in bold type**
- notes: in small roman type.

Subclauses, notes, tables and figures which are additional to those in IEC 63241-1 are numbered starting from 101.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

## ELECTRIC MOTOR-OPERATED TOOLS – DUST MEASUREMENT PROCEDURE –

### Part 2-3: Particular requirements for hand-held concrete grinders and disc-type sanders

#### 1 Scope

IEC 63241-1:2023, Clause 1 is applicable, except as follows:

*Addition:*

This part of IEC 63241 applies to hand-held **concrete grinders** and **disc-type sanders**.

#### 2 Normative references

IEC 63241-1:2023, Clause 2 is applicable, except as follows:

*Addition:*

IEC 63241-1:2023, *Electric motor-operated tools – Dust measurement procedure – Part 1: General requirements*

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

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

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#### 3 Terms and definitions

IEC 63241-1:2023, Clause 3 is applicable, except as follows:

*Addition:*

##### 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

IEC 63241-1:2023, Clause 4 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**

<b>Material and set-up</b>	<p>Concrete slabs with minimum dimensions of 400 mm × 400 mm, maximum dimensions of 600 mm × 600 mm and a thickness of (50 ± 5) mm in accordance with 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 × 400 mm,                  Class 45 (5.3.6.2) for 400 mm × 600 mm and 600 mm × 600 mm.</p> <p>The slabs 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 slabs are arranged without gaps to achieve a plane area of approximately 2,0 m length and 1,2 m height, see Figure 101.</p> <p>For each tested machine, new slabs shall be used.</p>
<b>Orientation and operation</b>	<p>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 the concrete slabs.</p> <p>During grinding, the grinding area of the wheel shall be parallel to the surface of the concrete slabs.</p>
<b>Tool bit/settings</b>	<p>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 can be changed during a rest time.</p> <p>Speed setting devices, if any, shall be adjusted to the setting specified for grinding concrete.</p>
<b>Feed force</b>	<p>The feed force applied to the tool shall be sufficient to ensure stable operation with good performance.</p>
<b>Test</b>	<p>During the entire test, a minimum of 1 200 g of material shall be collected in the <b>dust extraction unit</b>.</p> <p>The weight of the material collected may be determined as the weight increase of the <b>dust extraction unit</b> by means of scales.</p>

**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**

<b>Material and set-up</b>	<p>Gypsum blocks made of 100 % calcium sulfate dihydrate (<math>\text{CaSO}_4 \cdot 2\text{H}_2\text{O}</math>) with a density of minimum <math>1\,250 \text{ kg/m}^3</math> (high density, designation as D – dense) and a minimum hardness of 80 Shore C units in accordance with 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.</p> <p>Gypsum blocks with suitable dimensions and a thickness of approximately 100 mm are placed on an A-support, see Figure 102, with <math>15^\circ</math> inclination and the lower workpiece support being <math>(500 \pm 50)</math> 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.</p> <p>For each tested tool, new gypsum blocks shall be used and replaced when either</p> <ul style="list-style-type: none"> <li>– the gypsum blocks are sanded down to the surface of the supporting plate; or</li> <li>– the gypsum blocks are broken; or</li> <li>– pieces of the gypsum blocks are thrown out.</li> </ul>
<b>Orientation and operation</b>	<p>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.</p> <p>During sanding, the sanding paper shall be parallel to the surface of the gypsum block.</p>
<b>Tool bit/settings</b>	<p>Sanding paper or grinding grid with a grain P80, suitable for the material gypsum. The sanding paper is replaced after each test cycle.</p> <p>Speed setting devices, if any, shall be adjusted to maximum speed.</p>
<b>Feed force</b>	<p>The feed force applied to the tool shall be sufficient to ensure stable operation with good performance.</p>
<b>Test</b>	<p>During the entire test a minimum of</p> <ul style="list-style-type: none"> <li>– 1 500 g, for <b>disc-type sanders</b> with a rated capacity up to and including 150 mm; or</li> <li>– 2 000 g, for <b>disc-type sanders</b> with a rated capacity above 150 mm</li> </ul> <p>material shall be collected in the <b>dust extraction unit</b>.</p> <p>The weight of the material collected may be determined as the weight increase of the <b>dust extraction unit</b> by means of scales.</p>

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**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**

<b>Material and set-up</b>	<p>Beech wood, <math>(500 \pm 2)</math> mm length, <math>(500 \pm 2)</math> mm width, with a thickness sufficient for three complete tests.</p> <p>At the beginning of the test, the wood shall have a humidity not exceeding 12 %. The workpiece is mounted horizontally on a bench with a working height matching the requirement for the vertical distance between the upper surface of the workpiece and the intake openings of the dust samplers as specified in IEC 63241-1:2023, 4.2.</p>
<b>Orientation and operation</b>	<p>Uniform sanding of the complete surface.</p>
<b>Tool bit/settings</b>	<p>Sanding paper with a grain P80, suitable for beech. The sanding paper is replaced after each test cycle.</p> <p>Speed setting devices, if any, shall be adjusted to maximum speed.</p>
<b>Feed force</b>	<p><math>(30 \pm 5)</math> N, if the mass of the tool is less than 1,5 kg; or</p> <p><math>(50 \pm 5)</math> N, if the mass of the tool is greater than or equal to 1,5 kg.</p>
<b>Test</b>	<p>Uniform sanding during working time.</p> <p>If <b>disc-type sanders</b> with integral <b>dust extraction units</b> are used, the dust container shall be changed on one-way systems or emptied on multiple-use systems dependent on its capacity, but at the latest after the third test cycle of each test. The emptying of multiple-use <b>dust extraction units</b> shall be done in the test room, in accordance with the manufacturer's instructions.</p>

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

**Table 104 – Operating conditions for disc-type sanders when sanding wooden floors**

<b>Material and set-up</b>	<p>Oak (strip parquet) on the floor of the test room: approximately 3 000 mm × 2 000 mm, thickness sufficient for three complete tests.</p> <p>Parquet surface pre-sanded, oak wood with a humidity not exceeding 12 %.</p> <p><b>Disc-type sanders</b> intended for sanding along a wall: a three-sided moveable frame, (300 ± 2) mm high, size approximately 2 000 mm × 1 000 mm is prepared and used.</p>
<b>Orientation and operation</b>	<p><b>Disc-type sanders</b> 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.</p> <p><b>Disc-type sanders</b> 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.</p>
<b>Tool bit/settings</b>	<p>Aluminium oxide sanding paper with a grain P80, suitable for oak parquet. The sanding paper is replaced after each test cycle.</p> <p>Speed setting devices, if any, shall be adjusted to maximum speed.</p>
<b>Feed force</b>	The <b>disc-type sander</b> is moved without additional load.
<b>Test</b>	<p>Uniform sanding during working time.</p> <p>If <b>disc-type sanders</b> with integral <b>dust extraction units</b> are used, the dust container shall be changed on one-way systems or emptied on multiple-use systems dependent on its capacity, but at the latest after the third test cycle of each test. The emptying of multiple-use <b>dust extraction units</b> shall be done in the test room, in accordance with the manufacturer's instructions.</p>

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**5 Instrumentation**

IEC 63241-1:2023, Clause 5 is applicable.

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**6 Information to be reported**

IEC 63241-1:2023, Clause 6 is applicable, except as follows:

*Replacement of item c):*

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

*Addition to item j):*

- j) the mean value for the concentration of the **respirable dust** is also required;