
Testni postopki za določanje fizikalnih lastnosti materialov ščetk za električne stroje (IEC 60413:2026)

Test procedures for determining physical properties of brush materials for electrical machines (IEC 60413:2026)

Prüfverfahren zur Bestimmung der physikalischen Eigenschaften der Werkstoffe von Kohlebürsten für elektrische Maschinen (IEC 60413:2026)

Méthodes d'essai pour la mesure des propriétés physiques des matières de balais pour machines électriques (IEC 60413:2026)

Ta slovenski standard je istoveten z: **EN IEC 60413:2026**

ICS:

29.160.10	Sestavni deli rotacijskih strojev	Components for rotating machines
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SIST EN IEC 60413:2026**en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN IEC 60413

April 2026

ICS 29.160.10

English Version

**Test procedures for determining physical properties of brush
materials
(IEC 60413:2026)**

Modes opératoires d'essai pour déterminer les propriétés
physiques des matériaux de balais
(IEC 60413:2026)

Prüfverfahren zur Bestimmung der physikalischen
Eigenschaften der Werkstoffe von Kohlebürsten für
elektrische Maschinen
(IEC 60413:2026)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 60413:2026 (E)**European foreword**

The text of document 2/2286/FDIS, future edition 2 of IEC 60413, prepared by TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60413:2026.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2027-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2029-04-30 document have to be withdrawn

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In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60773	NOTE	Approved as EN IEC 60773
ISO 868	NOTE	Approved as EN ISO 868
ISO 2739:2012	NOTE	Approved as EN ISO 2739:2012 (not modified)
ISO 6508-1:2023	NOTE	Approved as EN ISO 6508-1:2023 (not modified)
ISO 7500-1	NOTE	Approved as EN ISO 7500-1
ISO 11357-1:2023	NOTE	Approved as EN ISO 11357-1:2023 (not modified)
ISO 11357-4	NOTE	Approved as EN ISO 11357-4
ISO 13102:2012	NOTE	Approved as EN ISO 13102:2012 (not modified)
ISO 13385-1:2019	NOTE	Approved as EN ISO 13385-1:2019 (not modified)
ISO 16859-1:2015	NOTE	Approved as EN ISO 16859-1:2015 (not modified)
ISO 16859-3	NOTE	Approved as EN ISO 16859-3
ISO 18265:2013	NOTE	Approved as EN ISO 18265:2013 (not modified)
ISO 18755:2022	NOTE	Approved as EN ISO 18755:2023 (not modified)
ISO 19628:2024	NOTE	Approved as EN ISO 19628:2024 (not modified)
ISO 21920-2:2021	NOTE	Approved as EN ISO 21920-2:2022 (not modified)
ISO 22007-4:2024	NOTE	Approved as EN ISO 22007-4:2024 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60276	-	Carbon brushes, brush holders, commutators and slip-rings - Definitions and nomenclature	EN IEC 60276	-
ISO 148-1	-	Metallic materials - Charpy pendulum impact test - Part 1: Test method	EN ISO 148-1	-
ISO 179-1	2023	Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test	-	-
ISO 6508-2	-	Metallic materials - Rockwell hardness test - Part 2: Verification and calibration of testing machines and indenters	EN ISO 6508-2	-
ISO 22007-2	2022	Plastics - Determination of thermal conductivity and thermal diffusivity - Part 2: Transient plane heat source (hot disc) method	EN ISO 22007-2	2022

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INTERNATIONAL STANDARD

Test procedures for determining physical properties of brush materials

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Test procedures for determining physical properties of brush materials**FOREWORD**

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IEC 60413 has been prepared by IEC technical committee 2: Rotating machinery. It is an International Standard.

This second edition cancels and replaces the first edition published in 1972. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Title modified.
- b) Addition of definitions in Clause 3.
- c) Clause 5 on test specimen: Nomenclature and addition of the different types of test specimen, specification on their dimensions, tolerances and preparation.
- d) Improvement of test procedures of the properties already disclosed in the previous edition (Clause 6 to Clause 11).

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- e) Separation of apparent density and apparent porosity (respectively Clause 6 and Clause 10).
- f) Resistivity (Clause 7): Addition of the eddy current method.
- g) Rebound hardness (Clause 9): Addition of a new model of scleroscope and addition of Leeb method, as a possible alternative to the traditional scleroscope method.
- h) Common elements of the test report in a dedicated Clause 12.
- i) Addition of Annex A (normative): introduction of tests categories (serial/type tests), list of properties to be tested for each test category of test according to their purpose.
- j) Addition of Annex B: test procedures for other mechanical properties than flexural strength and hardness: tensile, compressive and impact strength.
- k) Addition of Annex C: test procedures for thermal properties (coefficient of linear expansion, specific heat capacity and thermal conductivity).
- l) Addition of Annex D: supplement to density and porosity.
- m) Addition of Annex E: recommendations on methods for elements analysis.
- n) Addition of Annex F: supplement of information concerning scleroscope hardness.

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

Draft	Report on voting
2/2286/FDIS	2/2298/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. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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