

SLOVENSKI STANDARD SIST EN 50164-7:2008

01-december-2008

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Lightning Protection Components (LPC) - Part 7: Requirements for earthing enhancing compounds

Blitzschutzbauteile -- Teil 7: Anforderungen an Mittel zur Verbesserung der Erdung iTeh STANDARD PREVIEW

Composants de protection contre la foudre (CRF) - Partie 7: Prescriptions pour les enrichisseurs de terre

SIST EN 50164-7:2008

Ta slovenski standard je istoveten z:800/sist/0670164-7:2008

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Lightning protection

SIST EN 50164-7:2008

en,fr,de



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SIST EN 50164-7:2008

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN 50164-7

August 2008

ICS 91.120.40

English version

Lightning Protection Components (LPC) -Part 7: Requirements for earthing enhancing compounds

Composants de protection contre la foudre (CPF) -Partie 7: Prescriptions pour les enrichisseurs de terre Blitzschutzbauteile -Teil 7: Anforderungen an Mittel zur Verbesserung der Erdung

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

https://standards.iteh.ai/catalog/standards/sist/0e70f7ad-d403-4fa0-a392-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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

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

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 81X, Lightning protection.

The text of the draft was submitted to the Unique Acceptance procedure and was approved by CENELEC as EN 50164-7 on 2008-04-01.

The following dates were fixed:

_	latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2009-04-01
-	latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-04-01

EN 50164 is a family standard and consists of the following parts under the generic title *"Lightning Protection Components (LPC)":*

- Part 1 Requirements for connection components
- Part 2 Requirements for conductors and earth electrodes
- Part 3 Requirements for isolating spark gaps
- Part 4 Requirements for conductor fasteners (standards.iteh.ai)
- Part 5¹⁾ Requirements for earth electrode inspection housings and earth electrode seals
- Part 6¹⁾ Requirements for lightning strike counters²⁰⁰⁸ https://standards.iteh.ai/catalog/standards/sist/0e70f7ad-d403-4fa0-a392-
- Part 7 Requirements for earthing enhancing compounds8

¹⁾ In preparation.

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1 Scope

This European Standard specifies the requirements and tests for

- earthing enhancing compounds increasing the contact surface area of the earth electrode.

NOTE Refill products are not within the scope of this European Standard.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 62305-1	Protection against lightning – Part 1: General principles (IEC 62305-1)
EN 62305-3	Protection against lightning – Part 3: Physical damage to structures and life hazard (IEC 62305-3, mod.)
EN 62305-4	Protection against lightning – Part 4: Electrical and electronic systems within structures (IEC 62305-4)
EN 12457-2	Characterization of waste – Leaching – Compliance test for leaching of granular waste materials and sludges – Part 2: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 4 mm (without or with size reduction)
EN 12506	Characterization of waste – Analysis of eluates – Determination of pH, As, Ba, Cd, Cl ⁻ , Co, Cr, Cr VI, Cu, Mo, Ni, NO ²⁻ , Pb, total S, SO ₄ ²⁻ , V and Zn
ISO 4689-3 2004	Iron ores – Determination of sulfur content – Part 3: Combustion/infrared method <u>SIST EN 50164-7:2008</u> https://standards.iteh.ai/catalog/standards/sist/0e70f7ad-d403-4fa0-a392-
2 Definitione	5cfd11b880b9/sist-en-50164-7-2008

3 Definitions

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

3.1

earthing enhancing compound

compound improving the contact surface of the earth electrode without damaging the electrodes or polluting the environment

3.2

manufacturer's, supplier's instructions

written instructions provided by the manufacturer or the supplier in his documentation (see 4.1)

3.3

leaching test

test during which is put into contact with a leachant and some constituents of the material are extracted

4 Requirements

Earthing enhancing compounds shall be so designed and constructed that in normal use their performance is reliable and without danger to persons and the surrounding.

The choice of a material depends on its ability to match the particular application requirements.

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4.1 Documentation

The manufacturer or supplier of the earthing enhancing compounds shall provide adequate information in his literature to ensure that the installer can select and install the materials in a suitable and safe manner.

Compliance is checked by inspection.

4.2 Material

The material of the earthing enhancing compound must exhibit low specific resistance and chemically inert to subsoil. It must not pollute the environment. It must be insoluble in water. Its aquatic suspension must not exhibit an acidic pH. It must not contain substances corrosive to the earth electrodes. It must be inert to steel, stainless steel, zinc, copper.

4.3 Marking

All products complying with this standard shall be marked at least with the following:

- a) manufacturer's or responsible vendor's name or trade mark,
- b) identifying symbol.

Where this proves to be impractical the marking in accordance with b) may be given on the smallest packing unit.

NOTE Marking may be applied for example by moulding, pressing, engraving, printing adhesive labels, or water slide transfers.

Compliance is checked in accordance with 5.7. (standards.iteh.ai)

5 Tests

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5.1 General https://standards.iteh.ai/catalog/standards/sist/0e70f7ad-d403-4fa0-a392-

The tests in accordance with this standard are type tests.

- Unless otherwise specified, tests are carried out with the specimens prepared as in normal use according to the manufacturer's or supplier's instructions.
- All tests are carried out on new specimens.
- Unless otherwise specified, three samples are subjected to the tests and the requirements are satisfied if all the tests are met. If only one of the test does not meet the passing criteria, that test and any preceding one which may have influenced the results of the test shall be repeated and also the tests which follow shall be carried out in the required sequence.

NOTE The applicant, when submitting the material to be tested, may also submit an additional quantity which may be necessary should one test fail. The testing station will then, without further request, repeat the test and will reject only if a further failure occurs. If the additional sample is not submitted at the same time, the failure of one test will entail rejection.

5.2 pH measurement

This test covers the procedure for determining the pH of slurries coming from the materials used as earthing enhancing compound. The significance of the test is important because they must be physically and chemically inert with the earth electrodes, to avoid corrosion and the surrounding environment.

5.2.1 **Testing apparatus**

- Any reliable pH meter with a standard electrode for measuring viscous slurries or for measuring soils
- Standard pH reference solution
- Deionised water
- Glassware
- Mixer
- Balance with an accuracy of \pm 0,01 g

5.2.2 **Test preparation**

The volume of the material to be tested shall be the appropriate to perform the test.

- If the material is provided commercially in wet form, then it must be tested as received.
- If the material is provided commercially in dry form and used in wet form, then a slurry must be prepared according to the manufacturer's instructions. Care must be taken during slurry preparation. The produced slurry shall be homogenous without any coagulates.
- If the material is provided commercially and used in dry form, then it must be tested as received.

Procedure of test 5.2.3

- iTeh STANDARD PREVIEW The pH meter will be calibrated with the reference solution.
- (standards.iteh.ai)
- Read and report pH.

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5.2.4 Passing criteria /standards.iteh.ai/catalog/standards/sist/0e70f7ad-d403-4fa0-a392-

The material is deemed to have passed the test if all the measured values are > 8.

The property of the material is determined by the average value of the three independent measurements.

5.3 Solubility in acidic environment

This test covers the procedure for determining the solubility of the material used in earthing in acidic environment. It is considered that this test covers the requirements for the solubility of the material in the water. The significance of the test of such materials is important because they must be stable with time (provide continuous and stable connection of the electrode with the subsoil).

5.3.1 **Testing apparatus**

- Glassware
- Mixer or stirrer
- Balance with an accuracy of \pm 0,01 g
- Oven operating at 105 °C
- 10 % solution of sulphuric acid in de-ionized water
- Filter paper Whatman #3 or equivalent

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5.3.2 Test preparation

- If the material is provided commercially in wet form, then adequate quantity must be dried at 105 °C overnight in order to test the material in dry form.
- If the material is provided commercially in dry form, then it must be tested as received. However adequate quantity must stay at 105 °C overnight in order to remove any moisture.

5.3.3 Procedure of test

5 g (= W1) of pre-dried material are weighted with an accuracy of \pm 0,01 g and added to 500 ml of dilute acid solution 10 % under stirring.

After 30 min \pm 1 min of stirring, the slurry is filtered. The filtered material is dried at 105 °C \pm 5 °C until constant weight. The resultant weight is recorded as W2.

NOTE 1 The filter papers must be dry. They can be kept in a dryer. Before filtration their weight must be measured in order to be able to determine the weight of the tested material:

W2 = (Balance indication) - (Filter weight)

NOTE 2 The weighted materials (filter – tested material) must have the environmental temperature. For this reason, after taking out of the oven, they must be kept in a dryer until they are cooled down.

The solubility of the material is determined as:

Passing criteria Teh STANDARD PREVIEW

The material is deemed to have passed the test if the measured value is less than 25 %.

5.3.5 Determination of leachable ion<u>SIST EN 50164-7:2008</u>

This test covers the procedure for determining the leachable jons of the materials used in earthing. The significance of the test of the materials used as earthing improver must be inert to subsoil and they must not pollute the environment and also not cause corrosion to the earth electrode. For these reasons the determination of the leachable ion concentrations is of great importance.

5.3.6 Leaching test

Leaching test should be performed according to EN 12457-2:

- Fe (iron)

5.3.4

- Cu (copper)
- Zn (zinc)
- Ni (nickel)
- Cd (cadmium)
- Co (cobalt)
- Pb (lead)

5.3.7 Determination of leachable ions

Determination of the concentrations of constituents of interest should be performed according to EN 12506.