BS EN 50164-5:2009

BSI British Standards

Lightning Protection Components (LPC) —

Part 5: Requirements for earth electrode inspection housings and earth electrode seals

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National foreword

This British Standard is the UK implementation of EN 50164-5:2009.

The UK participation in its preparation was entrusted to Technical Committee GEL/81, Protection against lightning.

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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Lightning Protection Components (LPC) - Part 5: Requirements for earth electrode inspection housings and earth electrode seals

Composants de protection contre la foudre (CPF) - Partie 5: Prescriptions pour les regards de visite et les joints d'étanchéité des électrodes de terre

Bitzschutzbauteile - Teil 5: Anforderungen an Revisionskästen und Erderdurchführungen

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

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

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 50164-5 on 2008-12-01.

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)	2009-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-12-01

Contents

1 Scope

This European Standard specifies the requirements and tests for

– earth electrode inspection housings (earth pit),

– earth electrode seals.

Lightning protection components (LPC) may also be suitable for use in hazardous atmospheres. Regard should then be taken of the extra requirements necessary for the components to be installed in such conditions.

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)

3 Definitions

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

3.1
earth electrode inspection housing
metallic or non-metallic enclosure that houses the down conductor/earth termination connection for inspection and testing purposes. This consists of a housing and a removable lid

3.2
earth electrode seal
water pressure seal used in conjunction with an earth rod electrode that passes through the foundation of the building, so preventing ground water from entering the building

4 Requirements

All earth electrode inspection housings and earth electrode seals 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.

4.1 Documentation

The manufacturer or supplier of the earth electrode inspection housing and earth electrode seals shall provide adequate information in his literature to ensure that the installer can select and install the materials in a suitable and safe manner, in accordance with EN 62305-3.

Compliance is checked by inspection.

4.2 Earth electrode inspection housing

The design of the earth electrode inspection housing shall be such that it carries out its function of enclosing the down conductor/earth rod termination in an acceptable and safe manner, and has sufficient internal dimensions to permit the assembly/disassembly of the earth rod clamp. The housing body shall be deep enough to permit the lid to sit flush on the body without fouling on the rod/conductor/clamp assembly.

The material of the earth electrode inspection housing shall be compatible with the associated down conductor and earth rod termination and comply with the tests given in 6.2.

The maximum total weight of the inspection housing shall be 25 kg.

4.3 Earth electrode seal

The design of the earth electrode seal shall be such that it carries out its function of preventing ground water bi-passing the earth rod and entering the basement of a building, in an acceptable and safe manner.

The material of the earth electrode seal shall be compatible with its surrounding environment and comply with the tests given in 6.3.

5 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 6.4.

6 Tests

6.1 General

The tests in accordance with this standard are type tests.

6.1.1 In normal use according to the manufacturer's or supplier's instructions.

6.1.2 All tests are carried out on new specimens.

6.1.3 Unless otherwise specified, three specimens are subjected to the tests and the requirements are satisfied if all the tests are met. If only one of the specimens does not satisfy a test due to an assembly or a manufacturing fault, 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 on another full set of specimens, all of which shall comply with the requirements.

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

6.2 Earth electrode inspection housing

All tests shall be performed on three new lid samples using one housing.

6.2.1 Load test

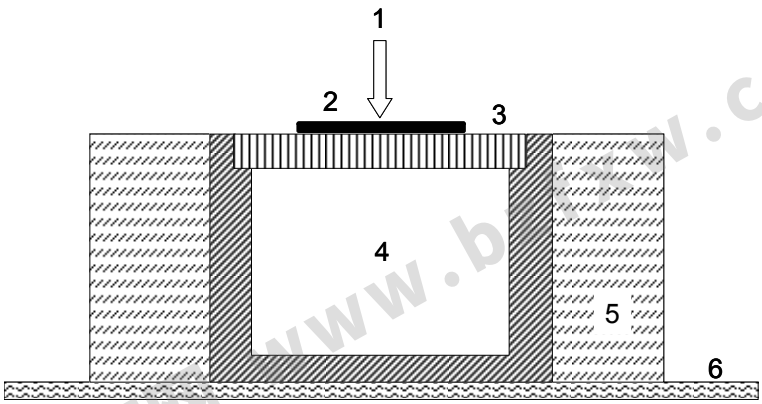
The specimens shall be tested after a curing period. In the case of concrete this shall be a minimum of 28 days and 7 days for all other materials.

The test is carried out on a complete assembly and prepared according to the manufacturer's instructions.

The housing of the specimen shall be cast in a concrete base following the manufacturer instructions.

The arrangement should be placed on a rigid support.

An example for an arrangement is shown in Figure 1.



Legend

1	Force	4	Housing
2	Circular steel plate	5	Concrete base
3	Removable lid	6	Rigid support

Figure 1 – Test arrangement

The product applicable for heavy duty usage i.e. vehicular traffic areas shall be subjected to a force of 40 kN vertically applied through a circular steel plate with a 170 mm ± 0,5 mm diameter and a thickness of 20 mm ± 1 mm with an edge radius of approximately 2 mm.

The product applicable for light duty usage i.e. walkways etc shall be subjected to a force of 15 kN vertically applied through a circular steel plate with a 130 mm ± 0,5 mm diameter and a thickness of 20 mm ± 1 mm with an edge radius of approximately 2 mm.

The centre of the circular plate should be positioned over the centre of the lid.

The force shall be gradually applied over 60 s ± 10 s and maintained for 120 s ± 5 s.

6.2.2 Acceptance criteria

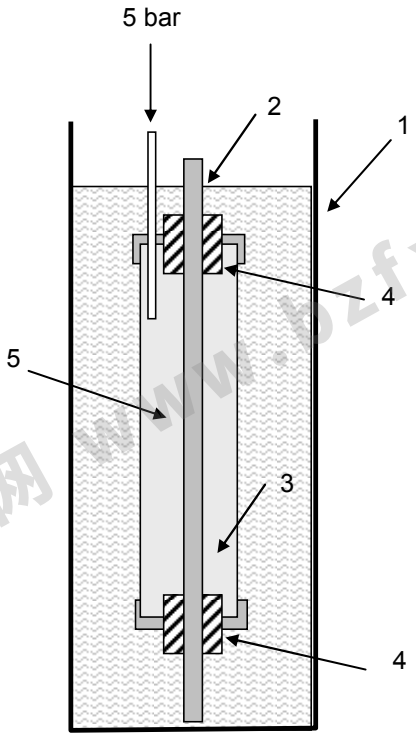
During the test the lid shall show no deflection greater than 7 mm. After the test, the samples shall show no signs of disintegration, nor shall there be any cracks visible to normal or corrected vision without additional magnification. One minute after the load has been removed, there shall be no permanent deformation exceeding 3 mm.

The specimens are deemed to have passed the tests if all samples meet the above requirements.

6.3 Earth electrode seal

6.3.1 Sealing test

The earth electrode seal shall be assembled in accordance with the manufacturer's instructions in a typical test bed that proves its intended application (as shown in Figure 2).



Legend

1 Tank
2 Earth electrode
3 Earth electrode seal arrangement
4 Seals
5 Air

Figure 2 – Test arrangement

A minimum air pressure of 5 bar shall be applied for 24 h continuous to one end of the seal arrangement.

6.3.2 Acceptance criteria

No leakage shall be detected at the sealing points at the completion of the test.

6.4 Marking test

The marking is checked by inspection and by rubbing it by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked by white spirit.

6.5 Acceptance criteria

After the test the marking shall be legible.

NOTE Marking made by moulding, pressing or engraving is not subjected to this test.

7 Electromagnetic compatibility (EMC)

Products covered by this standard are, in normal use, passive in respect of electromagnetic influences (emission and immunity).

8 Structure and content of the test report

The purpose of this instruction is to provide general requirements for laboratory test reports. This document is intended to promote clear, complete reporting procedures for laboratories submitting test reports.

The results of each test carried out by the laboratory shall be reported accurately, clearly, unambiguously and objectively, in accordance with any instructions in the test methods. The results shall be reported in a test report and shall include all the information necessary for the interpretation of the test results and all information required by the method used.

Particular care and attention shall be paid to the arrangement of the report, especially with regard to presentation of the test data and ease of assimilation by the reader. The format shall be carefully and specifically designed for each type of test carried out, but the headings shall be standardized as indicated herein.

The structure of each report shall include at least the following:

8.1 Report identification

8.1.1 A title or subject of the report.

8.1.2 Name, address and telephone number of the test laboratory.

8.1.3 Name, address and telephone number of the sub test laboratory where the test was carried out if different from company which has been assigned to perform the test.

8.1.4 Unique identification number (or serial number) of the test report.

8.1.5 Name and address of the vendor.

8.1.6 Report shall be paginated and the total number of pages indicated.

8.1.7 Date of issue of report.

8.1.8 Date(s) of performance of test(s).

8.1.9 Signature and title, or an equivalent identification of the person(s) authorized to sign for the testing laboratory for the content of the report.

8.1.10 Signature and title of person(s) conducting the test.

8.2 Sample description

8.2.1 Detailed description and unambiguous identification of the test sample and/or test assembly.

8.2.2 Characterization and condition of the test sample and/or test assembly.

8.2.3 Sampling procedure, where relevant.

8.2.4 Date of receipt of test items.

8.2.5 Photographs, drawings or any other visual documentation, if available.

8.3 Standards and references

8.3.1 Identification of the test standard used and the date of issue of the standard.

8.3.2 Other relevant documentation with the documentation date.

8.4 Test procedure

8.4.1 Description of the test procedure.

8.4.2 Justification for any deviations from, additions to or exclusions from the referenced standard.

8.4.3 Any other information relevant to a specific test such as environmental conditions.

8.4.4 Configuration of testing assembly.

8.4.5 Location of the arrangement in the testing area and measuring techniques.

8.5 Testing equipment, description

8.5.1 Description of equipment used for every test conducted.

8.5.2 Measuring instruments description

8.5.3 Characteristics and calibration date of all instruments used for measuring the values specified in the standard.

8.6 Results and parameters recorded

8.6.1 The required passing criteria for each test, defined by the standard.

8.6.2 The relevant observed or derived results of the tests.

8.6.3 A statement of pass/fail identifying the part of the test for which the specimen has failed and also a description of the failure.

The above shall be presented by tables, graphs, drawings, photographs or other documentation of visual observations as appropriate.

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