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Conduit systems for electrical installations -- Part 2-1: Particular requirements for rigid conduit systems

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English version

Conduit systems for electrical installations
Part 2-1: Particular requirements for rigid conduit systems

Systèmes de conduit pour installations électriques
Partie 2-1: Règles particulières pour les systèmes de conduits rigides

Elektroinstallationsrohrsysteme für elektrische Installationen
Teil 2-1: Besondere Anforderungen für starre Elektroinstallationsrohrsysteme

This European Standard was approved by CENELEC on 1994-12-06. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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.

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 has been prepared by CENELEC Technical Committee TC 113, Cable Management Systems.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50086-2-1 on 1994-12-06.

This Part 2-1 specifies particular requirements for rigid conduit systems.

A conduit system which complies with this standard, is deemed safe for use.

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) 1995-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-12-01

For products which have complied with the relevant national standard before 1996-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-12-01.

This Part 2-1 supplements or modifies the corresponding clauses of EN 50086-1:1993, Conduit systems for electrical installations, Part 1: General requirements.

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

Subclauses, tables and figures which are in addition to those in Part 1 are numbered starting with 101. Annexes which are in addition to those in Part 1 are labelled AA, BB, etc.

Contents

1 Scope

This clause of Part 1 is applicable, except as follows:

Addition:

This standard specifies the requirements for rigid conduit systems.

Conduit systems which are used as an integral part of other equipment also have to be tested according to the relevant standard for that equipment.

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable.

4 General requirements

This clause of Part 1 is applicable.

5 General conditions for tests

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable, except as follows:

6.1.1.1, 6.1.2.1, 6.1.3.2, 6.1.3.3, 6.1.3.4 and 6.1.5.1 are not applicable.

7 Marking and documentation

This clause of Part 1 is applicable, except as follows:

Addition:

7.1.101 The conduit shall be marked in accordance with 7.1 at regular intervals along its length of preferably 1 m but not longer than 3 m and each length shall be marked at least once.

Compliance is checked by inspection.

7.1.102 The manufacturer shall document for the system the minimum inside diameter and the classification in accordance with clause 6.

Compliance is checked by inspection.

8 Dimensions

Replacement:

8.1 Threads and outside diameters shall comply with EN 60423.

Compliance is checked by means of the gauges specified in EN 60423.

8.2 Threadable conduits and threadable conduit fittings shall comply with table 101. Non-threadable conduit fittings shall comply with table 102. The minimum inside diameter of the conduit system shall be declared by the manufacturer.

Compliance is checked by measurement.

Table 101: Thread lengths

Size	External thread	Internal thread
	Minimum length (mm)	Minimum length (mm)
6	05,5	06,5
8	06,5	07,5
10	08,5	09,5
12	10,5	11,5
16	12,5	13,5
20	14,0	15,0
25	17,0	18,0
32	19,0	20,0
40	19,0	20,0
50	19,0	20,0
63	19,0	20,0
75	19,0	20,0

Table 102: Maximum entry diameter and minimum entry length details

Size	Maximum entry diameter (mm)	Minimum entry length (mm)
6	06,5	06,0
8	08,5	08,0
10	10,5	10,0
12	12,5	12,0
16	16,5	16,0
20	20,5	20,0
25	25,5	25,0
32	32,6	30,0
40	40,7	32,0
50	50,8	42,0
63	63,9	50,0
75	75,9	50,0

9 Construction

This clause of Part 1 is applicable.

10 Mechanical properties

This clause of Part 1 is applicable, except as follows:

10.4 Bending test

Conduits which are declared by the manufacturer as being bendable shall be tested in accordance with 10.4.101, 10.4.102 or 10.4.103.

10.4.101 *Metallic conduits*

10.4.101.1 Conduit sizes 16, 20 and 25 shall be subjected to a bending test by means of the apparatus shown in figure 101. Testing of other sizes shall be in accordance with the manufacturer's instructions.

10.4.101.2 Samples having a length equal to 30 times the outside diameter shall be bent through 90°, so that the inside radius of the bend is equal to six times the nominal diameter.

10.4.101.3 For conduits with welded seams, six samples shall be tested, three with the seam on the outside of the bend, three with the seam on the side.

10.4.101.4 After the test:

- the basic material of the conduits and the protective coating of the conduits shall show no cracks visible to normal or corrected vision without magnification;

- seams, if any, shall not have opened;

- the section of the conduit shall not have distorted unduly.

The distortion of the section shall be checked as follows:
When the bent conduit is held in such a position that the straight portions are at 45° to the vertical, one end of the sample pointing upwards and the other downwards, it shall be possible to pass the appropriate gauge in accordance with figure 102 through the sample under its own weight and without any initial speed.

10.4.102 *Non-metallic conduits*

10.4.102.1 Conduit sizes 16, 20 and 25 shall be subjected to a bending test by means of the apparatus shown in figure 103. The length of the sample shall be approximately 500 mm. Testing of other sizes shall be in accordance with the manufacturer's instructions.

10.4.102.2 A bending aid, in the form of a coiled spring of square section metal wire, without burrs and having an overall diameter between 0,7 mm and 1,0 mm less than the specified minimum inside diameter of the conduit, or a bending aid recommended by the manufacturer, shall be inserted into each sample before bending.

10.4.102.3 Before the test, the sample with the bending aid inserted shall be conditioned for at least 2 h in a refrigerator within which the temperature is maintained at the declared transport, permanent application and installation temperature in accordance with table 1 with a tolerance of ± 2 °C.

The bending apparatus shall be placed beside the refrigerator and the test shall be carried out within 10 s after the removal of the sample from the refrigerator.

10.4.102.4 Each sample shall be placed in position as shown in figure 103, and held lightly in the groove of the former by means of the clamp. The sample shall be bent round the former by moving the bending rollers so that, when released, it has a bend of (90 +10/0)°. In this position, it shall be possible to remove the bending aid without damage to the sample or the aid.

After the test, the sample shall show no cracks visible to normal or corrected vision without magnification and it shall be possible to pass the appropriate gauge, in accordance with figure 102, through the sample under its own weight and without any initial speed.