



BSI Standards Publication

**Test requirements for accessories for use
on power cables of rated voltage from
3,6/6(7,2) kV up to 20,8/36(42) kV**

Part 1: Accessories for cables with extended insulation

National foreword

This British Standard is the UK implementation of HD 629-1-S3:2019. It supersedes BS 7888-4.1:2006+A1:2008 (dual numbered as HD 629.1 S2:2006+A1:2008), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/20/11, Electric Cable accessories.

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.

© The British Standards Institution 2019
Published by BSI Standards Limited 2019

ISBN 978 0 539 04440 9

ICS 29.120.20; 29.060.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2019.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

HARMONIZATION DOCUMENT

HD 629-1-S3

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

March 2019

ICS 29.060.20

Supersedes HD 629.1 S2:2006

English Version

Test requirements for accessories for use on power cables of rated voltage from 3,6/6(7,2) kV up to 20,8/36(42) kV - Part 1 Accessories for cables with extruded insulation

Prescriptions relatives aux essais des accessoires des câbles d'énergie pour des tensions assignées de 3,6/6(7,2) kV à 20,8/36(42) kV - Partie 1: Accessoires pour câbles à isolation extrudée

Prüfanforderungen für Kabelgehäuse für Starkstromkabel mit einer Nennspannung von 3,6/6(7,2) kV bis 20,8/36(42) kV - Teil 1: Gehäuse für Kabel mit extrudierter Kunststoffisolation

This Harmonization Document was approved by CENELEC on 2019-02-06. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document at national level.

Up-to-date lists and bibliographical references concerning such national implementation may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

Contents

	Page
1 Scope	5
1.1 General.....	5
1.2 Type of accessories	5
1.3 Rated voltage	5
1.4 Current	5
2 Normative references	6
3 Terms and definitions	6
4 Components.....	9
4.1 Connectors	9
4.2 Materials.....	9
5 Test assemblies	9
5.1 Identification	9
5.2 Cable conductor cross-section	9
5.3 Assembly	11
5.4 Terminations	11
5.5 Terminal boxes	11
5.6 Joints and stop ends	11
5.7 Separable connectors	11
5.8 Test arrangements and number of samples.....	12
6 Extent of compliance.....	12
6.1 General.....	12
6.2 Non range taking terminations, joints and stop ends	12
6.3 Range taking terminations, joints and stop ends	13
6.4 Terminations.....	13
6.5 Separable connectors	14
6.6 Connectors	14
6.7 Cable constructions	15
6.8 Three-core to single core accessory	15
7 Test sequences.....	16
7.1 General.....	16
7.2 Dynamic short circuit performance	16
8 Test results	16
8.1 General	16
8.2 Test reports	16
8.3 Failures	17
9 Visual examination.....	17
Annex A (normative) Identification of test cable	37
Annex B (normative) Identification of Connector	38
Annex C (normative) Visual examination	39
Annex D (informative) Examples for cross section selection	40
Bibliography	44

Tables

Table 1 — Compliance and qualification scheme for non range taking terminations, joints and stop ends	10
Table 2 — Compliance and qualification scheme for range taking terminations, joints, and stop ends	10
Table 3 — Test cable conductor cross-sections for separable connectors	12
Table 4 — Extension of compliance and qualification scheme for non range taking terminations, joints and stop ends	13
Table 5 — Extension of compliance and qualification scheme for range taking terminations, joints, and stop ends	13
Table 6 — Compliance requirements of connectors for joints and terminations	14
Table 7 — Compliance requirements of lugs for separable connectors	15
Table 8 — Cable insulation compliance	15
Table 9 — Extension of compliance from a three-core accessory to a single-core accessory of the same design	15
Table 10 — Indoor terminations for extruded insulation cables (including shielded terminations)	18
Table 11 — Outdoor terminations for extruded insulation cables	19
Table 12 — Straight joints, branch joints and loop joints for extruded insulation cables	20
Table 13 — Stop ends for extruded insulation cables	21
Table 14 — Screened separable connectors for extruded insulation cables	22
Table 15 — Unscreened separable connectors (excluding shielded terminations) for extruded insulation cables	24
Table 16 — Additional tests for compliance extension to other conductor connectors ⁽¹⁾	25
Table 17 — Additional tests for smallest cable cross section compliance ⁽¹⁾	26
Table 18 — Additional tests for separable connector for compliance extension to largest cable cross section ⁽¹⁾	27
Table 19 — Summary of test voltages	28
Table D.1 — Example for Outdoor Terminations	40
Table D.2 — Example for Joints	41
Table D.3 — Example for Outdoor Terminations	42
Table D.4 — Example for Joints	43

Figures

Figure 1 — Test arrangements for non range taking terminations	29
Figure 2 — Test arrangements for range taking terminations	30
Figure 3 — Test arrangements for non range taking joints, loop joints and branch-joints	31
Figure 4 — Test arrangements for range taking joints, loop joints and branch-joints	32
Figure 5 — Test arrangements for non range taking stop ends	33
Figure 6 — Test arrangements for range taking stop ends	34
Figure 7 — Test arrangements for screened separable connectors	35
Figure 8 — Test arrangements for unscreened separable connectors	36

European foreword

This document (HD 629.1 S3:2019) has been prepared by CLC/TC 20, "Electric cables".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-02-06
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-02-06

This document supersedes HD 629.1 S2:2006 and its amendment A1:2008.

This Harmonization Document has been written as part of a series of standards to satisfy the Public Procurement Directive, and is complementary to HD 620, which covers extruded insulation power cables from 3,6/6(7,2) kV to 20,8/36(42) kV, inclusive.

This standard defines the requirements, which may be called up for joints, top ends, separable connectors, indoor and outdoor terminations when used with extruded insulation power cables covered by HD 620. The equivalent requirements for paper-insulated power cables are given in HD 629.2.

The test methods for these accessories are given in EN 61442:2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

1 Scope

1.1 General

This document specifies performance requirements for type tests for cable accessories for use on extruded insulation power cables as specified in HD 620 or other relevant cable standards.

Once type test for an accessory is successfully completed, it is not necessary to repeat the test, unless changes are made in the materials, design or manufacturing process, which might affect the performance characteristics.

Possible extra thermo-mechanical forces due to high current loads from renewable sources of power generation are not covered by these tests (under consideration).

Accessories for special applications such as submarine cables, ship cables or hazardous situations (explosive environments, fire resistant cables or seismic conditions) are not included.

Test methods are included in EN 61442:2005.

NOTE 1: This European Standard does not invalidate existing approvals of products achieved on the basis of national standards and specifications and/or the demonstration of satisfactory service performance. However, products approved according to such national standards or specifications cannot directly claim approval to this European Standard.

NOTE 2: It may be possible, subject to agreement between supplier and purchaser, and/or the relevant conformity assessment body, to demonstrate that conformity to the earlier standard can be used to claim conformity to this European Standard, provided an assessment is made of any additional type testing that may need to be carried out. Any such additional testing that is part of a sequence of testing cannot be done separately.

1.2 Type of accessories

The accessories covered by this standard are listed below:

- a) indoor and outdoor terminations of all designs, including terminal boxes;
- b) straight-joints, branch-joints, stop ends and T-joints of all designs, suitable for use underground, indoors or outdoors;

NOTE 1 Tests specific for UV and outdoor weather resistance are not included.

- c) screened or unscreened plug-in type or bolt-type separable connectors, capable of interfacing with bushing profiles as specified in EN 50180 and EN 50181.

NOTE 2 Joints connecting extruded insulation cables (HD 620) to paper insulated cables (HD 621) are not included. The requirements for these accessories are dealt with in HD 629.2.

1.3 Rated voltage

The rated voltages $U_0/U (U_n)$ of the accessories covered by this standard are 3,6/6(7,2) - 3,8/6,6(7,2) - 6/10(12) - 6,35/11(12) - 8,7/15(17,5) - 12/20(24) - 12,7/22(24) - 18/30(36) - 19/33(36) - 20,8/36(42) kV where:

U_0 is the rated power-frequency voltage between conductor and earth or metallic screen, for which the cable accessory is designed;

U is the rated power-frequency voltage between conductors for which the cable accessory is designed;

U_m is the maximum value of the 'highest system voltage' for which the cable accessory is designed.

1.4 Current

The continuous current rating of a termination or joint for extruded insulation power cables is in accordance with the appropriate cable specified in HD 620 or other relevant cable standards and is suitable for operation at the rated current and under short circuit fault conditions at the temperatures stated therein.

The current rating of a separable connector is governed by the current rating of the mating bushing (see EN 50180 and EN 50181).