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BSI Standards Publication

Electric cables for photovoltaic systems (BT(DE/NOT)258)

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This British Standard is the UK implementation of EN 50618:2014.

The UK participation in its preparation was entrusted by Technical Committee GEL/20, Electric cables, to Subcommittee GEL/20/17, Electric Cables - Low voltage.

BSI, as a member of CENELEC, is obliged to publish EN 50618:2014 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval as a European Standard.

The main reasons for this negative vote are as follows:

- The scope includes statements about the lifetime of the cable in relation to maximum conductor temperature and the number of years of service that may be expected from the cable. While such a performance objective is supported, in the opinion of the UK committee the means of determining such performance are insufficiently robust.
- Table B.1 requires the insulation and the sheath materials of the cable to undergo testing for thermal endurance, this being the principal basis for the statements about lifetime expectation. These tests (to EN 60216) are complex, lengthy and specialized. They are of great use for research purposes and for materials development but, if they are to be used for tests on end products, it is necessary to define the sampling, the test temperatures, the test durations and the failure criteria in greater detail than is given in EN 50618. The absence of detail given in EN 50618 provides a high risk of variability of testing within manufacturers, suppliers, test laboratories and certifiers.

The UK committee advise users to be aware of these concerns when applying this standard, particularly in the context of any expectation that a minimum lifetime of 25 years, under any and all exposure conditions, is somehow guaranteed.

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

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28 February 2015	Extra national foreword text inserted

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English Version

**Electric cables for photovoltaic systems
(BT(DE/NOT)258)**

Câbles électriques pour systèmes photovoltaïques
(BT(DE/NOT)258)

Kabel und Leitungen - Leitungen für Photovoltaik Systeme
(BT(DE/NOT)258)

This European Standard was approved by CENELEC on 2014-10-27. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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, 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: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 50618:2014) 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) 2015-10-27
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-10-27

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.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

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Introduction

This standard specifies cables for use in Photovoltaic (PV) Systems, in particular for installation at the Direct Current (d.c.) side. These cables are suitable for permanent outdoor use for many years under variable demanding climate conditions. Relatively stringent requirements are set for these products in line with the expected harsh usage conditions.

During the writing of this standard the joint work of TC 64 (Electrical installations and protection against electric shock) and TC 82 (Solar Photovoltaic Energy Systems) on the design and installation of PV systems has been taken into account.

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1 Scope

This European Standard applies to low smoke halogen-free, flexible, single-core power cables with cross-linked insulation and sheath. In particular for use at the direct current (d.c.) side of photovoltaic systems, with a nominal d.c. voltage of 1,5 kV between conductors and between conductor and earth.

The cables are suitable to be used with Class II equipment.

The cables are designed to operate at a normal maximum conductor temperature of 90 °C, but for a maximum of 20 000 hours a max. conductor temperature of 120 °C at a max. ambient temperature of 90 °C is permitted.

NOTE The expected period of use under normal usage conditions as specified in this standard is at least 25 years.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50289-4-17, *Communication cables – Specifications for test methods – Part 4-17: Test methods for UV resistance evaluation of the sheath of electrical and optical fibre cable*

EN 50395:2005, *Electrical test methods for low voltage energy cables*

EN 50396:2005, *Non electrical test methods for low voltage energy cables*

EN 50525-1:2011, *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) – Part 1: General requirements*

EN 50565-1:2014, *Electric cables – Guide to use for cables with a rated voltage not exceeding 450/750 V (U₀/U) – Part 1: General guidance*

EN 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state (IEC 60068-2-78)*

EN 60216-1, *Electrical insulating materials – Thermal endurance properties – Part 1: Ageing procedures and evaluation of test results (IEC 60216-1)*

EN 60216-2, *Electrical insulating materials – Thermal endurance properties – Part 2: Determination of thermal endurance properties of electrical insulating materials – Choice of test criteria (IEC 60216-2)*

EN 60228:2005, *Conductors of insulated cables (IEC 60228:2004)*

EN 60332-1-2:2004, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame (IEC 60332-1-2:2004)*

EN 60811-401, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 401: Miscellaneous tests – Thermal ageing methods – Ageing in an air oven (IEC 60811-401)*

EN 60811-403, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 403: Miscellaneous tests – Ozone resistance test on cross-linked compounds (IEC 60811-403)*

EN 60811-404, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 404: Miscellaneous tests – Mineral oil immersion tests for sheaths (IEC 60811-404)*