



**NSAI**  
Standards

Irish Standard  
I.S. EN 50620:2017

# Electric cables - Charging cables for electric vehicles

**I.S. EN 50620:2017**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 50620:2017

*Published:*

2017-05-12

*This document was published under the authority of the NSAI and comes into effect on:*

2017-05-30

ICS number:

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeán Náisiúnta na hÉireann

## National Foreword

I.S. EN 50620:2017 is the adopted Irish version of the European Document EN 50620:2017, Electric cables - Charging cables for electric vehicles

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

EUROPEAN STANDARD

**EN 50620**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

---

ICS 29.060.20

English Version

## Electric cables - Charging cables for electric vehicles (BT(DE/NOT)259)

Câbles électriques - Câbles de charge pour véhicules  
électriques  
(BT(DE/NOT)259)

Kabel und Leitungen - Ladeleitung für Elektrofahrzeuge  
(BT(DE/NOT)259)

This European Standard was approved by CENELEC on 2016-06-27. 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, 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: Avenue Marnix 17, B-1000 Brussels**

EN 50620:2017 (E)

| <b>Contents</b>   | <b>Page</b> |
|---|-------------|
| <b>European foreword</b> .....  | <b>4</b>    |
| <b>1 Scope</b> .....  | <b>5</b>    |
| <b>2 Normative references</b> .....   | <b>5</b>    |
| <b>3 Terms and definitions</b> .....  | <b>7</b>    |
| <b>4 Rated voltage</b> .....  | <b>8</b>    |
| <b>5 Marking</b> .....  | <b>8</b>    |
| <b>5.1 Indication of origin</b> .....                                       | <b>8</b>    |
| <b>5.2 Continuity of marking</b> .....                                      | <b>8</b>    |
| <b>5.3 Use of the name CENELEC</b> .....                                    | <b>9</b>    |
| <b>5.4 Code designation</b> .....   | <b>9</b>    |
| <b>5.5 Additional voluntary marking</b> .....                               | <b>9</b>    |
| <b>5.6 Additional requirements</b> .....                                    | <b>10</b>   |
| <b>5.6.1 Durability</b> .....   | <b>10</b>   |
| <b>5.6.2 Legibility</b> .....   | <b>10</b>   |
| <b>6 Requirements for the construction of cables</b> .....                  | <b>10</b>   |
| <b>6.1 Conductors</b> .....   | <b>10</b>   |
| <b>6.1.1 Material</b> .....   | <b>10</b>   |
| <b>6.1.2 Electrical resistance</b> .....                                    | <b>10</b>   |
| <b>6.2 Sizes of cable</b> .....   | <b>10</b>   |
| <b>6.3 Insulation</b> .....   | <b>10</b>   |
| <b>6.3.1 Material</b> .....   | <b>10</b>   |
| <b>6.3.2 Application to the conductor</b> .....                             | <b>10</b>   |
| <b>6.3.3 Thickness</b> .....  | <b>11</b>   |
| <b>6.3.4 Core identification</b> .....                                      | <b>11</b>   |
| <b>6.4 Assembly of cores</b> .....  | <b>12</b>   |
| <b>6.5 Other components</b> .....   | <b>12</b>   |
| <b>6.5.1 General</b> .....  | <b>12</b>   |
| <b>6.5.2 Interstitial fillers</b> .....                                     | <b>12</b>   |
| <b>6.6 Sheath</b> .....   | <b>13</b>   |
| <b>6.6.1 Material</b> .....   | <b>13</b>   |
| <b>6.6.2 Application</b> .....  | <b>13</b>   |
| <b>6.6.3 Thickness</b> .....  | <b>13</b>   |
| <b>6.6.4 Colour</b> .....   | <b>14</b>   |
| <b>7 Requirements</b> .....   | <b>14</b>   |
| <b>Annex A (normative) Requirements for compatibility test</b> .....        | <b>25</b>   |
| <b>A.1 Conditions</b> .....   | <b>25</b>   |
| <b>A.2 Requirements</b> .....   | <b>25</b>   |
| <b>Annex B (informative) Guide to use (future amendment EN 50565)</b> ..... | <b>26</b>   |
| <b>Annex C (normative) Cold impact test</b> .....                           | <b>27</b>   |

|  |           |
|--|-----------|
| <b>Annex D (normative) Resistance against chemicals .....</b>  | <b>28</b> |
| <b>Annex E (informative) Current ratings .....</b>   | <b>29</b> |
| <b>Annex F (normative) Weathering/UV resistance test.....</b>  | <b>30</b> |
| <b>Bibliography.....</b>   | <b>31</b> |
| <b>Tables</b>  |           |
| <b>Table 1 - Examples of maximum permitted voltages against rated voltage of cable.....</b>                | <b>8</b>  |
| <b>Table 2 — Requirements for halogen free insulation compounds.....</b>                                   | <b>15</b> |
| <b>Table 3 — Requirements for halogen free sheathing compounds.....</b>                                    | <b>16</b> |
| <b>Table 4a — Dimensional and insulation resistance values of H05BZ5-F and H07BZ5-F <sup>a</sup> .....</b> | <b>18</b> |
| <b>Table 4b — Dimensional and insulation resistance values of H05BZ6-F and H07BZ6-F <sup>a</sup> .....</b> | <b>19</b> |
| <b>Table 5 — Tests for complete cable .....</b>  | <b>20</b> |
| <b>Table A.1 — Requirements .....</b>  | <b>25</b> |
| <b>Table B.1 - Constructional details and limiting conditions .....</b>                                    | <b>26</b> |
| <b>Table C.1 — Parameter for cold impact .....</b>   | <b>27</b> |
| <b>Table D.1 — List of test media .....</b>  | <b>28</b> |
| <b>Table E.1 - Current rating for flexible cable for Mode 1 charging only (300/500 V) .....</b>            | <b>29</b> |
| <b>Table E.2 - Current rating for flexible cable for Mode 2 and 3 charging (450/750V).....</b>             | <b>29</b> |
| <b>Figures</b>   |           |
| <b>Figure 1 — Example of marking.....</b>  | <b>9</b>  |

**EN 50620:2017 (E)**

## **European foreword**

This document (EN 50620:2017) 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) 2017-11-12
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-05-12

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.



## 1 Scope

This standard specifies design, dimensions and test requirements for halogen-free cables with extruded insulation and sheath having a voltage rating of up to and including 450/750 V for flexible applications under severe condition for the power supply between the electricity supply point or the charging station and the electric vehicle (EV).

The EV charging cable is intended to supply power and if needed communication (details see EN 61851-1 and the EN 62196 series) to an electric vehicle. The charging cables are applicable for charging modes 1-3 of EN 61851-1. The cables in this standard with rated voltage 300/500 V are only permitted for charging mode 1 of EN 61851-1.

The maximum conductor operating temperatures for the cables in this standard is 90 °C.

The cables may be:

- a) an integral part of the vehicle (case A of EN 61851-1); or
- b) a detachable cable assembly with a vehicle connector and AC supply connection to a socket outlet (case B of EN 61851-1); or
- c) permanently attached to a fixed charging point (case C of EN 61851-1).

This standard describes cables whose safety and reliability is ensured when they are installed and/or used in accordance to the guide to use EN 50565-1 and Annex B.

## 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 228, *Automotive fuels — Unleaded petrol — Requirements and test methods*

EN 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 50289-1-5:2001, *Communication cables — Specifications for test methods — Part 1-5: Electrical test methods - Capacitance*

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 50334, *Marking by inscription for the identification of cores of electric cables*

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 60228, *Conductors of insulated cables (IEC 60228)*

EN 60332-1-2:2004/A1:2015, *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/A1:2015)*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-