

INTERNATIONAL STANDARD



**Charging cables for electric vehicles for rated voltages up to and including
0,6/1 KV –
Part 1: General requirements**



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 43.120; 29.060.20

ISBN 978-2-8322-9047-7

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REDLINE VERSION



**Charging cables for electric vehicles for rated voltages up to and including
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CHARGING CABLES FOR ELECTRIC VEHICLES
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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 62893-1 edition 1.1 contains the first edition (2017-11) [documents 20/1761/FDIS and 20/1772/RVD] and its amendment 1 (2020-11) [documents 20/1916/CDV and 20/1933/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62893-1 has been prepared by IEC technical committee 20: Electric cables.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62893 series, published under the general title *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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CHARGING CABLES FOR ELECTRIC VEHICLES OF RATED VOLTAGES UP TO AND INCLUDING 0,6/1 kV –

Part 1: General requirements

1 Scope

This part of IEC 62893 specifies construction, dimensions and test requirements for cables with extruded insulation and sheath having a voltage rating of up to and including 0,6/1 kV AC or up to and including 1 500 V DC for flexible applications under harsh conditions for the power supply between the electricity supply point of the charging station and the electric vehicle (EV).

The EV charging cable is intended to supply power and, if needed, communication (for details see the IEC 62196 series and IEC 61851-1) to an EV or plug-in hybrid vehicle (PHEV). The charging cables are applicable for charging modes 1 to 4 of IEC 61851-1. Ordinary duty cables with rated voltage 300/500 V are only permitted for charging mode 1 of IEC 61851-1. Maximum conductor temperature for the cables in this part of IEC 62893 is 90 °C.

The particular types of cables are specified in IEC 62893-3 (modes 1 to 3 for AC charging) and in the future IEC 62893-4 (mode 4 for DC charging).

These parts are collectively referred to hereafter as “the particular specifications”.

The test methods specified are given in IEC 62893-2, IEC 60245-2, IEC 60332-1-2, IEC 62821-1:2015, Annex B, and in the relevant parts of IEC 60811, as listed in the normative references.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60245-2:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 2: Test methods*

IEC 60228:2004, *Conductors of insulated cables*

IEC 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/AMD1:2015

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

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

IEC 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds*

IEC 60811-505:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 505: Mechanical tests – Elongation at low temperature for insulations and sheaths*

IEC 60811-507, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 507: Mechanical tests – Hot set test for cross-linked materials*

IEC 60811-508:2012, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 508: Mechanical tests – Pressure test at high temperature for insulation and sheaths*

IEC 60811-509, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 509: Mechanical tests – Test for resistance of insulations and sheaths to cracking (heat shock test)*

IEC 62821-1:2015, *Electric cables – Halogen-free, low smoke, thermoplastic insulated and sheathed cables of rated voltages up to and including 450/750 V – Part 1: General requirements*

IEC 62893-2:2017, *Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV – Part 2: Test methods*

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 7619-1, *Rubber, vulcanized or thermoplastic – Determination of indentation hardness – Part 1: Durometer method (Shore hardness)*

ISO 14572:2011, *Road vehicles – Round, sheathed, 60 V and 600 V screened and unscreened single or multi-core cables – Test methods and requirements for basic- and high-performance cables*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Definitions relating to insulating and sheathing materials

3.1.1

halogen-free compound

compound not containing halogens which meets the requirements given in this document