IEC 62893-2

Edition 1.0 2017-11

INTERNATIONAL STANDARD

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

IEC 62893-2:2017-11(en)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing 20 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
65 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

IEC 62893-2

Edition 1.0 2017-11

INTERNATIONAL STANDARD

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 43.120; 29.060.20

ISBN 978-2-8322-5068-6

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 2: Test methods

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62893-2 has been prepared by IEC technical committee 20: Electric cables.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
20/1763/FDIS	20/1774/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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 this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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

A bilingual version of this publication may be issued at a later date.

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

Part 2: Test methods

1 Scope

This part of IEC 62893 specifies test methods which are particular 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 or the charging station and the electric vehicle (EV).

General requirements are specified in IEC 62893-1 and particular types of cables are specified in IEC 62893-3 and the intended future IEC 62893-4 on DC charging.

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 60811-501:2012, *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 60811-506, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 506: Mechanical tests – Impact test at low temperature for insulations and sheaths*

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

ISO 1817, *Rubber vulcanized or thermoplastic – Determination of the effect of liquids*

ISO 6722-1, *Road vehicles – 60 V and 600 V single-core cables – Part 1: Dimensions, test methods and requirements for copper conductor cables*

ISO 22241-1, *Diesel engines – NOx reduction agent AUS 32 – Part 1: Quality requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62893-1 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

4 General requirements

4.1 Pre-conditioning

All the tests shall be carried out not less than 16 h after the extrusion of the insulating or sheathing compounds.

4.2 Test temperature

Unless otherwise specified, tests shall be made at an ambient temperature of (20 ± 15) °C.

4.3 Test voltage

Unless otherwise specified in the individual clause of this document or in the product standard, the test voltage shall be AC of approximately sine wave form and of frequency between 49 Hz and 61 Hz. The ratio of peak value to r.m.s. value shall be equal to √2 with a tolerance of ± 7 %.

The values quoted are r.m.s. values.

4.4 Test values

Full test conditions (such as temperatures, durations, etc.) and full test requirements are not specified in this document; it is intended that they should be specified by the standard dealing with the relevant type of cable.

Any test requirements which are given in this document may be modified by the relevant cable standard to suit the needs of a particular type of cable.

5 Test methods

5.1 Electrical test methods

5.1.1 Long term resistance of insulation to DC

5.1.1.1 Test sample

Carry out the test on a sample of cable of 5 m length from which all coverings have been removed.

Take care to avoid damage to the core(s) during removal of the coverings.

5.1.1.2 Procedure

Immerse the sample for (240 ± 2) h at (85 ± 2) °C in an aqueous solution of sodium chloride having a concentration of 30 g/l, with a length of about 250 mm at each end of the sample projecting above the solution. Connect the negative pole of a 600 V DC supply to the conductor(s) of the sample and the positive pole to a copper electrode immersed in the solution for the time given in the relevant cable standard.

5.1.1.3 Requirement

No breakdown of the insulation shall occur during the test and, after the test, the exterior of the insulation shall show no sign of damage.

Discoloration of the insulation should be ignored.