

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

FC	REWO	RD	4
1	Scop	e	6
2	Norm	ative references	6
3	Term	s and definitions	6
4	Gene	eral requirements	7
•	4.1	Pre-conditioning	
	4.2	Test temperature	
	4.3	Test voltage	
	4.4	Test values	
5		methods	
•	5.1	Electrical test methods	
	5.1.1		
	5.2	Weathering/UV resistance test	
	5.2.1	General	
	5.2.2		
	5.2.3	• •	
	5.2.4		
	5.3	Resistance against chemicals	
	5.3.1	Test conditions	
	5.3.2		
	5.4	Water resistance test	
	5.4.1	General	
	5.4.2	Procedure	9
	5.4.3	Requirements	9
	5.5	Tear resistance test	9
	5.5.1	Sampling and preparation of the test piece	9
	5.5.2	Conditioning of test pieces	10
	5.5.3	Test procedure	10
	5.5.4	Expression of results	10
	5.6	Determination of saponification value	
	5.6.1		
	5.6.2	' '	
	5.6.3	•	
	5.6.4	•	
	5.6.5		
	5.6.6	'	
	5.7	Crush resistance test	
	5.7.1	General	
	5.7.2		
	5.7.3	·	
	5.7.4		
	5.7.5	•	
	5.8	Cold impact test	
	5.8.1	Test conditions	
יים	5.8.2	•	
DII	υιοgrap	hy	14

Figure 1 – Test piece for tear resistance test	10
Figure 2 – Test piece before being placed in the jaws of the tensile testing machine	11
Table 1 – Test-medium for resistance against chemicals	9
Table 2 – Parameters for cold impact test	13

#### 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