INTERNATIONAL STANDARD

ISO 19642-8

First edition
2019-01

Road vehicles — Automotive cables —

Part 8: Dimensions and requirements for 30 V a.c. or 60 V d.c. round, sheathed, screened or unscreened multi or single core aluminium conductor cables

Véhicules routiers — Cables automobiles —

Partie 8: Dimensions et exigences des câbles en aluminium ronds, gainés, blindés, à plusieurs ou unique noyau blindés 30 V a.c ou 60 V c.c.

Reference number
ISO 19642-8:2019(E)

© ISO 2019



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Specifications ... **1**
4.1 General test conditions ... 1
4.2 Safety concerns ... 2
4.3 Voltage rating ... 2
4.4 Temperature classes ... 2
4.5 Conductor material ... 2
4.6 Conductors ... 2
4.7 Sheath thickness ... 2
4.8 Core cable outside diameter ... 2
4.9 Representative conductor sizes for testing ... 2
4.10 Reference and requirements for the tests according to ISO 19642-2 ... 3

5 Requirements for single core cables ... **5**

6 Requirements for round, sheathed, screened or unscreened multi or single core cables ... **5**
6.1 General ... 5
6.2 Dimensional tests ... 5
6.2.1 Cable outside and inner layer diameters ... 5
6.2.2 Ovality of sheath ... 6
6.2.3 Thickness of sheath ... 6
6.2.4 In-process cable outside diameter ... 6
6.3 Electrical tests ... 6
6.3.1 Electrical continuity ... 6
6.3.2 Withstand voltage at final inspection ... 6
6.3.3 Screening effectiveness ... 6
6.3.4 Sheath fault on screened cables ... 7
6.4 Mechanical tests ... 7
6.4.1 Strip force of sheath ... 7
6.4.2 Cyclic bending ... 7
6.4.3 Flexibility ... 7
6.5 Environmental tests ... 7
6.5.1 Test specimen preparation and winding tests ... 7
6.5.2 Long term heat ageing, 3 000 h at temperature class rating ... 7
6.5.3 Short term heat ageing, 240 h at temperature class rating +25 °C ... 7
6.5.4 Thermal overload, 6 h at temperature class rating +50 °C ... 7
6.5.5 Pressure test at high temperature ... 8
6.5.6 Shrinkage by heat of sheath ... 8
6.5.7 Low temperature winding ... 8
6.5.8 Cold impact ... 8
6.5.9 Temperature and humidity cycling ... 8
6.5.10 Resistance to liquid chemicals ... 8
6.5.11 Durability of sheath marking ... 8
6.5.12 Resistance to ozone ... 8
6.5.13 Artificial weathering ... 8
6.5.14 Resistance to flame propagation ... 9

Annex A (informative) **Dimensions of preferred constructions** ... **10**

Bibliography ... **16**

© ISO 2019 – All rights reserved

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 32, *Electrical and electronic components and general system aspects*.

A list of all parts in the ISO 19642 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2019 – All rights reserved

Introduction

This document was prepared following a joint resolution to improve the general structure of the ISO Automotive Electric Cable standards. This new structure adds more clarity and, by defining a new standard family, opens up the standard for future amendments.

Many other standards currently refer to ISO 6722-1, ISO 6722-2 and ISO 14572. So these standards will stay valid at least until the next scheduled systematic review and will be replaced later on by the ISO 19642 series.

For new Automotive Cable Projects customers and suppliers are advised on using the ISO 19642 series.

© ISO 2019 – All rights reserved

Road vehicles — Automotive cables —

Part 8: Dimensions and requirements for 30 V a.c. or 60 V d.c. round, sheathed, screened or unscreened multi or single core aluminium conductor cables

WARNING — The use of this document can involve hazardous materials, operations and equipment. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This document specifies the dimensions and requirements for multi or single core cables intended for use in road vehicle applications where the nominal system voltage is 30 V a.c. or 60 V d.c.. It also applies to individual cores in multi core cables.

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.

ISO 19642-1, *Road vehicles — Automotive cables — Vocabulary and design guidelines*

ISO 19642-2, *Road vehicles — Automotive cables — Test methods*

ISO 19642-4, *Road vehicles — Automotive cables — Dimensions and requirements — 30 V a.c. or 60 V d.c. single core aluminium cables*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19642-1 apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Specifications

4.1 General test conditions

The test conditions of ISO 19642-2 shall apply.

The cables shall be submitted to the tests as specified in Table 2.

If suppliers and customers agree upon modifications or changes to the methods and requirements, all the changes and modifications shall be clearly documented.

© ISO 2019 – All rights reserved