Third edition
2019-04

Road vehicles — Multi-core connecting cables —

Part 1: Test methods and requirements for basic performance sheathed cables

Véhicules routiers — Câbles de raccordement multiconducteurs —

Partie 1: Méthodes d'essai et exigences pour les câbles gainés à performance de base

Reference number
ISO 4141-1:2019(E)

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 ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **2**

4 General ... **2**

5 Dimensions ... **3**
5.1 Outside cable diameter ... 3
5.1.1 Test sample ... 3
5.1.2 Apparatus ... 3
5.1.3 Procedure ... 3
5.1.4 Requirement ... 3
5.2 Ovality ... 3
5.2.1 Test sample and apparatus ... 3
5.2.2 Procedure ... 3
5.2.3 Requirement ... 4
5.3 Thickness of the sheath ... 4
5.3.1 Test samples, apparatus, procedure ... 4
5.3.2 Requirement ... 4
5.4 Lay length ... 4
5.4.1 General ... 4
5.4.2 Test samples ... 4
5.4.3 Apparatus ... 4
5.4.4 Procedure ... 4
5.4.5 Requirement ... 4

6 Electrical characteristics ... **4**
6.1 Continuity ... 4
6.2 Withstand voltage ... 4
6.3 Capacitance ... 4
6.3.1 General ... 4
6.3.2 Test samples ... 5
6.3.3 Apparatus ... 5
6.3.4 Procedure ... 5
6.3.5 Requirements ... 6

7 Mechanical characteristics ... **6**
7.1 Pressure test at high temperature ... 6
7.2 Adhesion of the sheath ... 6
7.3 Cyclic bending ... 6
7.3.1 General ... 6
7.3.2 Test samples ... 6
7.3.3 Apparatus ... 6
7.3.4 Procedure ... 7
7.3.5 Requirement ... 7

8 Low temperature characteristics ... **7**
8.1 Winding ... 7
8.1.1 Test sample ... 7
8.1.2 Apparatus ... 8
8.1.3 Procedure ... 8
8.1.4 Requirements ... 8
8.2 Impact ... 8
8.2.1 Test samples ... 8
8.2.2 Apparatus ... 8
8.2.3 Procedure ... 9

8.2.4 Requirement 9
9 Resistance to abrasion 9
10 Heat ageing 9
10.1 Long term ageing, 3 000 h 9
10.2 Short term ageing, 240 h 9
11 Resistance to chemicals 9
11.1 Fluid compatibility of the sheath 9
11.1.1 Test samples 9
11.1.2 Apparatus 9
11.1.3 Procedure 10
11.1.4 Requirements 10
11.2 Durability of sheath marking 10
11.2.1 General 10
11.2.2 Test Samples 10
11.2.3 Apparatus 10
11.2.4 Procedure 10
11.2.5 Requirements 10
11.3 Resistance to ozone 11
12 Resistance to flame propagation 11
13 Artificial weathering 11
13.1 General 11
13.2 Test sample 11
13.3 Apparatus 11
13.4 Procedure 11
13.5 Requirement 11
Bibliography 12

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*.

This third edition cancels and replaces the second edition (ISO 4141-1:2005), which has been technically revised. The main changes compared to the previous edition are as follows:

— Temperature range of cable defined as Class A and Class B (see 10.1 and 10.2).

A list of all parts in the ISO 4141-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.