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**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*



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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 4141-1 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

This second edition cancels and replaces the first edition (ISO 4141-1:1998), which has been technically revised.

ISO 4141 consists of the following parts, under the general title *Road vehicles — Multi-core connecting cables*:

- *Part 1: Test methods and requirements for basic performance sheathed cables*
- *Part 2: Test methods and requirements for high-performance sheathed cables*
- *Part 3: Construction, dimensions and marking of unscreened sheathed low-voltage cables*
- *Part 4: Articulation test method and requirements for coiled cable assemblies*

# Road vehicles — Multi-core connecting cables —

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

### 1 Scope

This part of ISO 4141 specifies the test methods and requirements of basic performance multi-core sheathed cables for the connection of towing and towed vehicles, suitable for a temperature range of  $-40\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$ .

### 2 Normative references

The following referenced documents are indispensable for the application 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 1817, *Rubber, vulcanised — Determination of the effect of liquids*

ISO 4141-3 *Road vehicles — Multi-core connecting cables — Part 3: Construction, dimensions and marking of unscreened sheathed low-voltage cables*

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources*

ISO 4892-4, *Plastics — Methods of exposure to laboratory light sources — Part 4: Open-flame carbon-arc lamps*

ISO 6722, *Road vehicles — 60 V and 600 V single-core cables — Dimensions, test methods and requirements*

ISO 7638-1, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Part 1: Connectors for braking systems and running gear of vehicles with 24 V nominal supply voltage*

ISO 7638-2, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Part 2: Connectors for braking systems and running gear of vehicles with 12 V nominal supply voltage*

ISO 12098, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — 15-pole connector for vehicles with 24 V nominal supply voltage*

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

ISO/PAS 16553, *Road vehicles — Data cables — Test methods and requirements*

IEC 60811-1-1, *Common test methods for insulating and sheathing materials of electric cables and optical cables — Part 1-1: Methods for general application — Measurement of thickness and overall dimensions — Tests for determining the mechanical properties*

EN 14214, *Automotive fuels — Fatty acid methyl esters (FAME) for diesel engines — Requirements and test methods*

DIN V 70070, *Diesel engines — NO<sub>x</sub>-reduction additives AUS 32 — Requirements and test methods*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6722 and the following apply.

#### 3.1 basic performance

⟨cable⟩ meeting basic requirements for general automotive applications

#### 3.2 screen

conductive material intended to reduce the penetration and/or radiation of a varying electromagnetic field into an assigned region

#### 3.3 unscreened

absence of a screen

#### 3.4 core

an assembly comprising a conductor with its own insulation (and screens, if there are any)

### 4 General

Single core identification shall conform to ISO 4141-3. The single components of multi-core sheathed cables shall comply with ISO 6722 for single cores, and with ISO/PAS 16553 for data cables, with the exception of the capacitance test of unscreened twisted pair cores for which 6.3 shall apply.

The general test conditions and the ovens used shall be in accordance with ISO 6722.

If a visual examination is required, the sheath shall be smooth, even and free from surface imperfections, e.g. lumps, voids and particles.

The test sequence for each sample group shall be in accordance with Table 1. (Sequences are indicated with an "X", ordered from top to bottom.)