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

道路车辆 多芯连接电缆 第3部分:无屏蔽护套低压电缆的结
构、尺寸和标记

(ISO 4141-3:2019, IDT)

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

1 Scope

This document specifies the comprehensive requirements, construction, dimensions and marking of unscreened sheathed low-voltage cables.

This document applies to connecting cables between tractors and trailers, and its temperature range complies with Class A (-40 °C~85 °C) or Class B (-40 °C~100 °C).

2 Normative references

The provisions of the following documents constitute the essential clauses of this document through normative references in this text. Among them, for any dated reference, only the version corresponding to that date applies to this document; for any undated reference, the latest version (including all amendments) applies to this document.

ISO 1185 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24 N (normal) for vehicles with 24 V nominal supply voltage

NOTE: GB/T 5053.1-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24 N (normal) for vehicles with 24 V nominal supply voltage (ISO 1185:2003, IDT)

ISO 1724 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 12 N (normal) for vehicles with 12 V nominal supply voltage

NOTE: GB/T 5053.2-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 12 N (normal) for vehicles with 12 V nominal supply voltage (ISO 1724:2003, IDT)

ISO 3731 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24 S (supplementary) for vehicles with 24

ISO 11446-2 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - Part 2: 13-pole connectors for vehicles with 12 V nominal supply voltage intended to cross water fords

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

NOTE: GB/T 20717-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 15-pole connector for vehicles with 24 V nominal supply voltage (ISO 12098:2004, IDT)

ISO 25981 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - Connectors for electronically monitored charging systems with 12 V or 24 V nominal supply voltage

3 Terms and definitions

There are no terms or definitions that require definition in this document.

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

- IEC Encyclopedia of Electronic Engineering: <https://www.electropedia.org/>;
- ISO online browsing platform: <https://www.iso.org/obp>.

4 General requirements

Basic performance sheathed cables shall meet the requirements of ISO 4141-1.

High performance sheathed cables shall meet the requirements of ISO 4141-2.

5 Construction and dimensions

5.1 Single-core

5.1.1 General

The core wire shall be composed of multiple strands of fine wires twisted together, and the arrangement sequence of the core wires shall comply with the requirements for any contact arrangement sequence of electrical connectors in the following standards: ISO 3732, ISO 3731, ISO 1185, ISO 1724, ISO 7638-1, ISO 7638-2, ISO 11446-1, ISO

11446-2, ISO 12098, ISO 25981.

NOTE: Appendix A gives an overview of the rated cross-sectional areas of cable cores specified in the above standards.

5.1.2 Additional materials

According to the requirements of the cable construction, the sheath is filled with non-metallic tape or packaging materials, and an inner sheath can also be used.

5.2 Sheath dimensions

5.2.1 Thickness

According to the relevant measurement requirements in ISO 4141-1, the minimum thickness of the cable sheath shall be 1 mm.

5.2.2 Outer diameter

According to the relevant measurement method in ISO 4141-1, the outer diameter of the multi-core cable shall meet the requirements of Table 1.

According to the relevant measurement method in ISO 4141-1, the ellipticity of multi-core cables shall not exceed 10%.

5.3 Coiled cable dimensions

The length symbols of coiled connecting cables are defined as follows:

L_B -- the block length or retracted length; the length of the coiled part, excluding the tail straight segment;

L_W -- the working length; the length when the coiled cable connects the tractor and trailer without bending, including the tail straight segment;

$L_{E_{max}}$ -- the maximum allowable extension length; the maximum extension length

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