

INTERNATIONAL
STANDARD

ISO
6722-2

Third edition
1996-03-01

**Road vehicles — Unscreened low-tension
cables —**

**Part 2:
Requirements**

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ISO 6722-2:1996
Véhicules routiers — Câbles basse tension non blindés —
Partie 2: Exigences



Reference number
ISO 6722-2:1996(E)

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.

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.

International Standard ISO 6722-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

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This third edition cancels and replaces the second edition (ISO 6722-2:1985), which has been extended to include performance requirements of new test methods.

ISO 6722 consists of the following parts, under the general title *Road vehicles — Unscreened low-tension cables*:

- Part 1: *Test methods*
- Part 2: *Requirements*
- Part 3: *Conductor sizes and dimensions for thick-wall insulated cables*
- Part 4: *Conductor sizes and dimensions for thin-wall insulated cables*

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Road vehicles — Unscreened low-tension cables —

Part 2: Requirements

1 Scope

This part of ISO 6722 specifies the requirements for unscreened single-core low-tension cables [nominal system voltage of 50 V (r.m.s.) or less] used in road vehicle applications. It also applies to the individual cores in multi-core cables.

Depending on the environmental temperature, six cable classes are defined:

- class A: – 40 °C to + 85 °C;
- class B: – 40 °C to + 100 °C;
- class C: – 40 °C to + 125 °C;
- class D: – 40 °C to + 155 °C;
- class E: – 40 °C to + 175 °C;
- class F: – 40 °C to + 200 °C.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6722. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this

part of ISO 6722 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6722-1:1996, *Road vehicles — Unscreened low-tension cables — Part 1: Test methods.*

ISO 6722-3:1993, *Road vehicles — Unscreened low-tension cables — Part 3: Conductor sizes and dimensions for thick-wall insulated cables.*

ISO 6722-4:1993, *Road vehicles — Unscreened low-tension cables — Part 4: Conductor sizes and dimensions for thin-wall insulated cables.*

IEC 228:1978, *Conductors of insulated cables.*

3 Requirements

The conductors of all cable classes shall consist of bunched or stranded soft annealed copper wires as specified in IEC 228, completed by material specifications.

The cables shall comply with the requirements specified in table 1 (the numbering of which cross-refers to the clauses in ISO 6722-1:1996).

Table 1

ISO 6722-1 clause ref.	Test method	Class						
		A	B	C	D	E	F	
4	Test for insulation faults	No breakdown shall occur when the earthed dry cable is drawn through the test electrode.						
5.1	Outside cable diameter	No single value shall exceed the maximum cable diameter specified in table 1 of ISO 6722-3:1993 or table 1 of ISO 6722-4:1993.						
5.2	Measurement of insulation thickness	No measured value shall be lower than the minimum insulation thickness specified in table 1 of ISO 6722-3:1993 or table 1 of ISO 6722-4:1993.						
5.3	Measurement of conductor diameter	No value shall exceed the maximum conductor diameter specified in table 1 of ISO 6722-3:1993 or table 1 of ISO 6722-4:1993.						
6.1	Conductor resistance	The measured value, corrected for temperature and length if necessary, shall be less than shown in table 1 of ISO 6722-3:1993 or table 1 of ISO 6722-4:1993.						
6.2	Withstand voltage	Breakdown shall not occur.						
6.3	Insulation resistance	The minimum volume resistivity shall be equal to 1 000 MΩ·mm.						
7.1	Pressure test at high temperature	Breakdown shall not occur.						
7.2	Adhesion of insulating layer to conductor	A	B	C1	C2	D	E	F
		$s \leq 0,75 \text{ mm}^2$		5 N to 30 N	5 N to 50 N	5 N to 30 N		
		$0,75 \text{ mm}^2 < s \leq 1,5 \text{ mm}^2$		5 N to 40 N	5 N to 75 N	5 N to 40 N		
		$1,5 \text{ mm}^2 < s \leq 2,5 \text{ mm}^2$		10 N to 50 N	20 N to 100 N	10 N to 50 N		
		$2,5 \text{ mm}^2 < s \leq 6 \text{ mm}^2$		10 N to 70 N	30 N to 120 N	10 N to 70 N		
7.3	Stripping of insulation	To be applied.						
8.3	Winding test at low temperature without ageing	The test is carried out at $(-40 \pm 2)^\circ\text{C}$ ¹⁾ . After winding, the insulation shall show neither cracks, fractures nor other defects. Breakdown shall not occur during the test in 6.2.						
8.4	Winding test at low temperature after short-term ageing	The test is carried out at $(-25 \pm 2)^\circ\text{C}$. After winding, the insulation shall show neither cracks, fractures nor other defects. Breakdown shall not occur during the test in 6.2.						
9	Impact test at low temperature	After impact, the insulation shall show neither cracks, fractures nor other defects. Breakdown shall not occur during the test in 6.2.						

ISO 6722-1 clause ref.	Test method	Class						
		A	B	C		D	E	F
10	Winding and impact tests after long-term ageing, for initial product acceptance	After winding and/or impact, the insulation shall show neither cracks, fractures nor other defects. Breakdown shall not occur during the test in 6.2.						
11.1	Thermal overload test							
11.2	Shrinkage by heat	The maximum shrinkage shall not exceed 2 mm from either end.						
12	Resistance to flame propagation ²⁾	A	B	C1	C2	D	E	F
	— Exposure time	30 s			15 s	30 s		
	— Extinction time				70 s			
13	Resistance to liquids	After winding or impact, the insulation shall show neither cracks, fractures nor other defects. Breakdown shall not occur during the test in 6.2.						
13.5	Durability of cable marking	All cable marking shall remain legible.						
14	Abrasion resistance	The minimum number of cycles shall be agreed between user and supplier.						
Annex A	Thermal stability of insulation	Within a test time of 30 min the indicating paper shall not show a change as great as from pH 5 to pH 3. This change is indicated if the colour which corresponds to pH 3 becomes visible.						

1) For cables as in ISO 6722-3, the lower temperature of classes A and B may be changed to (- 25 ± 2) °C if agreed between user and supplier.

2) The difference between classes C1 and C2 is only the resistance to flame propagation needed for existing products. However, this subject will be examined during the future revision of the ISO 6722-1 and ISO 6722-2.

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