IEC 61534-1

Edition 2.0 2020-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Powertrack systems –
Part 1: General requirements

Systèmes de conducteurs préfabriqués –
Partie 1: Exigences générales

IEC 61534-1:2011-05/AMD2:2020-07(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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FOREWORD

This amendment has been prepared by subcommittee 23A: Cable management systems, of IEC technical committee 23: Electrical accessories.

The text of this amendment is based on the following documents:

FDIS	Report on voting
23A/903/FDIS	23A/908/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

2 Normative references

Replace:

IEC 60068-2-52, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60127-1:2006, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*

IEC 60269-1:2006, *Low-voltage fuses – Part 1: General requirements*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*[2]

[*footnote text*] [2] There exists a consolidated edition 2.1 (2001) that includes IEC 60529 (1989) and its Amendment 1 (1999).

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test methods for end-products*

IEC 60695-10-2:2003, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*

IEC 60695-11-2:2003, *Fire hazard testing – Part 11-2: Test flames – 1 kW nominal pre-mixed flame – Apparatus, confirmatory test arrangement and guidance*

IEC 60884-1:2002, *Plugs and socket outlets for household and similar purposes – Part 1: General requirements*
Amendment 1 (2006)[3]

[*footnote text*] [3] There exists a consolidated edition 3.1 (2006) that includes IEC 60884-1 (2002) and its Amendment 1 (2006).

ISO 2081:2008, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

with the following:

IEC 60068-2-52:2017, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-75:2014, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*
IEC 60112:2003/AMD1:2009

IEC 60127-1:2006, *Miniature fuses – Part 1: Definitions for miniature fuses and general requirements for miniature fuse-links*
IEC 60127-1:2006/AMD1:2011
IEC 60127-1:2006/AMD2:2015

IEC 60269-1:2006, *Low-voltage fuses – Part 1: General requirements*
IEC 60269-1:2006/AMD1:2009
IEC 60269-1:2006/AMD2:2014

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013[2]

[*footnote text*] [2] A consolidated version of this publication exists, comprising IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

IEC 60695-2-11:2014, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

IEC 60695-10-2:2014, *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

IEC 60695-11-2:2017, *Fire hazard testing – Part 11-2: Test flames – 1 kW nominal pre-mixed flame – Apparatus, confirmatory test arrangement and guidance*

IEC 60884-1:2002, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*
IEC 60884-1:2002/AMD1:2006
IEC 60884-1:2002/AMD2:2013[3]

[*footnote text*] [3] A consolidated version of this publication exists, comprising IEC 60884-1:2002, IEC 60884-1:2002/AMD1:2006 and IEC 60884-1:2002/AMD2:2013.

ISO 2081:2018, *Metallic and other inorganic coatings – Electroplated coatings of zinc with supplementary treatments on iron or steel*

Add the following reference:

ISO 4628-3:2016, *Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting*

3 Terms and definitions

Delete the following term entry:

3.21
routine test

4 General requirements

4.1 *Replace the existing text with the following new text:*

PT systems shall be so designed and constructed that in normal use their performance is reliable and without unreasonable hazard to the user, domestic animals or the surroundings.

4.3 *Replace the existing text with the following new text:*

Accessories associated with or incorporated in a system component shall comply with their own IEC International Standard or, when an IEC International Standard is unavailable, with their own relevant national standard.

5 General notes on tests

5.3 *Replace "*14.1(10/11.1/11.3/15.3)[b]*" in the second row beneath the column title "***Clause number***" with:*

14.2(10/11.1/11.3/15.3)[b]

as follows:

Number of samples	Clause number				
3	8	9	10 (15)[b]	11	14 (10/ 11.1/ 11.3/15.3)[b]
1[a]	14.2(10/11.1/11.3/15.3)[b]				

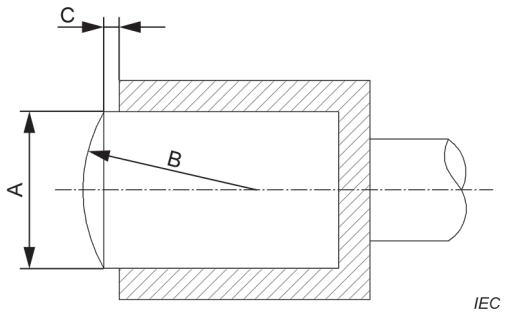
8 Marking and documentation

8.8 *Replace all existing paragraphs with the following new paragraphs, and add new Figure 8:*

The marking according to 8.2, 8.3 and 8.4 shall not be placed on easily removable parts such as screws or washers.

Laser marking directly on the product and marking made by moulding, pressing or engraving are not subjected to this test.

Compliance is checked by the tests in 8.9 and 8.10 and by inspection, using normal or corrected vision, without additional magnification and by rubbing the label using the equipment shown in Figure 8. New samples shall be used for 8.9 and 8.10.



Key

A	Diameter of the piston	(20 ± 1) mm
B	Radius of the piston head	(20 ± 1) mm
C	Gap between piston head and cylinder	(2 + 1/− 0) mm

Figure 8 – Piston for durability of marking test

The test piston head shall be made of an elastic material which is inert against the test liquids and has a Shore-A hardness of 47 ± 5 (for example synthetic rubber). The piston shall be wrapped with cotton comprising cotton wool covered by a piece of cotton medical gauze.

When it is not possible to carry out the test on the specimens due to the shape/size of the product, a suitable piece of the product having the same characteristics can be submitted to the test.

The test shall be carried out on one sample. If the sample does not satisfy the test, the test shall be repeated on two new samples, both of which shall comply with the requirements.

Add the following two new subclauses:

8.9 Durability of marking

The sample shall be rubbed by applying a compression force of (5 ± 1) N at a rate of one cycle per second for 15 s (a cycle comprising a forward and backward movement along the length of the marking) by means of the test piston shown in Figure 8.

Rubbing shall commence immediately after soaking the piece of cotton with water. For markings longer than 20 mm, rubbing can be limited to a part of the marking, over a path of at least 20 mm length.

The sample surface shall then be dried, and the test repeated on the same sample using new cotton soaked in n-hexane 95 % solvent.

When using this liquid, precautions as stated in the relevant material safety datasheet provided by the chemical supplier shall be taken to safeguard the person performing the test.

NOTE n-hexane 95 % (Chemical Abstracts Service Registry Number, CAS RN, 110-54-3) is available from a variety of chemical suppliers as a high pressure liquid chromatography (HPLC) solvent.

After the test, the marking shall be legible.

8.10 Durability of label adhesion

Under consideration.

9 Construction

Add the following new subclause:

9.9 Requirements for PT system with more than one circuit

When a PT system with tap-off facilities is intended to supply several circuits in the same powertrack, the system shall be designed and constructed to prevent tap-off units from being connected to the wrong circuit.

Compliance is checked by inspection.

20 Fire hazard

20.2 Flame spread

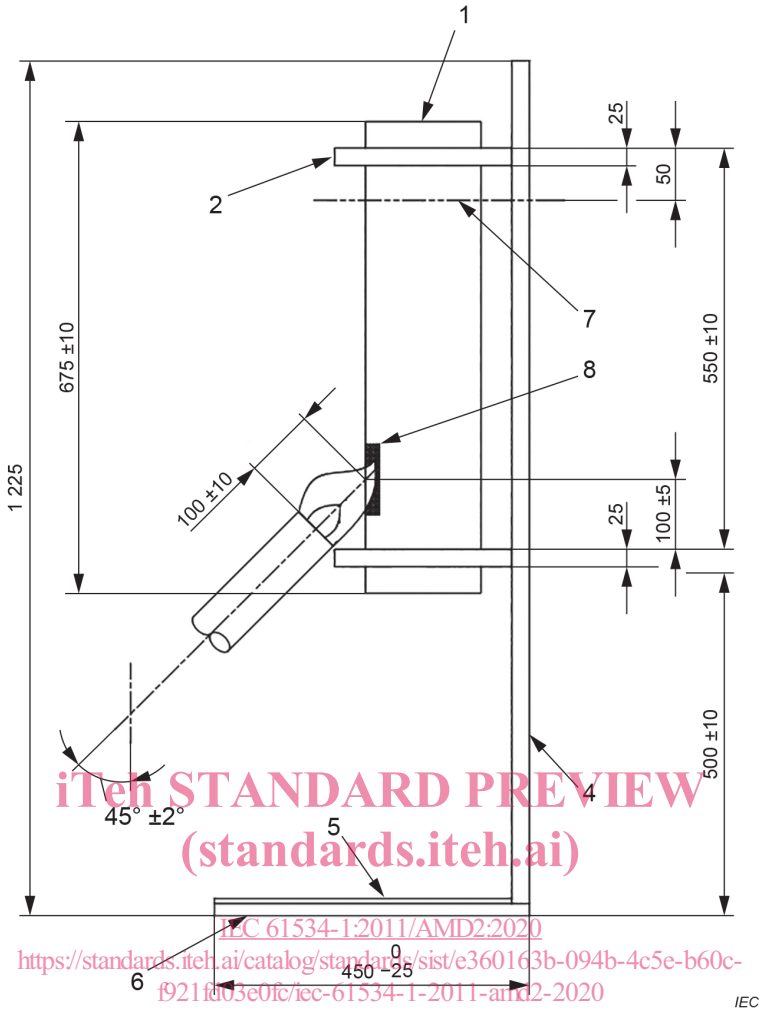
Replace the third paragraph with the following new paragraph:

The test is made on a single straight length of powertrack as supplied by the manufacturer together with at least one tap-off outlet and any associated covers. The overall length of the sample shall be (675 ± 10) mm.

Replace the seventh paragraph with the following new paragraph:

The flame shall be applied to the front face of the tap-off outlet as shown in Figure 3. The sample is exposed to the flame for (60 ± 2) s.

Figure 3: *Replace existing Figure 3 and its Key with the following new Figure 3 and Key and move the new Figure 3 and Key to the end of this Subclause 20.2 as follows:*



Dimensions in millimetres

Key

1 Vertically mounted sample

2 Clamp

3 Flame

4 Back face

5 Wrapping tissue

6 10 mm soft white-wood board of width 700^{+0}_{-25}

7 Maximum height limit for evidence of burning or charring

8 Tap-off outlet

NOTE This drawing is not intended to govern design except as regards the dimensions and specific requirements shown.

Figure 3 – Arrangement for flame test

21 External influences

21.1.2 Corrosion test for dry non-aggressive environments

Replace the existing first paragraph with the following two new paragraphs:

All grease shall be removed from the sample to be tested by cleaning with n-hexane 95 % (Chemical Abstracts Service Registry Number, CAS RN, 110-54-3), after which all parts shall be dried.

When using the liquid specified for the test, precautions as stated in the relevant material safety datasheet provided by the chemical supplier shall be taken to safeguard the person performing the test.

Replace the existing third paragraph, i.e. the paragraph directly preceding the note, with the following new paragraphs:

Without drying, but after shaking off any drops, the parts shall then be immediately placed for $\left(10^{+1}_{-0}\right)$ min in a box containing air saturated with moisture at a temperature of (20 ± 5) °C. The parts shall then be dried for 10 min in a heating cabinet at a temperature of (100 ± 5) °C. After removal from the heating cabinet, any traces of rust and/or yellowish film may be removed by rubbing the appropriate area for $\left(20^{+5}_{-0}\right)$ s with an applied force of $\left(10^{+5}_{-0}\right)$ N, using a cotton cloth lightly moistened with methylated spirit.

Compliance is checked by visual inspection to determine that there is no evidence of iron oxide, cracking or other deterioration more than that allowed by ISO 4628-3 for a degree of rusting Ri1.

21.2.2 Protection against ingress of solid foreign objects

Replace the existing two paragraphs with the following new two paragraphs:

An assembled system declared by the manufacturer is tested in the most unfavourable installation positions according to the manufacturer's instructions, and all system components shall be tested. The assembled system is tested in accordance with the appropriate test of IEC 60529.

For an assembled system tested to IEC 60529 numeral 5, category 2 applies.

Figure 7: *Replace the text alongside "*" in the Key as follows:*

Key

1 Circuit breaker
2 Closing switch
3 Calibration point
4 Protective device
5 Resistor to limit earth fault current to 100 A
6 4,0 m of cable
7 Fine wire fuse 0,1 mm diameter x 50 mm long tinned copper wire
8 0,6 m of cable
9 Shorting out connection (when testing busbar only, see 18.4.3.2)
10 Supply connector
11 Length of track
12 Joint (separate or integral)
13 Length of track
14 Flexible corner or similar if applicable
15 Length of track
16 Supply connector
17 Tap-off unit
18 Shorting out connection (when testing tap-off units only, see 18.4.3.3)

✱ The regulator resistor is only used in conjunction with air-cored inductors, in this combination it simulates a metal-cored inductor. The regulator is to take approximately 1 % of the fault current through the inductor.

Figure 7 – Short-circuit test arrangement

Annex G – Routine test

Replace the existing Annex G (including title) with the following new Annex G: