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Protective gloves — General requirements and test methods

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This document was prepared by Technical Committee ISO/TC 94, *Personal safety -- Personal protective equipment*, Subcommittee SC 13, *Protective Clothing*.

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AMENDMENT 1

Normative references

Replace text of Clause 2 by changing the undated normative references to dated normative references as follows:

“The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3071:2020, *Textiles — Determination of pH of aqueous extract*

ISO 3758:2012, *Textiles — Care labelling code using symbols*

ISO 4045:2018, *Leather — Determination of pH*

ISO 7000:2019, *Graphical symbols for use on equipment — Registered symbols*

ISO 11092:2014, *Textiles — Physiological effects — Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded hotplate test)*

ISO 14268:2012, *Leather — Physical and mechanical tests — Determination of water vapour permeability*

ISO 14362-1:2017, *Textiles — Methods for determination of certain aromatic amines derived from azo colourants — Part 1: Detection of the use of certain azo colorants accessible with and without extracting the fibres*

ISO 16073-4:2019, *Wildland firefighting personal protective equipment — Part 4 Gloves*

ISO 16190:2021, *Footwear — Critical substances potentially present in footwear and footwear components — Test method to quantitatively determine polycyclic aromatic hydrocarbons (PAH) in footwear materials*

ISO 17075-1:2017, *Leather — Chemical determination of chromium(VI) content in leather — Part 1: Colorimetric method*

ISO 17075-2:2017, *Leather — Chemical determination of chromium(VI) content in leather — Part 2: Chromatographic method*

ISO 17234-1:2020, *Leather — Chemical tests for the determination of certain azo-colourants in dyed leather — Part 1: determination of certain aromatic amines derives from azo colourants*

ISO 20344:2021, *Personal protective equipment — Test method for footwear*

ISO 23388:2018, *Protective gloves against mechanical risks*

EN 388:2016+A1:2018, *Protective gloves against mechanical risks*

EN 1149-1:2006, *Protective clothing — Electrostatic properties — Part 1: Test method for measurement of surface resistivity*

EN 1149-3:2004, *Protective clothing — Electrostatic properties — Part 3: Test methods for measurement of charge decay*

EN 1811:2011+A1:2015, *Reference test method for release of nickel from post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin*

EN 16350:2014, *Protective gloves — Electrostatic properties*

EN 16778:2016, *Protective gloves — Determination of dimethylformamide in gloves*"

4.1

Replace text of 4.1, paragraph 2 with the following

"If required in the relevant specific standard (for example ISO 16073-4:2019, 6.4.3), the glove shall be designed to minimize the donning and doffing time."

4.2 a)

Replace text of 4.2 a), paragraph 1 with the following:

"Chromium VI content in gloves containing leather shall be tested according to ISO 17075-1:2017 or ISO 17075-2:2017 and shall be less than 3,0 mg/kg of leather."

4.2 b)

Replace text of 4.2 b), last sentence, with the following:

"the method of test shall be in accordance with EN 1811:2011+A1:2015."

4.2 c)

Replace text of 4.2 c), paragraph 1 with the following:

"All glove materials shall have a value greater than pH 3,5 and less than pH 9,5. The test method for leather shall be according to ISO 4045:2018 and for other materials according to ISO 3071:2020."

4.2 d)

Replace text of 4.2 d), with the following:

"Azo colorants which release carcinogenic amines listed in ISO 14362-1:2017 for all textile materials and ISO 17234-1:2020 for all leathers shall not be detectable by the method in these standards."

4.2 e)

Replace text of 4.2 e), with the following:

"Dimethylformamide (DMFa) in gloves containing PU shall not exceed 1 000 mg/kg (0,1 % weight/weight). The test method shall be according to EN 16778:2016."

4.2 f)

Replace text of 4.2 f), with the following:

“Polycyclic aromatic hydrocarbons (PAHs) as listed in Table 1, shall not exceed 1 mg/kg (0,000 1 % by weight of this component), for the rubber or plastic materials intended to come in direct contact with the skin. The test method shall be according to ISO 16190:2021.”

4.3

Replace text of 4.3, paragraph 3 with the following:

“The warning on tear resistance gloves in close proximity of rotating machinery shall be given on the basis of the highest tear performance level according to EN 388:2016+A1:2018 (identical to ISO 23388:2018) whether tested before or after cleaning. In case of rotative machinery, the glove should tear prior to the hand getting caught in the moving parts of the machine.”

4.4.1

Replace text of 4.4.1, with the following:

“For protective gloves that are intended to be worn in areas where flammable or explosive risks exist or might be present, the electrostatic properties shall be tested according to the test method described in EN 16350:2014

For gloves meeting the requirement in EN 16350:2014, the corresponding pictogram given in Table C.1 can be used for marking. Reference to EN 16350:2014 shall be affixed to it as shown in Figure 2.”

In the case that the surface electrostatic properties or charge decay need to be determined as additional parameters, EN 1149-1:2006 or EN 1149-3:2004 should be used to determine further electrostatic properties of the gloves. The corresponding test results may be reported in the information supplied by the manufacturer but cannot be used to apply the pictogram.

Replace text of the title of Figure 2 with the following:

“Figure 2 — Example of marking for electrostatic properties of gloves according to EN 16350:2014 and ISO 7000-2415”

6.3.1.2

Replace text of 6.3.1.2, with the following:

“The test shall be performed in accordance with ISO 14268:2012.”

6.3.2.1

Replace text of 6.3.2.1, with the following:

“A sample of material as required in ISO 11092:2014 shall be tested, provided the sample material and construction are identical with that of the glove.”

6.3.2.2

Replace text of 6.3.2.2, with the following:

“The test shall be performed in accordance with ISO 11092:2014.”

6.4.2

Replace text of 6.4.2, with the following:

“The test shall be performed in accordance with ISO 20344:2021, 6.7.”

7.3.5

Replace text of 7.3.5, paragraph 5 with the following:

“Example for protective gloves for use against mechanical risks according to ISO 23388:2018 is given in the Figure 4.”

7.3.14

Replace text of 7.3.14, with the following:

“If cleaning according to 4.3 is claimed, care symbols according to ISO 3758:2012 or explanations and an acceptable number of cleaning cycles.”

Annex D

Replace text of Annex D, the 3 first hyphens, with the following:

- a statistical method, for example as given in ISO 5725-2:2019;
- a mathematical method, for example as given in ISO/IEC Guide 98-3:2014;
- uncertainty and conformity assessment as given in ISO/IEC Guide 98-4:2013;

Bibliography

Replace text of Bibliography by changing the undated references to dated references as follows:

- [1] ISO 374-1:2016+A1:2018, *Protective gloves against dangerous chemicals and micro-organisms — Part 1: Terminology and performance requirements for chemical risks*
- [2] ISO 374-5:2016, *Protective gloves against dangerous chemicals and micro-organisms — Part 5: Terminology and performance requirements for micro-organisms risks*
- [3] ISO 5725-2:2019, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*
- [4] ISO 10819:2013+A1:2019+A2:2021, *Mechanical vibration and shock — Hand-arm vibration — Measurement and evaluation of the vibration transmissibility of gloves at the palm of the hand*
- [5] ISO 11393-4:2019, *Protective clothing for users of hand-held chainsaws — Part 4: Performance requirements and test methods for protective gloves*