SLOVENSKI STANDARD
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Varovalne rokavice za varilce

Protective gloves for welders

Schutzhandschuhe für Schweißer

Gants de protection pour soudeurs

Ta slovenski standard je istoveten z: **prEN 12477**

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25.160.01	Varjenje, trdo in mehko spajkanje na splošno	Welding, brazing and soldering in general

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Protective gloves for welders

Gants de protection pour soudeurs

Schutzhandschuhe für Schweißer

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 162.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 12477:2021) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12477:2001 and EN 12477:2001/A1:2005.

In comparison with the previous edition, the following technical modifications have been made:

— reference to new standard EN 388, EN 407, EN ISO 21420, etc.;

— new TDM test coming from EN 388;

— new gloves length, Table 1;

— new pictogram.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Introduction

There are various manual welding processes, which are defined in ISO/TR 25901-3:2016, “Welding and allied processes — Vocabulary — Part 3: Welding processes”.

The nature and the severity of the risks for welders' hands vary according to the various welding processes. The performance (protection and dexterity) required for protective gloves can therefore differ depending on their intended use.

1 Scope

This document specifies requirements and test methods for protective gloves for use in manual metal welding, cutting and allied processes.

Protective gloves for welders protect the hands and the wrists during the process of welding and related tasks.

Protective gloves for welders protect against small splashes of molten metal, short contact exposure to limited flame, convective heat and contact heat and U.V. radiation from the arc. The glove's material provides minimum electrical resistance up to 100 V (DC) for arc welding. Besides, they protect against mechanical aggressions.

WARNING — It is not meant to bring any protection in case of defective or wrong use of the welding equipment. It does not qualify the glove for protection against electrical shock where protective gloves designed according to EN 60903 shall be used.

According to their performance, protective gloves for welders are classified into two types:

— Type A: lower dexterity (with higher other performance);

— Type B: higher dexterity (with lower other performance).

Protective gloves for special welding processes are outside the scope of this document.

2 Normative references

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.

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

EN 407:2020, *Protective gloves and other hand protective equipments against thermal risks (heat and/or fire)*

EN 1149-2, *Protective clothing — Electrostatic properties — Part 2: Test method for measurement of the electrical resistance through a material (vertical resistance)*

EN ISO 21420:2020, *Protective gloves — General requirements and test methods (ISO 21420:2020)*

3 Terms and definitions

No terms and definitions are listed in this document.

4 Requirements

4.1 General requirements

Protective gloves for welders shall comply with all the general requirements of EN ISO 21420:2020, except the lengths which are defined in 4.2.

4.2 Sizes

The sizes shall correspond to the requirements established in EN ISO 21420:2020, 5.1.

When measured according to EN ISO 21420:2020, 6.1, the minimum length shall be in accordance with Table 1.

Table 1 — Minimum length for gloves for welder

Hand size	6	7	8	9	10	11	12	13
Minimum length of glove (mm)	300	310	320	330	340	350	Higher than 350	

4.3 Specific requirements

Protective gloves for welders shall be tested and, according to the test results, be classified as type A and/or type B, according to Table 2.

Table 2 — Minimum performance required for gloves for welders

Properties	Test method	Minimum performance required for gloves for welders		
		Standard	Type A	Type B
Abrasion resistance	6.2	EN 388:2016+A1:2018, Table 1 (2nd line)	Level 2 (500 cycles)	Level 1 (100 cycles)
Blade cut resistance [a]	6.3	EN 388:2016+A1:2018, Table 1 (3rd line)	Level 1 (index 1,2)	Level 1 (index 1,2)
Cut resistance method (TDM) [a]	6.4	EN 388:2016+A1:2018, Table 2	Level A (2 N)	Level A (2 N)
Tear resistance	6.5	EN 388:2016+A1:2018, Table 1 (4th line)	Level 2 (25 N)	Level 1 (10 N)
Puncture resistance	6.6	EN 388:2016+A1:2018, Table 1 (5th line)	Level 2 (60 N)	Level 1 (20 N)
Burning behaviour	6.7	EN 407:2020, 4.5.2, Table 2	Level 3	Level 2
Contact heat resistance	6.8	EN 407:2020, 4.5.3, Table 3	Level 1	Level 1
Convective heat resistance	6.9	EN 407:2020, 4.5.4, Table 4	Level 2	
Resistance to small splashes of molten metal	6.10	EN 407:2020, 4.5.6, Table 6	Level 3	Level 2
Dexterity	6.12	EN ISO 21420:2020, Table 2	Level 1 (smallest diameter 11 mm)	Level 4 (smallest diameter 6,5 mm)
[a] The manufacturer shall claim at least one of these 2 cut resistance performance levels.				

After each thermal test, all inner materials shall be inspected to ensure that no melting has occurred.

During the test for resistance to small splashes of molten metal, if drops adhere to the material, then the material shall not ignite.

4.4 Optional requirements for gloves intended for arc welding in normal conditions of use

Gloves shall be designed without electrically conductive connection between their outside and inside parts, e.g. by metal parts as rivets. Conformity shall be checked by visual inspection.

The electrical vertical resistance of the glove type A and B shall be > 10^5 Ohm. The testing shall be done according to 6.11.

5 Conditioning

Before testing, the test samples shall be conditioned as specified in the specific test method standard.

For protective gloves with a multilayer construction, the test shall be carried out on all layers simultaneously, even if these, after removal of the test samples, are no longer connected to one another.

If care instructions are provided, all the tests shall be performed on the gloves, before and after they have been subjected to the maximum recommended number of cleaning cycles.

The lowest performance level obtained from either before or after the maximum number of cleaning cycles shall be provided in the marking and in the instructions for use.

6 Test methods

6.1 General

If the glove areas to be submitted to the tests are made of different materials, all these materials shall be tested. The classification is based on the lowest performance level obtained.

6.2 Abrasion resistance

The material for welders' protective gloves shall be tested according to EN 388:2016+A1:2018, 6.1 on the palm of the glove.

6.3 Blade cut resistance

The material for welders' protective gloves shall be tested according to EN 388:2016+A1:2018, 6.2 on the palm of the glove.

6.4 Cut resistance method (TDM)

The material for welders' protective gloves shall be tested according to EN 388:2016+A1:2018, 6.3 on the palm of the glove.

6.5 Tear resistance

The material for welders' protective gloves shall be tested according to EN 388:2016+A1:2018, 6.4 on the palm of the glove.

6.6 Puncture resistance

The material for welders' protective gloves shall be tested according to EN 388:2016+A1:2018, 6.5 on the palm of the glove.

6.7 Burning behaviour

The glove shall be tested according to EN 407:2020, 6.2.

6.8 Contact heat resistance

The material for welders' protective gloves shall be tested according to EN 407:2020, 6.3, on the palm of the glove, with a contact temperature of 100 °C.

A sample with a diameter of 80 mm is taken from each palm area of three gloves.

All the individual values t_t shall comply with the minimum performance required in Table 2.

6.9 Convective heat resistance

The material for welders' protective gloves shall be tested according to EN 407:2020, 6.4, on the palm, on the back and on the cuff of the glove if they are made of different materials.

For each material or each material assembly, three samples shall be tested. All the individual values shall comply with the minimum performance required in Table 2.

6.10 Resistance to small splashes of molten metal

The material for welders' protective gloves shall be tested according to EN 407:2020, 6.6, on the back and on the cuff of the glove, if these are made of different materials.

A sample of 120 mm × 20 mm is taken from each back of four gloves.

All the individual values shall comply with the minimum performance required in Table 2.

6.11 Test for gloves intended for arc welding in normal conditions of use – Electrical vertical resistance

The material for welder's protective gloves shall be conditioned at least for 24 h in an atmosphere having a temperature of (20 ± 2) °C and a relative humidity of (85 ± 3) %.

Testing in accordance with EN 1149-2 shall be carried out under these conditions or within 5 minutes of removal from this atmosphere.

The vertical resistance of each different part of the glove or gauntlet including the cuff shall be tested. If the external surface of the glove on its own exceeds the requirements, then only the differing external surfaces need to be tested. However, if the external surface does not pass but the combination of the external surface and the lining to meet the requirements, then each differing construction of the glove and cuff shall be tested.

6.12 Dexterity

The glove shall be tested according to EN ISO 21420:2020, 6.2.

All the individual values shall comply with the minimum performance required in Table 2.

7 Marking

The marking shall comply with EN ISO 21420:2020, 7.1 and 7.2. In addition, each glove shall be marked with the number of the present standard, followed by type A or type B depending on type claimed by the gloves according to Table 2.

The following pictogram should be used, see Figure 1.