INTERNATIONAL STANDARD

ISO 11611

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Protective clothing for use in welding and allied processes

Vêtements de protection utilisés pendant le soudage et les techniques connexes

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11611 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 162, *Protective clothing including hand and arm protection and lifejackets*, in collaboration with Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 13, *Protective clothing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 11611 cancels and replaces EN 470-1:1995 and EN 470-1:1995/A1:1998, which have been technically revised to:

a) include additional clothing in the scope;

b) specify two classes of protective clothing;

c) include additional terms and definitions;

d) specify ageing due to washing (maximum number of cleaning procedures as indicated by the manufacturer);

e) specify additional tests for heat transfer (radiation) and electrical resistance;

f) specify requirements for inoccuousness;

g) modify requirements for dimensional change on washing to include requirements for knitted fabrics;

h) delete test method for the thickness of leather;

i) modify requirements for tensile strength and tear strength;

j) specify requirements for burst strength and seam strength;

k) include test procedure for the flame testing of seams and hemmed edges;

l) modify the information to be supplied by the manufacturer;

m) specify requirements for care and maintenance;

n) include annex for the selection of welders' clothing;

o) include annex regarding information on UV radiation hazards;

p) include annex for uncertainty of measurement.

This corrected version contains corrections to the values of radiant heat transfer index (RHTI) given in 6.9 and in Table 1, row 6.9.

Protective clothing for use in welding and allied processes

1 Scope

This International Standard specifies minimum basic safety requirements and test methods for protective clothing including hoods, aprons, sleeves and gaiters that are designed to protect the wearer's body including head (hoods) and feet (gaiters) and that are to be worn during welding and allied processes with comparable risks. For the protection of the wearer's head and feet, this International Standard is only applicable to hoods and gaiters. This International Standard does not cover requirements for hand protection.

This type of protective clothing is intended to protect the wearer against spatter (small splashes of molten metal), short contact time with flame, radiant heat from the arc, and minimizes the possibility of electrical shock by short-term, accidental contact with live electrical conductors at voltages up to approximately 100 V d.c. in normal conditions of welding. Sweat, soiling or other contaminants can affect the level of protection provided against short-term accidental contact with live electric conductors at these voltages.

This International Standard specifies two classes with specific performance requirements (see Annex A), i.e. Class 1 being the lower level and Class 2 the higher level.

— Class 1 is protection against less hazardous welding techniques and situations, causing lower levels of spatter and radiant heat.

— Class 2 is protection against more hazardous welding techniques and situations, causing higher levels of spatter and radiant heat.

Details are given in Table 1 and Annex B.

For adequate overall protection against the risks to which welders are likely to be exposed, personal protective equipment (PPE) covered by other standards should additionally be worn to protect the head, face, hands and feet.

2 Normative references

The following referenced documents are indispensable for the application 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 3071:2005, *Textiles — Determination of pH of aqueous extract*

ISO 3376:2002, *Leather — Physical and mechanical tests — Determination of tensile strength and percentage extension*

ISO 3377-1:2002, *Leather — Physical and mechanical tests — Determination of tear load — Part 1: Single edge tear*

ISO 4045:1977, *Leather — Determination of pH*

ISO 4048:1977, *Leather — Determination of matter soluble in dichloromethane*

ISO 5077:2007, *Textiles — Determination of dimensional change in washing and drying*

ISO 6942:2002, *Protective clothing — Protection against heat and fire — Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat*

ISO 9150:1988, *Protective clothing — Determination of behaviour of materials on impact of small splashes of molten metal*

ISO 13688, *Protective clothing — General requirements*

ISO 13934-1:1999, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method*

ISO 13935-2:1999, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method*

ISO 13937-2:2000, *Textiles — Tear properties of fabrics — Part 2: Determination of tear force of trouser-shaped test specimens (Single tear method)*

ISO 13938-1, *Textiles — Bursting properties of fabrics — Part 1: Hydraulic method for determination of bursting strength and bursting distension*

ISO 15025:2000, *Protective clothing — Protection against heat and flame — Method of test for limited flame spread*

ISO 17075, *Leather — Chemical tests — Determination of chromium VI content*

EN 1149-2:1997, *Protective clothing — Electrostatic properties — Part 2: Test method for measurement of the electrical resistance through a material (vertical resistance)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
ageing
changing of the product performance over time during use or storage

NOTE Ageing is caused by a combination of several factors, such as:

— cleaning, maintenance or disinfecting process;

— exposure to visible and/or ultra-violet radiation;

— exposure to high or low temperatures or to changing temperatures;

— exposure to chemicals including humidity;

— exposure to biological agents such as bacteria, fungi, insects or other pests;

— exposure to mechanical action such as abrasion, flexing, pressure and strain;

— exposure to contaminants such as dirt, oil, splashes of molten metal, etc.;

— exposure to wear and tear.

3.2
allied processes
processes having similar types and levels of risk as welding, cutting, arc air gouging and spraying