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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

DL/T 320-2019

**Performance requirements of personal arc protective
equipment
(English Translation)**

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1 Scope

This Standard specifies the technical requirements, test methods, selection methods, quality inspection rules, use and maintenance as well as marking, instructions for use, storage and transportation of personal arc protective equipment in electrical workplaces.

This Standard applies to the production, acceptance and use of personal arc protective equipment in the electric power trade.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 2912.1, Textiles - Determination of formaldehyde - Part 1. Free and hydrolyzed formaldehyde (water extraction method)

GB/T 3609.1-2008, Occupational eye and face protection - Welding protection - Part

1. Welding protector

GB/T 3917.3, Textiles - Tear properties of fabrics - Part 3. Determination of tear force of trapezoid-shaped test specimens

GB/T 3920, Textiles - Tests for colour fastness - Colour fastness to rubbing

GB/T 3922, Textiles - Tests for colour fastness - Colour fastness to perspiration

GB/T 3923.2, Textiles - Tensile properties of fabrics - Part 2. Determination of maximum force using the grab method

GB/T 4669-2008, Textiles - Woven fabrics - Determination of mass per unit length and mass per unit area

3 Terms and definitions

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

3.1

arc hazard

Personal injury or damage to equipment caused by the energy released by the arc.

3.2

arc hazard energy

Energy released by the arc and received over the test distance.

3.3

arc burn

Compound burns to the human body - caused by the powerful arc light generated when electric current passes through the air medium or the circuit is short-circuited - within its injuring distance. Thermal burn caused by arc flash and electrical burn caused when electric current breaks down and enters the human body are included. See Appendix A for grading of burn severity. This Standard applies to the prevention of thermal burn.

3.4

arc protection

Protection which is taken - when an arc occurs, by blocking the incident arc hazard energy - to reduce the possible harm of the arc to the human body, so that the residual energy is not enough to cause second-degree or above burns to the human body.

3.5

arc thermal performance value; ATPV

Value characterized by 50% chance that the energy incident on the arc protection material will cause heat energy to penetrate the material and cause second-degree burns (judged based on the Stohr curve). When the external incident energy is less than this value, the material can effectively block and reduce the transmitted energy to avoid causing second-degree and above burns to the human body.

4.1.2.1 Arc protection performance

The arc protection performance of personal arc protective face shield materials (referred to as face shield) shall be tested according to the method specified in 5.2, and shall meet the requirements for arc protection performance ATPV in Table 3.

4.1.2.2 Shock resistance

The shock resistance of the face shield shall be tested according to the method specified in 6.8 of GB/T 3609.1-2008. After the test, there shall be no flying debris and the lens shall not be damaged.

4.2.1 General requirements

Personal arc protective equipment shall meet the requirements of wearing comfort while ensuring protection. It shall have corporate marking, name tag and other patches, where metal parts are strictly prohibited. See Appendix C for sample diagrams.

4.2.3 Design and performance requirements for arc protective face shield and arc protective hood

4.2.4 Design and performance requirements for arc protective gloves and arc protective shoes cover

The design and performance of arc protective gloves (referred to as gloves) and arc protective shoes cover (referred to as shoes cover) shall comply with the requirements in Table 7.

5.1.1.1 Requirements for test sample

Before testing the arc protection performance of fabrics, ensure that the fabrics pass the flame-retardant property test.

5.1.2.1 Requirements for the number of samples and valid data points

For ATPV testing of fabric samples, at least 7 groups of samples shall be used. During the test, different incident energies are obtained by adjusting the arc duration. During the ATPV calculation, the number of valid data points for incident energy shall not be less than 21.

5.2.1 Face shield material arc protection performance test

The face shield material arc protection performance test shall be carried out on at least 24 material samples.

5.2.2 Evaluation and verification of overall protection performance of head shield and hood

6.1.1 Principles for configuring protective equipment

Anyone entering an electrical workplace should be configured with protective equipment if the person may face arc energy greater than 25.1 J/cm² after arc risk analysis or the place may have arc hazard.

6.2.1 Requirements for arc protection performance of personal arc protective equipment

The arc protection performance of personal arc protective equipment (characterized by ATPV and Ebt arc values) shall be higher than the arc hazard level of the workplace.

7.1.1 Scope of application

Type test shall be carried out under the following circumstances.

7.1.2 Test items

Type test items are shown in Table 9.

7.2.1 Batching rules

Products of the same batch of raw materials and the same process conditions shall be grouped into one batch.

8.1 Inspection before use

Inspection contents before use are as follows.

8.2 Cleaning and requirements during use

Cleaning and requirements during use are as follows.