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

GB/T 29511-2013

**Protective clothing -- Chemical protective clothing against solid
particulates**

(English Translation)

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard refers to ISO 13982.1: 2004 "Protective clothing for use against solid particulates - Part 1: Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing)", ISO 13982.2: 2004 "Protective clothing for use against solid particulates - Part 2: Test method of determination of inward leakage of aerosols of fine particles into suits".

This Standard converts the contents of ISO 13982.2: 2004 into Appendix A of this Standard.

This Standard was proposed by the State Administration of Work Safety.

This Standard shall be under the jurisdiction of National Technical Committee

112 on Personal Protective Equipment of Standardization Administration of

China (SAC/TC 112).

The drafting organizations of this Standard: China Academy of Safety Science and Technology, People's Liberation Army Institute of Chemical Defense, Du Pont China Holding Co., Ltd., Beijing Yingtelai Technology Co., Ltd., the Second

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Protective clothing - Chemical protective clothing
against solid particulates

1 Scope

This Standard specifies the gradation, basic performance requirements, test methods and identification of chemical protective clothing against solid particulates.

This Standard applies to the protective clothing that is required for the skin protection of workers who are exposed to chemical contamination of particulates in the workplace environment.

This Standard does not include technical requirements for supporting personal protective equipment such as respiratory protective equipment, protective gloves, protective shoes and other personal protective equipment.

2 Normative references

The following 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 3917.3, Textiles - Tear properties of fabrics - Part 3: Determination of tear force of trapezoid-shaped test specimens

GB/T 3923.1, Textiles - Tensile properties of fabrics - Part 1: Determination of maximum force and elongation at maximum force using the strip method

GB/T 4744, Textiles - Testing and evaluation for water resistance - Hydrostatic pressure method

GB/T 12586, Rubber or plastics-coated fabrics - Determination of resistance to damage by flexing

GB/T 13640, Size designation of protective clothing

GB/T 13773.1, Textiles - Seam tensile properties of fabrics and made-up textile articles - Part 1: Determination of maximum force to seam rupture using the strip method

GB/T 20655, Protective clothing - Mechanical properties - Determination of the resistance to puncture

GB/T 21196.2, Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 2: Determination of specimen breakdown

GB 24539-2009, Protective clothing - Performance requirements of chemical protective clothing

3 Terms and definitions

The following terms and definitions are applicable to this document.

3.1 Particle

Solid suspended matters or solid particles in the gas medium, of which the landing speed can be ignored.

Note 1: It does not include volatile or permeable toxic particles.

Note 2: "The landing speed can be ignored" usually refers to the landing speed lower than 0.25 m/s.

3.2 Inward leakage

The ratio OF the concentration of pollutants that leak into clothing from various parts of protective clothing, including fabrics and connections TO the concentration of pollutants in the environment.

Note: The inward leakage is expressed in percentages.

3.3 Penetration efficiency

The percentage of particle that penetrates the protective clothing fabric.

4.1.1 The fabrics and accessories that are used in chemical protective clothing

against solid particulates (hereinafter referred to as protective clothing) shall be non-irritating to the skin and harmless to health.

4.1.2 For protective clothing, under the premise of ensuring the protection, the

comfort of the protective clothing shall be fully considered. The comfort of the fabric shall be evaluated on the basis of full consideration and assessment of the material's air permeability, moisture and heat resistance. On the premise of ensuring the strength of the material and the protective performance of the protective clothing, try to use materials of small mass per unit area.

4.1.3 The protective clothing shall be compatible with other relevant personal

protective equipment as much as possible.

4.1.4 After maintenance according to the method that is recommended by the

manufacturer, protective clothing that can be used multiple times shall meet the requirements that are specified in 4.3.

4.2 Design requirement

The design of protective clothing shall:

- a) at least provide protection to the wearer's torso, head, arms and legs;
- b) The fabric and style of protective clothing shall meet the requirements to prevent the penetration of particles.

4.3.1 Overall protective performance of protective clothing

Perform the overall protective performance test of protective clothing according to the provisions of 5.1. It is required that the inward leakage of protective clothing to particulate matter $L_{jmn}, 82/90 \leq 30\%$; the total inward leakage of each protective clothing $LS, 8/10 \leq 15\%$.

Note 1: $L_{jmn}, 82/90$: inward leakage that is expressed in percentages. 82/90 refers that when all 90 leakages are arranged in order from small to large,