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

GB 16413-2026

Replacing GB 16413-2009

**Safety technical requirements for non-metallic products used in
coal mines**

煤矿用非金属制品安全技术要求

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1 Scope

GB 16413-2026 is the Chinese national standard covering the plastics, rubbers and composites taken underground - the flame retardance and antistatic properties they must have, because a burning polymer or a static discharge in a methane atmosphere is how a mine disaster starts. A mandatory standard under the National Mine Safety Administration. It replaces GB 16413-2009 and takes effect on 1 April 2027. It was issued on 31 March 2026 and takes effect on 1 April 2027, replacing GB 16413-2009. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document defines the terms and definitions for flame retardancy, antistatic properties, surface resistivity, specific optical density, non-metallic products, flaming combustion, and flameless combustion. The document defines the requirements and inspection rules for non-metallic products used in coal mines and describes the corresponding test methods. This document applies to non-metallic products used in underground coal mines (hereinafter referred to as products), such as conveyor belts, ventilation ducts, and pipes. This document does not apply to cables or tires.

4.1 General Requirements

4.1.1 The safety characteristics of the product shall be clearly stated in the product standard, including mechanical properties, flame retardancy and antistatic properties, weather resistance, and environmental safety. Other safety features.

4.1.2 Mechanical properties shall include the following characteristics.

---Tensile properties;

---Pressure resistance;

---Pulse performance.

4.1.3 Flame retardancy and antistatic properties should include the following characteristics.

---Flame retardancy;

---Antistatic properties.

4.1.4 Weather resistance shall include the following characteristics.

---Flame retardancy and weather resistance;

---Antistatic and weather-resistant properties.

4.1.5 Environmental safety characteristics shall include the following characteristics.

---Limits for lead and arsenic;

---Smoke density properties;

4.2 Mechanical properties

4.2.1 Tensile properties When the product is used in applications where there is a risk of tensile failure, its tensile properties shall meet the following requirements.

a) The longitudinal tensile strength of fabric-core and steel cord-core conveyor belts should not be lower than the value specified in the product model.

b) The tensile strength of polyolefin pipes should be no less than

9.0 MPa, the tensile strength of polyvinyl chloride pipes should be no less than

30.0 MPa, and the tensile strength of fiberglass pipes should be no less than

30.0 MPa. The minimum axial tensile strength of the pipe shall not be less than

c) Positive pressure ventilation ducts with a nominal diameter of 800mm or less shall have a tensile strength of not less than 1300N in both warp and weft directions; those with a nominal diameter of more than 800mm shall have a tensile strength of not less than 1300N

in both warp and weft directions. The tensile strength of the positive and negative pressure ventilation ducts in both the warp and weft directions shall not be less than 2000N;

- d) The tensile strength of the resin anchor rod should not be less than 300 MPa;
- e) For other products that have a significant risk of tensile failure under other operating conditions, the tensile performance requirements should be clearly specified in their product technical requirements.

4.2.2 Pressure resistance

4.2.2.1 When the product is used in an environment with positive or negative pressure, the positive pressure resistance and negative pressure resistance of the product should be specified according to the requirements of the usage environment.

4.2.2.2 The positive pressure resistance performance shall meet the following requirements.

a) For positive pressure applications, the hydrostatic resistance of PVC pipes, fiber- or steel-wire-reinforced composite plastic pipes should be no less than twice the nominal pressure. The hydrostatic resistance of polyolefin pipes and fiberglass pipes should be no less than

1.5 times the nominal pressure; the hydrostatic resistance of rubber hoses should also be... The performance should not be less than its maximum operating pressure;

b) For composite pipes and rubber hoses used in positive pressure applications, the burst pressure should not be less than 3 times the nominal pressure; the burst pressure of hydraulic support hoses should be... Not less than 4 times the nominal pressure;

c) For coated/covered composite steel pipes used in positive pressure applications, the hydrostatic resistance should be no less than

1.5 times the design pressure;

d) For positive pressure ventilation ducts with a nominal diameter of 600 mm or less, the wind pressure resistance should not be less than 5 kPa; for nominal diameters of 700 mm or less... The wind pressure resistance of a diameter of 1000mm or more should be no less than 8kPa; the wind pressure resistance of a diameter of 1000mm or more should be no less than 10 kPa;

e) Pipes used for negative pressure ventilation and gas extraction should withstand a positive pressure of not less than 1 MPa.

4.2.2.3 The negative pressure resistance performance shall meet the following requirements.

a) The negative pressure resistance of the ventilation duct product should not be lower than

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b) For other products used for gas extraction and negative pressure ventilation, the negative pressure resistance should not be less than -0.097MPa.

4.2.3 Pulse Performance The pulse test pressure of the hose for hydraulic supports should be no less than 133% of the design pressure, and the number of pulses should be no less than 200,000.

4.3 Flame retardancy and antistatic properties

4.3.1 Flame retardancy The flame retardancy of the product shall meet the requirements of Table 1.

4.3.2 Antistatic properties The antistatic properties of the product shall meet the requirements of Table 2.

4.4 Weather resistance

4.4.1 Flame retardancy and weather resistance For products with a service life of more than one year, after aging treatment at 70°C for 168 hours, their burn-in performance with a blowtorch and an alcohol lamp should meet the following requirements. In accordance with the provisions of 4.3.1.

4.4.2 Antistatic and weather-resistant properties For products with a service life of more than one year, their antistatic and weather resistance should meet the following requirements.

a) After aging at 70°C for 168 hours, its surface resistivity should meet the requirements of 4.3.2;

b) After immersion in water at room temperature for 24 hours, its surface resistance should meet the requirements of 4.3.2.

4.5 Environmental safety characteristics

4.5.1 Limits for lead and arsenic The lead and arsenic content in the product should not exceed 1000 mg/kg.

4.5.2 Smoke density performance For products with low smoke density, the specific optical density $D_s(4)$ after 4 minutes of combustion should not exceed 650. For products with a surface area not exceeding 100 cm²... Products used in a container or enclosed within a metal part are exempt from requirements.

4.5.3 Flue gas toxicity properties For products with low smoke toxicity, the toxicity of the smoke after combustion should not exceed 1.2. For products with a surface area not exceeding 100 cm² or enclosed in metal... No requirements are required for products used