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

GB/T 20027.1-2025

**Rubber- or plastics-coated fabrics - Determination of bursting
strength - Part 1: Steel-ball method**
(English Translation)

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1 Scope

This document describes a method for the determination of bursting strength of rubber- or plastic-coated fabrics using a mechanically operated steel ball.

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.

GB/T 24133-2009 Rubber- or plastics-coated fabrics - Standard atmospheres for conditioning and testing (ISO 2231.1989, IDT)

GB/T 16825.1-2022 Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1. Tension/compression testing machines -

Calibration and verification of the force-measuring system (ISO 7500-1.2018, IDT)

3 Terms and definitions

This document does not contain any terms or definitions that need to be defined.

4 Principle

A specimen is securely mounted between ring clamps with precise coaxiality. A polished steel ball is pressed against the specimen at a constant speed until the specimen ruptures. The force required to cause the specimen to rupture and the displacement of the polished steel ball at the time of rupture are recorded.

5.1 Testing machine, with a power transmission, and equipped with an electronic force

measurement system and an electronic crosshead displacement monitor. The drive system shall be able to ensure that the speed of the moving end remains constant within

$\pm 10\%$ of the set value. When testing within the force measurement range of level 2 as specified in GB/T1 6825.1-2022, the force measurement system shall be able to measure the relevant force values generated. The crosshead displacement monitor shall be able to measure the relevant displacements under load with an error not exceeding

± 1.0 mm.

5.2 Bursting test fittings (see Figure 1). The specimen is securely clamped using a ring clamp with an inner diameter of $45\text{ mm} \pm 0.5\text{ mm}$. The center of the specimen is pressed against a polished steel ball with a diameter of $25.2\text{ mm} \pm 0.02\text{ mm}$ until the specimen ruptures. The direction of movement of the ring clamp or steel ball shall be perpendicular to the plane of the fabric. The clamping surfaces of the upper and lower clamps shall be grooved concentrically, with the raised portion of the grooves on one clamp matching the recessed portion on the other. The distance between each groove shall be not less than 0.8 mm , and the depth shall be not less than 0.15 mm . The distance between the grooves and the edge of the hole shall be not more than 3 mm , and they shall be formed into an arc shape with a radius of not greater than 0.4 mm . The lower inner edge of the upper clamp and the upper inner edge of the lower clamp shall be machined into an arc-shaped chamfer with a radius of 0.5 mm .

A polished steel ball with a diameter of $38\text{ mm} \pm 0.02\text{ mm}$ can also be used, but the test results are not comparable.

Figure 1 -- Test apparatus

5.3 Apparatus for immersing the specimen in water before wet testing.

5.4 Distilled or deionized water, used for preparing wet specimens.

5.5 Wetting agent or surfactant.

5.6 Blotting paper, two sheets, for wet specimen testing.

6 Sampling

The sample taken shall be as representative as possible of the entire shipment.

7 Preparation of specimens

7.1

Cut five specimens within the effective width of the sample (see note) and at least

1 m from the end of the sample. Each specimen shall be of sufficient size to ensure secure clamping by the clamping device of the testing machine. The minor diameter of each specimen shall be at least 12 mm larger than the outer diameter of the clamping surface. Alternatively, the test can be carried out perpendicular to the width direction at the desired location, avoiding areas already tested by at least 20 mm.

NOTE: The definition of effective width is given in ISO 2286-1. It refers to the width excluding selvage, with consistent performance, uniform surface, and no unacceptable defects.

7.2

The relevant parties shall consult and determine the test side of the coated fabric.

Results may differ if the test is carried out on the opposite side.

7.3

When testing the properties of wet materials, the specimen shall be immersed in water (5.4) or water containing no more than 0.1 % wetting agent or surfactant (5.5) at room temperature for 24 h, with the volume of water being 20 times the volume of the specimen. After removing the specimen from the water, immediately rinse it thoroughly with water and carry out the test within 1 min.

8 Time interval between manufacture and testing

8.1

For all tests, the minimum time between manufacture and testing shall be 16 h.

8.2 For non-finished product tests, the maximum time between manufacture and testing

shall be 4 weeks. For qualification tests requiring comparison, the time intervals shall be as consistent as possible.

8.3 For finished product tests, whenever possible, the time between manufacture and

testing shall not exceed 3 months. In other cases, testing shall be carried out within 2 months of the date when the user receives the product.

9.1 Conditioning

The atmosphere for conditioning shall meet the conditioning method "1" specified in GB/T 24133-2009.

For single-sided coated fabrics, a minimum exposure of 16 h is recommended.

For double-sided coated fabrics, a minimum exposure of 24 h is recommended.

9.2 Atmosphere for testing

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