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PEOPLE'S REPUBLIC OF CHINA**

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**Rubber and plastics hoses and hose assemblies - Hydrostatic
testing**

(English Translation)

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1 Scope

This Document describes hydrostatic testing methods for rubber and plastic hoses and hose assemblies, including methods for measuring dimensional stability.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

ISO 7751 Rubber and plastics hoses and hose assemblies - Ratios of proof and burst pressure to maximum working pressure

NOTE: GB/T 9574-2017 Rubber and plastics hoses and hose assemblies - Ratios of proof and burst pressure to maximum working pressure (ISO 7751:2016, IDT)

ISO 8330 Rubber and plastics hoses and hose assemblies - Vocabulary

NOTE: GB/T 7528-2025 Rubber and plastics hoses and hose assemblies - Vocabulary (ISO 8330:2022, IDT)

ISO 23529 Rubber - General procedures for preparing and conditioning test pieces for physical test methods

NOTE: GB/T 2941-2025 Rubber - General procedures for preparing and conditioning test pieces for physical test methods (ISO 23529.2016, IDT)

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in ISO 8330 apply.

4 General Requirements

Unless otherwise specified, all tests shall be performed at the standard temperature specified in

ISO 23529 (see ISO 23529).

5.1 Pressure pump

It is able to increase pressure at the rate described in 7.2.2 until the required test pressure is reached.

5.2 Calibrated pressure gauge or pressure converter with digital display

The test pressure value for each test shall be selected within 15% to 85% of the pressure gauge's maximum range.

To ensure accuracy, the pressure gauge or pressure converter with digital display shall be calibrated frequently. It is recommended to install a throttle valve to minimize vibration damage.

5.3 Dimension measuring instruments

Vernier calipers or micrometers, measuring tape, circumference tape (pi measuring tape).

6.1 Hose assembly

When testing hose assembly, the length of the assembled assembly shall satisfy the test conditions.

6.2 Hose

The minimum free length of the hose specimen used for hydrostatic and burst pressure tests, excluding fittings and reinforcements, shall be 600 mm if deformation is measured simultaneously, otherwise 300 mm. If a longer measurement is required for a particular type or size of hose, it shall be specified in the hose product standard.

6.3 Number of specimens

At least two specimens shall be tested.

7.1 General requirements

Water or other suitable liquids for hoses shall be used as the test medium.

WARNING. Hose and hose assemblies pressurized by liquids may break in a potentially hazardous manner. Therefore, the test shall be conducted under appropriate closed conditions. Air or other gases shall also be avoided as test media, as this is dangerous for the operator. In exceptional circumstances where such media are required for testing, strict safety measures shall be taken. Furthermore, it shall be emphasized that even when using a liquid as the test medium, all air in the specimen must be eliminated. Otherwise, if the hose bursts, the air trapped inside will expand due to sudden pressure release, posing a risk of injury to the operator.

7.2 Procedure

7.2.1

First, fill the specimen with the test liquid to eliminate all air; then connect it to the test apparatus. Close the valve and apply hydrostatic pressure at a uniform rate of pressure rise.

Measure the pressure using a calibrated pressure gauge or a pressure converter with a digital display (5.2).

Important Tips. During the test, unrestricted movement of the free or blocked end of the specimen is permitted.

7.2.2

The rate of pressure rise shall be constant. For hoses with a nominal inner diameter less than or equal to 50 mm, the final pressure shall be reached in 30 s to 60 s. For hoses with a nominal inner diameter greater than 50 mm but less than or equal to 250 mm, the time required to reach the final pressure shall be between 60 s and 240 s. For hoses with a nominal inner diameter greater than 250 mm, and/or when the test hose is longer than the minimum free length specified in 6.2, the time required to reach the final pressure shall be determined by the manufacturer and the user.

8.1 Verification pressure test

When checking for leaks in hoses and hose assemblies using a verification pressure test, the verification pressure shall be applied as specified in 7.2.2 and maintained for 30 s to 60 s. Unless otherwise specified in the product standard, during this period, the specimen shall be inspected for signs of leakage, cracks, abrupt deformation, or other damage caused by

uneven material and processing. The pressure tolerance is +10% of the specified pressure.

Unless otherwise specified for the hose, the verification pressure shall conform to the ratio of the maximum working pressure given in ISO 7751.

The test is not applicable to bent hoses.

NOTE: The term "maximum working pressure" used here replaces the rejected term "design working pressure".

8.2.1.1 Assembling the specimen

When the length change, outer diameter change, and torsion and/or bending of the hose are required to be measured, straighten the hose or hose assembly; place it horizontally for inspection; and apply a static pressure of 0.07 MPa for approximately 5 min after completing the verification pressure test. When the specimen remains straight without pressure, the 0.07

MPa pressure is not required. The support surface of the hose or hose assembly shall be flat and smooth to ensure that the hose or hose assembly expands or contracts without constraint. The hose or hose assembly can also be supported by rollers or suspended vertically. When using a portion of the hose as a specimen, it can also be placed vertically on the test bench.

8.2.1.2 Reference markings

For long hoses or hose specimens (see 6.2), three reference marking points (A, B, and C) shall be taken on the outer surface while maintaining pressure. The middle marking (B) shall be as close as possible to the midpoint of the hose length; and the markings at both ends (A and C) shall be at least 250 mm away from point B. Each marking shall be included on the circumferential arc of the hose. Draw a straight line perpendicular to the arc through each marking, and the three lines shall be on the same straight line (see Figure 1).

For hose assemblies, measure the distance between the contact surfaces of the hose fitting ends;

or select reference markings on the hose surface near the end of the fitting.

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