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

GB/T 5564-2006

**Rubber and plastics hoses -- Sub ambient temperature
flexibility tests
(English Translation)**

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Foreword

This Standard is identical to ISO 4672.1997 "Rubber and Plastics Hoses - Subambient Temperature Flexibility Tests" (English edition).

This Standard replaces GB/T 5564-1994 "Rubber and Plastics Hoses - Subambient Temperature Flexibility Tests".

This Standard is equivalent to translate ISO 4672.1997.

To be convenient for use, the following editorial changes are also made in this Standard.

- a) "This International Standard" is replaced by "this Standard";
- b) Replace decimal comma "," with decimal ".";
- c) Delete the foreword of the International Standard.

The main differences between this Standard and GB/T 5564-1994 are as follows.

- Specimen type of Method A was redefined, original length " $L = \pi R + 2d$ " was changed into " $L = 2(\pi R + d)$ " (see 3.2.1).

This Standard was proposed by China Petroleum and Chemical Industry Association.

This Standard shall be under the jurisdiction of Hose Subcommittee of National Technical Committee on Rubber & Products of Standardization Administration of China (SAC/TC 35/SC 1).

Drafting organization of this Standard. China Rubber Group - Shenyang Rubber Research & Design Institute.

Chief drafting staff. Zhang Xingde.

The previous editions replaced by this standard are as follows.

- GB/T 5564-1985, GB/T 5564-1994.

Rubber and Plastics Hoses

Subambient Temperature Flexibility Tests

1 Scope

This Standard specifies two methods for assessing whether a rubber or plastics hose retains adequate flexibility at subambient temperatures.

Method A is applicable to non-collapsible hose with a nominal inner-diameter up to and including 25 mm. It measures the increase in stiffness compared to the flexibility at a standard laboratory temperature.

Method B is a simpler, qualitative method suitable for control testing and is applicable to hose with a nominal inner-diameter up to and including 100 mm.

2 Normative references

The following Standards contain provisions which, through reference in this text, constitute provisions of this Standard. For dated references, subsequent amendments or revisions of these publications do not apply. However, parties who enter into agreement based on this Part are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

GB/T 2941 Rubber - General Procedures for Preparing and Conditioning Test

Pieces for Physical Test Methods (GB/T 2941-2006, ISO 23529.2004, IDT)

GB/T 5563 Rubber and Plastics Hoses and Hose Assemblies - Hydrostatic Testing (GB/T 5563-2006, ISO 1402.1994, IDT)

3.1.1 Torque wheel

Torque wheel, having a diameter equal to twice the minimum bend radius specified for the hose, provided with equipment for holding the hose tangential to the wheel, a suitable device to bend the hose around the wheel, and a strain gauge and graphical

recorder to measure the torque with an accuracy of $\pm 3\%$. If the minimum bend radius Conditioning chamber, capable of being maintained at the specified temperature (see 4.3).

4.2 Test specimen

The test specimen shall be cut from the hose under test and shall have a length adequate to provide a grip at each end in addition to a section which can be bent round the periphery of the mandrel.

The test specimen shall be discarded on completion of the test.

4.3 Test temperature

The test shall be conducted at one of the following temperatures. $0^{\circ}\text{C} \pm 2^{\circ}\text{C}$; $-10^{\circ}\text{C} \pm 2^{\circ}\text{C}$; $-25^{\circ}\text{C} \pm 2^{\circ}\text{C}$; $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$; $-55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ or at any other subambient temperature as defined in the relevant product standard.

4.4 Procedure

Condition the mandrel (4.1.1) and the test specimen (4.2) in the conditioning chamber (4.1.2) at the chosen test temperature (see 4.3) for 24 h. Without removing them from the conditioning chamber, bend round the mandrel hoses of up to and including 22 mm nominal inner-diameter through 180° in $10\text{ s} \pm 2\text{ s}$ and hoses of greater than 22 mm nominal inner-diameter through 90° in $10\text{ s} \pm 2\text{ s}$.

For hoses of greater than 22 mm nominal inner-diameter, testing outside the conditioning chamber is permitted, but precautions shall be taken against an unacceptable increase in the temperature of the specimen during the test.

Observe whether any cracking or breaking of the hose lining or cover occurs.

After bending, allow the test specimen to regain ambient temperature, and apply the specified proof test pressure, measured accurately in accordance with GB/T 5563, to confirm whether or not any cracking or breaking of the lining or cover has occurred.

4.5 Test report

The test report shall include the following particulars.

- a) A reference to this Standard;
- b) A full description of the hose and its origin;
- c) The dimensions of the test specimen;
- d) The test temperature;
- e) The results of the visual examination of the test specimen after bending;
- f) The results of the visual examination after the proof pressure test;
- g) A description of the test procedure.

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