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

GB 29993-2013

**Rubber and/or plastics hoses and hoses assemblies for
domestic gas-technical requirements and testing methods
(English Translation)**

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Foreword

The standard of Chapters 4 and 6 are mandatory, the rest are recommended.

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

The standard proposed by China Petroleum and Chemical Industry Association.

This standard by the National Rubber and rubber products hose Standardization Technical Committee Technical Committee (SAC/TC35/SC1) centralized.

This standard was drafted. Suzhou fourth Rubber Co., Ltd., Wuxi City Qian function Plastic Co., Ltd. Shenyang Product Quality Supervision and Inspection Institute experience, Shenyang Rubber Research and Design Institute.

1 Scope

This standard specifies the household gas Rubber and plastic hoses and hose assemblies of structures and materials, dimensions and tolerances, appearance, technical article Items and evaluation methods, test frequency, marking, packaging, transportation, storage and use.

This standard applies to the use of ambient temperature of $-10\text{ }^{\circ}\text{C} \sim 70\text{ }^{\circ}\text{C}$, working pressure of 3.3kPa or less low-pressure gas town gas switch and between burning appliances, as well as between domestic bottled liquefied petroleum gas regulator and the burner connected with rubber and plastic hose (hereinafter referred to as Hose) and hose assemblies.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 1690 vulcanized rubber or thermoplastic rubber Test method for resistance to liquids
 GB/T 2941 rubber physical test method for preparing and conditioning General Procedure
 GB/T 3512 vulcanized rubber or thermoplastic rubber hot air and heat accelerated aging test
 GB/T 5563 Rubber and plastics hoses and hose assemblies - Hydrostatic testing
 GB/T 5564-2006 Rubber and plastic hoses low Flexing Test
 GB/T 5565-2006 rubber or plastic hose reinforced and non-reinforced hose bending test
 GB/T 9573 Rubber and plastics hoses and hose assemblies size measurement method
 GB/T 9576 Rubber and plastics hoses and hose assemblies for selection, storage, use and maintenance guide
 GB/T 9577 Rubber and plastics hoses and hose assemblies marking, packaging and transport rules
 GB/T 24134-2009 Rubber and plastics hoses resistance under static conditions evaluate ozone resistance
 HG/T 2185 Rubber hose appearance quality

3.1 Hose Construction

Hose is structured as follows.

- a) hose structure may be a single layer or multiple layers (including armored hose);
- b) a single-layer structure hose (hose pure) black multilayer structure hose outer cover layer is orange, can also be customized.

3.2 Dimensions and tolerances

When measured according to GB/T 9573 method, unless otherwise specified, hose dimensions and tolerances shall comply with the requirements in Table 1.

Table 1 hose dimensions and tolerances

Nominal inner diameter	Inner and tolerance mm	Wall thickness and tolerances mm	Hose with metal protection
9.0	9.0 ± 0.4	3.0 ± 0.3	> 1.5
9.5	9.4 ± 0.4	3.0 ± 0.3	> 1.5
13	12.7 ± 0.5	3.3 ± 0.3	> 1.8

3.3 Materials

3.3.1

hose material shall conform to the requirements specified in Table 2.

Material requirements and test methods in Table 2 project Claim Outer liner cladding layer tubing -experiment method Aging properties of $70\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 96h Tensile strength change rate /% $\leq$ Elongation at break change rate /% $\leq$ GB/T 3512 Gas resistant performance the rate of mass change /%, $\leq$ 353 535 Appendix A

3.3.2

All samples should be intercepted on the hose, from the hose when not intercept, should use the same degree of vulcanization curing specimens tested, Selection of type 3 dumbbell specimens.

3.3.3

hose material and its intended use of the rubber, plastics and reinforcing layer material.

3.4 Appearance

Unless otherwise specified, the hose appearance quality should be consistent with the provisions of HG/T 2185's.

4 Hose Performance and Evaluation Method

4.1

when tested in accordance with Appendix B, hose fluid resistance must meet the requirements of Table 3.

Table 3 hose resistance to liquids

Project requirements, test methods Detergent resistant quality change rate /%
High-temperature cooking oil quality change rate /% Resistant oil quality change rate /%
Vinegar mass resistance change rate /% Soap mass resistance change rate /% ≤ 5 ≤ 3
 ≤ 3 ≤ 5 ≤ 5 Appendix B

4.2

When the method according to GB T 24134-2009 1 is resistance to ozone aging test/subject 96h, visual inspection, no cracking phenomenon.

4.3

When the flame test carried out in accordance with Annex C, the sample continued to burn time should not exceed 5s.

4.4

When carried out according to Annex D resistant gas permeation test, equal to the nominal inside diameter of less than 9.5 Hose gas not larger than 5mL/h, public He said inner diameter of the gas hose 13 is not larger than 7mL/h.

4.5

Take 1m long hose or a hose assemblies for the tightness test samples, one end plugged into the free end and the other end of the pump or gas source is connected to the sample immersed in water, and gradually into the inflatable tube to test pressure 100kPa maintain 1min, the sample should be no leakage Anomalies.

4.6

When in accordance with GB/T 5565-2006 A method for bending test, the minimum bend radius of 5 times the nominal inner diameter, T/D should not be Less than 0.9.

4.7

take about 500mm hose to heat test samples, placed in a temperature $(100 \pm 2) ^\circ\text{C}$ incubator 48h, after removing the at room temperature for 30min ~ 40min after the tightness test performed according to 4.5, no leaks and other anomalies.

4.8

When the test in accordance with Appendix E were soft, the contact angle of the sample hose and the cylinder must be greater than $110 ^\circ$.

4.9

When the pressure test to verify method according to GB/T 5563 stipulated. Test pressure 200kPa, maintaining 30s, the hose should be no leakage Dew or damage.

4.10

take a long hose or hose assemblies 120mm for breaking test samples, the sample symmetrically sandwiched tensile testing machine on the upper and lower gripper, start testing machine, tensile rate $(100 \pm 10) \text{ mm/min}$, the sample was stretched to breaking maximum tensile force of not less than 0.6kN.

4.11

When the press GB/T 5564-2006 Method B low temperature bending test, test temperature $(-10 \pm 2) ^\circ\text{C}$, 10 times the nominal After an internal diameter of minimum bend radius bending test, without cracks and other anomalies. The sample to be returned to ambient temperature (not less than 3h) Then 4.5 tightness test, without leaks and other anomalies.