

Translated English of Chinese Standard: QC/T1045-2016

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

QC

**AUTOMOBILE INDUSTRY STANDARD
OF THE PEOPLE'S REPUBLIC OF CHINA**

ICS 43.040.60

T 20

QC/T 1045-2016

Heat-shrinkable pipe

汽车管路保护用热收缩管

Issued on: April 5, 2016

Implemented on: September 1, 2016

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

Table of Contents

Announcement.....	3
of Ministry of Industry and Information Technology of the People's Republic of China	3
No.17, 2016	3
Foreword.....	8
1 Scope.....	9
2 Normative references.....	9
3 Requirements.....	9
4 Test methods.....	11
5 Inspection rules.....	16
6 Marks, packaging, transport and storage.....	17

Heat-shrinkable tubing for automotive pipe

1 Scope

This Standard specifies the requirements, test methods, inspection rules and marks of heat-shrinkable tubing for automotive pipe.

This Standard is applicable to heat-shrinkable tubing for automotive pipe.

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 209-2006, *Sodium hydroxide for industrial use*

GB/T 534-2002, *Sulphuric acid for industrial use*

GB/T 1842-2008, *Plastics - Test method for environmental stress-cracking of polyethylene*

GB/T 2423.22-2012, *Environmental testing - Part 2: Tests methods - Test N: Change of temperature*

GB/T 7113.2-2014, *Flexible insulating sleeving - Part 2: Methods of test*

GB 12981-2012, *Motor vehicle brake fluids*

GB 17930-2011, *Gasoline for motor vehicles*

3 Requirements

3.1 General requirements

3.1.1 Specifications.

Heat-shrinkable tubing for automotive pipe is divided into single wall tubing and double wall tubing. Single wall tubing has a maximum operating temperature of 105°C. Double wall tubing has a maximum operating temperature of 125°C. The double wall tubing is composed of an inner wall (hot melt adhesive) and an outer wall (heat shrinkable material).

after shrinkage as described above.

4.4 Wall thickness and concentricity

Measure the wall thickness with a thickness gauge with an accuracy of 0.01 mm. First lift the pressure column, carefully place the specimen on the pressure pin, and then release the pressure column. The pressure column is pressed against the pressure pin with a force of (0.25 ± 0.02) N. Read the wall thickness value. Measure at least 10 times at different locations to find the maximum wall thickness M_1 and the minimum wall thickness M_2 .

Place the specimen in an aging chamber heated to $(150 \pm 2)^\circ\text{C}$. After (600 ± 5) s non-limiting shrinkage, the maximum wall thickness and minimum wall thickness of the specimen after shrinkage shall be measured as described above.

Calculate the concentricity according to formula (1):

$$E_c = \frac{M_2}{M_1} \times 100\% \dots\dots\dots (1)$$

where,

E_c - concentricity value;

M_2 - minimum wall thickness, mm;

M_1 - maximum wall thickness, mm.

4.5 Longitudinal shrinkage

Measure the length of the specimen before shrinkage L_1 and the length of the specimen after shrinkage L_2 using a steel ruler with a precision of 1 mm or other measuring tools of the same precision. The shrinkage condition is: place the specimen in a $(150 \pm 2)^\circ\text{C}$ aging oven, and perform (600 ± 5) s non-limiting shrinkage.

Calculate the longitudinal shrinkage according to formula (2):

$$L_c = \frac{L_2 - L_1}{L_1} \times 100\% \dots\dots\dots (2)$$

where,

L_c - longitudinal shrinkage;

L_2 - specimen length after shrinkage, mm;

The fluid resistance is in accordance with Clause 37 of GB/T 7113.2-2014. Take a 100mm long specimen. Assemble it to a metal tube whose outer diameter corresponds to its specification. Remove after heating (260 ± 5) s in an oven heated to $(150\pm5)^{\circ}\text{C}$. Bend according to Figure 2. The outer diameter and bending radius of the metal tube shall comply with the requirements of Table 4. Then immerse in the following fluids. Fluid temperature is $(25\pm2)^{\circ}\text{C}$. Take out after 72 h. Observe whether the specimen is slack.

- 1/10N H_2SO_4 (shall comply with GB/T 534-2002);
- 1/10N NaOH (shall comply with GB 209-2006);
- Brake fluid (shall comply with GB 12981-2012);
- Gasoline (shall comply with GB 17930-2011).

5 Inspection rules

5.1 Sampling method and determination of rejection

The products shipped to the same user at one time shall be one batch, in batches with minimum packaging. Each batch of products shall be randomly sampled according to Table 5. If the user deems it necessary, determine the sample size of each batch according to the agreement between the parties. If the performance is unqualified, the unqualified performance shall be doubled and sampled again. If it is still unqualified, this batch of products shall be rejected.

Table 5 -- Sampling amount and determination of rejection

Batch product number	>500	500~301	300~101	≤ 100
Number of specimen	8	6	4	2
Number of rejection	0	0	0	0

5.2 Exit-factory inspection

Before the product leaves the factory, the manufacturer shall carry out the exit-factory inspection according to the test methods of 4.2 and 4.3. The exit-factory inspection shall meet the requirements of 3.1.

5.3 Type test

When any of the following conditions occurs, the type test shall be carried out in accordance with all test methods of 4.2 to 4.12. Type test shall meet the requirements of 3.2.

- trial model identification for new product;

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----