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

**GB/T 6111-2003**

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**Thermoplastics pipes for the conveyance of fluids -- Resistance  
to internal pressure -- Test method**

**(English Translation)**

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## Table of Contents

|                                                                        |    |
|------------------------------------------------------------------------|----|
| Foreword...                                                            | 3  |
| 1 Scope...                                                             | 4  |
| 2 Normative references...                                              | 4  |
| 3 Definitions...                                                       | 4  |
| 4 Principle...                                                         | 5  |
| 5 Test parameters...                                                   | 5  |
| 6 Test apparatus...                                                    | 5  |
| 7 Test pieces...                                                       | 8  |
| 8 Calibration of the apparatus and calculation of the test pressure... | 9  |
| 9 Conditioning...                                                      | 9  |
| 10 Test procedure...                                                   | 10 |
| 11 Test report...                                                      | 11 |
| Annex A (informative) Basic specifications...                          | 13 |

### Foreword

This Standard is identical to ISO 1167:1996 "Thermoplastics pipes for the conveyance of fluids - Resistance to internal pressure - Test method" (English version). The technical content is the same and the preparation method is identical, only editorial modifications in the text are made.

This Standard replaces GB/T 6111-1985 "Standard test method for time-to-failure of thermoplastic pipe under constant internal pressure".

Compared with GB/T 6111-1985, this Standard has the following main changes.

### **1 CHANGE the standard name from the "Standard test method for time-to-failure of**

thermoplastic pipe under constant internal pressure" TO "Thermoplastics pipes for the conveyance of fluids - Resistance to internal pressure - Test method".

## **7 SPECIFY the treatment method for different test phenomenon during the test**

process.

## **8 ADD the informative Annex A.**

This Standard replaces GB/T 6111-1985 from the date of implementation.

Annex A of this Standard is informative.

This Standard is proposed by China Light Industry Federation.

This Standard is under the jurisdiction of National Technical Committee on Plastics of Standardization Administration of China (TC 48).

Drafting organizations of this Standard. Zhejiang Yonggao Plastic Industry Development Co., Ltd., Hebei Baoshuo Pipe Co., Ltd.

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Thermoplastics pipes for the conveyance of fluids -

Resistance to internal pressure -Test method

## **1 Scope**

This Standard specifies a method for determination of the resistance of thermoplastics pipes to constant internal water pressure at constant temperature.

This Standard is applicable to thermoplastics pipes intended for the conveyance of fluids.

## **2 Normative references**

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

GB/T 4117-2001 Thermoplastics pipes for the conveyance of fluids - Nominal

outside diameters and nominal pressures (idt ISO 161-1.1996)

GB/T 8806-1988 Method for dimension measuring of plastic pipes (eqv ISO 3126.1974)

GB/T 18252-2000 Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation

**NOTE:** GB/T 18252-2000 "Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation" is developed referring ISO/DIS 9080.1997 "Thermoplastics pipes for the transport of fluids - Methods of extrapolation of hydrostatic stress rupture data to determine the long-term hydrostatic strength of thermoplastics pipe materials", so the technical content of this standard is identical to ISO/DIS 9080.1997. ISO/DIS 9080.1997 is the revision to ISO/TR 9080.

### 3 Definitions

For the purposes of this Standard, the definitions given in GB/T 4217-2001 apply.

### 4 Principle

After conditioning, test pieces are subjected to a specified constant internal hydrostatic pressure to a specified period of time or until failure.

Throughout the test, the test pieces are kept in an environment at a specified constant temperature. this is water ("water-in-water" test), another liquid ("water-in-liquid" test) or air ("water-in-air" test).

### 5 Test parameters

The following test parameters are set by the standard making reference to this Standard.

- a) the type of end cap to be used (see 6.1);
- b) the size and S-series of pipe to be used (see 7.1);
- c) the test temperature (see 6.2 and 10.1);
- d) for pipes of nominal outside diameter  $d_n$  greater than 315 mm, the free length of

- the test piece, if other than 1 000 mm (see 7.1.1);
- e) the number of test pieces (see 7.2);
- f) the test pressure  $p$  or the hoop stress  $\sigma$  to be induced by the test pressure (see 8.2.2);
- g) the conditioning period (see clause 9), if other than as specified in table 1;
- h) the type of test, i.e. water-in-water/air/liquid (see clause 4 and 10.1);
- i) the duration of the test under pressure and the criteria for a failure (see 10.3);
- j) the requirements for additional testing.

### **6.1 End caps**

End caps are fitted on two ends of the test pieces. By means of an appropriate system, end caps shall allow sealing and connection to the pressurizing equipment. The end cap shall be of one of the following types.

Type A. Fittings rigidly connected to the test piece but not to each other, and hence Capable of checking conformity to the specified test pressure. In the case of gauges or similar calibrated pressure measurement devices, the range of the gauge shall be such that the required pressure setting lies within the calibrated range of the device used.

The pressure measurement devices shall not contaminate the test fluid.

The use of master gauges for calibration of the apparatus is recommended.

### **6.6 Thermometer or equivalent**

Capable of checking conformity to the specified test temperature.

### **6.7 Timer**

Timer shall capable of recording the duration of the pressure applications up to the moment of failure or leakage.

**NOTE:** It is recommended that equipment be used which is sensitive to pressure variations due to leaks or a failure and which is capable of stopping the timer and, if necessary, closing the pressure circuit for the test piece concerned.