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**Plastics piping systems — Pressure  
systems for hot and cold water — Test  
method for leaktightness under vacuum**

*Systèmes de canalisations en plastique — Systèmes pour installation  
d'eau chaude et froide sous pression — Méthode d'essai de l'étanchéité  
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## Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13056 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 5, *General properties of pipes, fittings and valves of plastic materials and their accessories — Test methods and basic specifications*.

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# Plastics piping systems — Pressure systems for hot and cold water — Test method for leaktightness under vacuum

## 1 Scope

This International Standard specifies a method for testing the leaktightness under vacuum of joints for thermoplastics piping systems.

It is applicable to piping systems based on thermoplastics pipes intended to be used in hot and cold water pressure applications.

## 2 Principle

An assembly of pipes and fittings is subjected to partial vacuum for a specific period during which the joints are inspected for airtightness.

It is assumed that the following test parameters are set by the standard making reference to this International Standard:

- a) the number of test pieces (see 4.2);
- b) the test temperature (see 6.1);
- c) the test pressure (see 6.2);
- d) the duration of test (see 6.3);
- e) the pressure increase which indicates a failure (see 6.3).

## 3 Apparatus

**3.1 Vacuum source (pump)**, capable of producing in the test piece the partial vacuum specified in the referring standard.

**3.2 Vacuum pressure measurement device**, capable of measuring the pressure in the test piece with an accuracy of  $\pm 0,01 \text{ bar}^1$ .

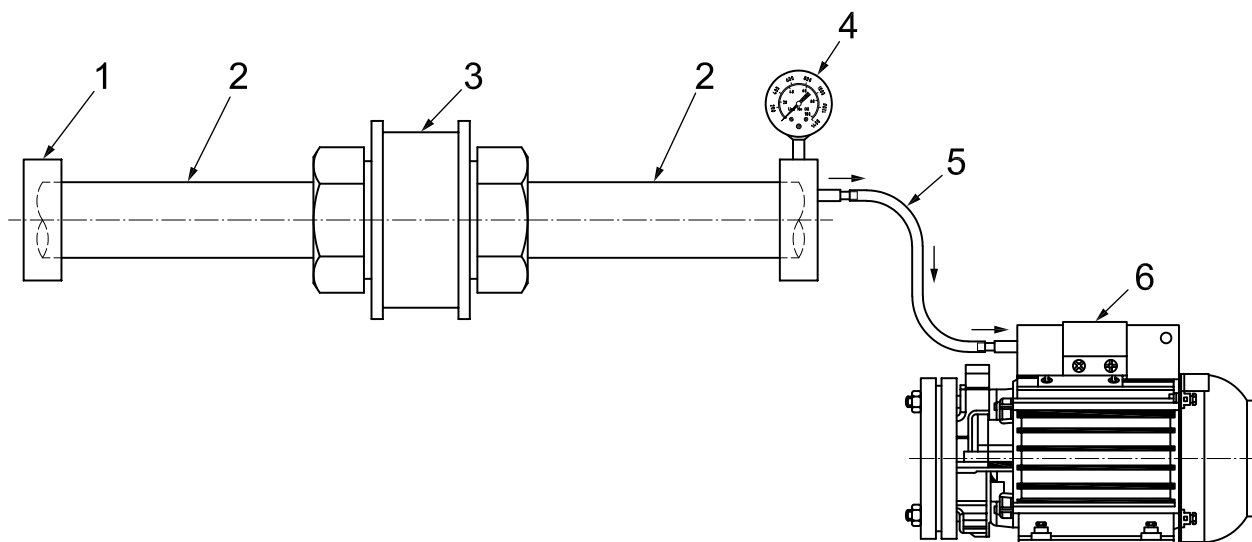
**3.3 Shut-off valve**, to isolate the test piece from the vacuum source (3.1).

**3.4 Thermometer(s)**, capable of checking conformity to the specified test temperature (see 6.1).

**3.5 End-sealing device**, of appropriate size and sealing method for sealing the non-jointed end of the test piece. The device shall be restrained in a manner that does not exert longitudinal forces on the joints.

A typical test arrangement is shown in Figure 1.

1) 1 bar = 100 kPa.



#### Key

- 1 end-sealing device
- 2 pipe section
- 3 joint under test
- 4 vacuum pressure gauge
- 5 connection to vacuum pump (shut-off valve not depicted)
- 6 vacuum pump

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Figure 1 — Typical test arrangement

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## 4 Test pieces

### 4.1 Preparation

The test piece shall comprise an assembly of pipes and/or fittings joined in accordance with the manufacturer's recommended practice.

The test piece shall be connected to the vacuum source (pump) via a line with a shut-off valve. The vacuum pressure measurement device shall be connected between the shut-off valve and the test piece.

### 4.2 Number

The number of test pieces shall be as specified in the referring standard or specification.

## 5 Conditioning

Unless otherwise specified in the referring standard, condition the test piece at  $(23 \pm 5) ^\circ\text{C}$  for at least 2 h.

## 6 Procedure

**6.1** Ensure that during this procedure the test temperature is maintained at the value specified in the referring standard and that variations in the test temperature do not exceed  $\pm 2 ^\circ\text{C}$ .

**6.2** Evacuate the test piece to the test pressure specified in the referring standard. Record the time when the test pressure is achieved and close the shut-off valve.

**6.3** Record the increase of pressure, if any, in the test piece until either the test period specified in the referring standard has elapsed or prior failure of the test piece has occurred due to increase of internal pressure.

## 7 Test report

The test report shall include the following information:

- a) a reference to this International Standard and to the referring standard;
- b) the identification and the number of the components under test including their operating pressure;
- c) the test temperature;
- d) the duration of the test;
- e) the test pressure, the pressure increase failure level and, if any, the pressure increase;
- f) any factors which could have affected the results, such as any incidents or any operating details not specified in this International Standard;
- g) the date of the test.

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