INTERNATIONAL STANDARD

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Adhesives for thermoplastic piping systems —

Part 3: Test method for the determination of resistance to internal pressure

Adhésifs pour systèmes de canalisations en thermoplastiques —

Partie 3: Méthode d'essai de détermination de la résistance à la pression interne

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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 9311-3 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 193, *Adhesives,* in collaboration with 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*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 9311 consists of the following parts, under the general title *Adhesives for thermoplastic piping systems*:

— *Part 1: Determination of film properties*

— *Part 2: Determination of shear strength*

— *Part 3: Test method for the determination of resistance to internal pressure*

Adhesives for thermoplastic piping systems —

Part 3:
Test method for the determination of resistance to internal pressure

1 Scope

This part of ISO 9311 specifies a method for the assessment of the internal pressure resistance of assemblies made with adhesives for thermoplastic piping systems.

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.

ISO 1167:1996, *Thermoplastics pipes for the conveyance of fluids — Resistance to internal pressure — Test method*

EN 923, *Adhesives — Terms and definitions*

EN 1066, *Adhesives — Sampling*

EN 1067, *Adhesives — Examination and preparation of samples for testing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923 and the following apply.

3.1
setting time
time between applying the adhesive and the beginning of the test

3.2
diametrical clearance
difference in diameter between mean outside diameter of the pipe and mean inside diameter of the socket

4 Principle

Test pieces of given dimensions are obtained by cutting lengths of pipe and fitting, for adhesive type testing to product bonded assemblies. After conditioning, these test assemblies are subjected to a specified constant internal hydrostatic pressure for a specified period of time or until the test piece(s) fail(s).

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

NOTE It is assumed that the following parameters are set by the reference standard that refers to the test method specified in this part of ISO 9311:

a) the test temperature;

b) the horizontal or vertical orientation of test pieces;

c) the pipe and fitting to be used;

d) the diametrical clearance in the bonded assembly;

e) the test pressure;

f) the setting time;

g) the type of test, i.e. water-in-water/air/liquid;

h) the duration of the test under pressure.

5 Safety

Persons using this part of ISO 9311 shall be familiar with normal laboratory practice.

This part of ISO 9311 does not purport to address all the safety problems, if any, associated with its use.

It is the responsibility of the user to establish safety and health practices and to ensure compliance with any European and national regulatory conditions.

6 Materials

6.1 Cleaning fluids, as recommended by the adhesive manufacturer.

6.2 Pipe, according to the reference standard, with a diameter of 40 mm and at least 150 mm of length.

6.3 Straight connecting sockets, according to the reference standard that refers to the test method specified in this part of ISO 9311.

6.4 Clean tissue paper.

7 Apparatus

All the apparatus required in ISO 1167 using end cap Type A (see ISO 1167:1996 6.1, and Figure 1 of this part of ISO 9311).

8 Preparation of test assemblies

8.1 Preparation and conditioning of test pieces

8.1.1 Prepare the surfaces of test pieces [pipe (6.2) and fitting (6.3)] following the instructions of the adhesive manufacturer using the cleaning fluids (6.1). Remove any swarf and other debris from the joining surfaces of the fitting and pipe.

8.1.2 Where a diametrical clearance is required by the adhesive or pipe specification, the internal surface of the fitting shall be machined to obtain the required value.

8.1.3 Condition the test pieces [pipe (6.2) and fitting (6.3)] at (23 ± 2) °C and (50 ± 5) % relative humidity for at least 6 h.

8.2 Sampling and preparation of adhesive

Prepare the adhesive in accordance with the adhesive manufacturer's instructions. Unless otherwise specified, take a sample of the adhesive according to EN 1066 and examine and prepare it according to EN 1067.

8.3 Preparation and storing of assemblies

8.3.1 Work in a draught-free area at (23 ± 2) °C and (50 ± 5) % relative humidity unless otherwise specified.

8.3.2 Apply the adhesive and build the test assemblies (see Figure 2) as recommended by the adhesive manufacturer.

8.3.3 Remove the excess adhesive on the exterior of the contact surface with clean tissue paper (6.4).

8.3.4 Store the test assemblies at (23 ± 2) °C and (50 ± 5) % relative humidity for the specified setting time.

Count the setting time from the end of the insertion operation. The setting time is specified in the relevant reference standard that refers to the test method specified in this part of ISO 9311.

For each setting time, prepare three test assemblies of this type.

9 Test procedure

Test the prepared assemblies (see 8.3) in accordance with ISO 1167 using end caps type A (see ISO 1167:1996, 6.1, and Figure 1 of this part of ISO 9311) and setting pressure values, application times and test temperatures as specified in the appropriate reference standard.

10 Requirements

An adhesive shall be regarded as passing the test if no leakage along the joint interface of the bonded assembly occurs under the specified test conditions.

11 Test report

The test report shall include at least the following information:

a) reference to this part of ISO 9311 and to the reference standard(s);

b) complete identification of the adhesive [and cleaning fluid (6.1)] examined;

c) complete identification of the pipe (6.2) and fittings (6.3) used and their measured dimensions;

d) the method of preparation of the test pieces, the setting time and where applicable the diametrical clearance in each joint;

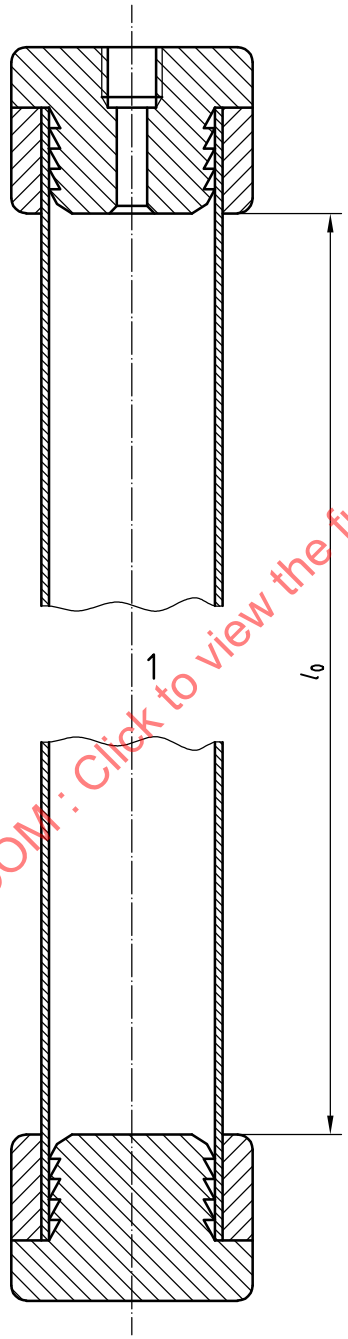
e) the conditioning and test conditions (temperature and humidity) and accuracy of measurement;

f) the nature of the environment, i.e. air, water or liquid (and nature of the liquid used);

g) the pressure applied and the application time and, if the prescribed period was not reached, the nature of the event which occurred;

h) any factors which may have affected the results, such as any incidents or any operating details not specified in this part of ISO 9311;

i) date(s) the test was conducted.



Key

l_0 length of pipe (at least 150 mm)

1 bonded assembly (see Figure 2)

Figure 1 — Test piece

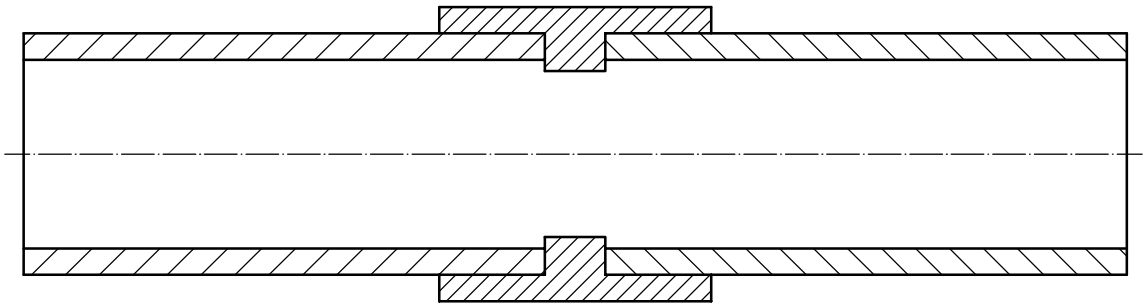


Figure 2 — Assembly of test pieces