
Cevni sistemi iz polimernih materialov - Mehanski spoji med fittingi in tlačnimi cevmi - Metoda za preskus tesnjenja spojev, obremenjenih s podtlakom (ISO/DIS 3459:2021)

Plastic piping systems - Mechanical joints between fittings and pressure pipes - Test method for leak tightness under negative pressure (ISO/DIS 3459:2021)

Kunststoff-Rohrleitungssysteme - Mechanische Verbindungen zwischen Formstücken und Druckrohren - Prüfung der Dichtheit bei Unterdruck (ISO/DIS 3459:2021)

Systèmes de canalisations en matières plastiques - Assemblages mécaniques entre raccords et tubes sous pression - Méthode d'essai pour l'étanchéité sous pression négative (ISO/DIS 3459:2021)

Ta slovenski standard je istoveten z: prEN ISO 3459

ICS:

23.040.60 Prirobnice, oglavki in spojni elementi Flanges, couplings and joints

oSIST prEN ISO 3459:2021

en,fr,de

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DRAFT INTERNATIONAL STANDARD

ISO/DIS 3459

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Plastic piping systems — Mechanical joints between fittings and pressure pipes — Test method for leak tightness under negative pressure

ICS: 23.040.60

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ISO/CEN PARALLEL PROCESSING



Reference number
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ISO/DIS 3459:2021(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document 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*.

This third edition cancels and replaces the second edition (ISO 3459:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

- references to diameters > 63 mm are deleted;
- a change in vacuum pressure that can be considered to be leak tight is introduced;
- editorial changes have been introduced.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plastic piping systems — Mechanical joints between fittings and pressure pipes — Test method for leak tightness under negative pressure

WARNING — Persons using this document should be familiar with normal laboratory practice, if applicable. The use of this International Standard may involve hazardous materials, operations, and equipment. This International Standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies two methods of testing for checking the leaktightness of assembled joints between mechanical fittings and plastic pressure pipes with diameters up to and including 63 mm. The test applies regardless of the design and material of the fitting used for jointing plastics pipe.

This test method is not applicable to fusion-welded joints.

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2 Normative references (standards.iteh.ai)

There are no normative references in this document.

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3 Terms and definitions

<https://standards.iteh.ai/catalog/standards/sist/cfla7862-9955-405e-8196-1d05fb3ada8e/osist-pren-iso-3459-2021>

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Principle

Checking of the leaktightness of an assembled joint when submitted to external pressure greater than the pressure within the pipe.

For measurements where the external hydraulic pressure is greater than the atmospheric pressure within the pipe, procedure A shall be used.

For measurements with vacuum inside the pipe segment and an atmospheric pressure outside the pipe, procedure B shall be used.

5 Test parameters and requirements

The test parameters of the standard which refers to this test standard shall be used and the requirements shall be fulfilled. If one or more parameters are not given in the referring International Standard, the ones given in [Annex A](#) shall apply.

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The following test parameters should be given by the standard which refers to this test standard:

- a) test medium;
- b) test pressure (bar or MPa);
- c) test duration (h);
- d) test temperature (°C);
- e) free length (mm).

6 Apparatus

6.1 Apparatus for procedure A

6.1.1 A suitable apparatus for procedure A is shown in [Figure 1](#).

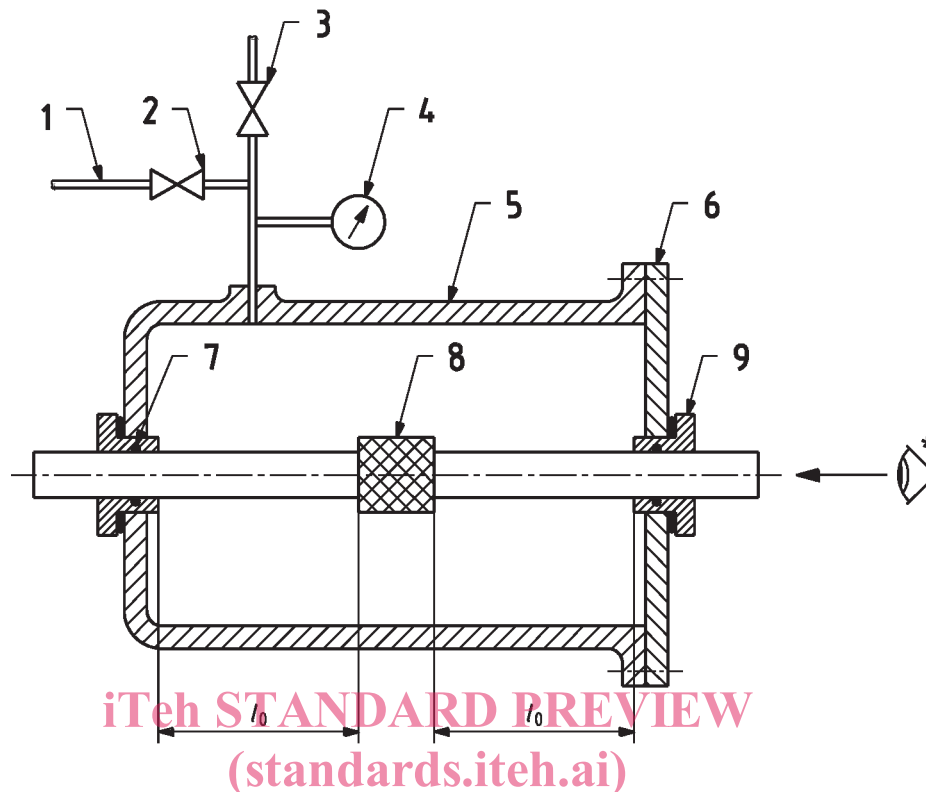
6.1.2 Enclosed tank, capable of being used at the appropriate test pressure and receiving the test specimen. The ends of the test specimen shall pass through the walls of the tank, so that the inside of the pipe is open to the atmosphere and the connecting pipes are in axial alignment. The assembly shall be arranged so as to enable any leakage to be detected within the test specimen.

6.1.3 Pressure source, connected to the tank and capable of raising and maintaining the specified water pressure with an accuracy of $\pm 0,05$ bar.

6.1.4 Pressure measuring device, capable of checking conformity of the test pressure.

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6.1.5 Temperature control system, capable of maintaining the temperature of the pressurized water in the tank at the specified temperature, T , with an accuracy of ± 2 °C.



Key

1	connection to hydraulic pump	6	cover flange
2	valve	7	annular seal
3	air release valve	8	fitting to be tested
4	pressure measuring device	9	sealing collar
5	enclosed tank	10	pipe free length
*	The apparatus shall permit a clear view through the test piece.		

Figure 1 — Typical apparatus

6.2 Apparatus for procedure B

6.2.1 A typical test arrangement for Procedure B is shown in [Figure 2](#).

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

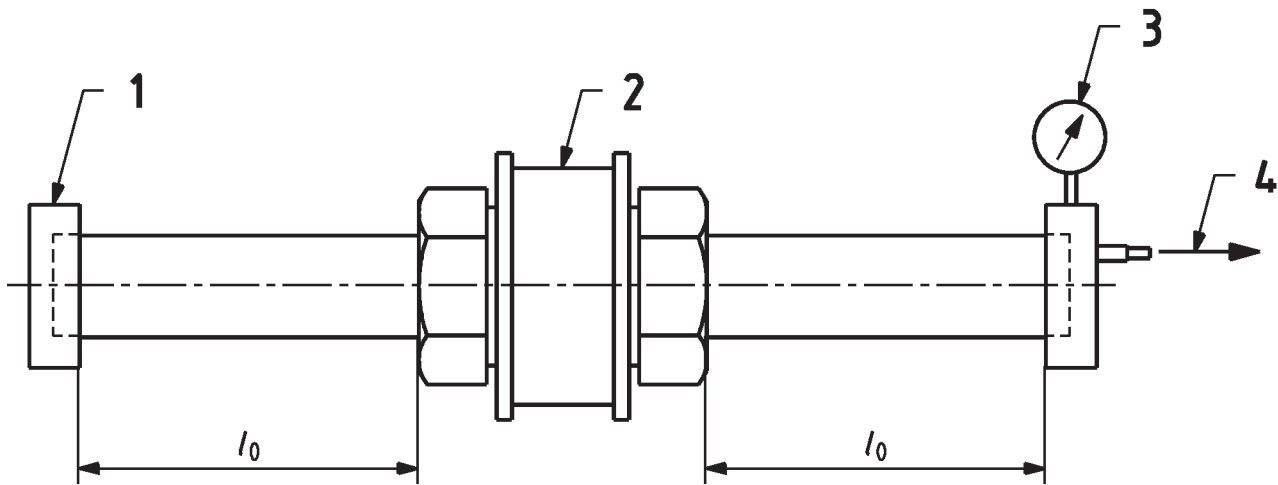
6.2.3 Vacuum pressure measurement device, capable of measuring the pressure in the test piece with an accuracy of $\pm 0,01$ bar.

6.2.4 Shut-off valve, to isolate the test piece from the vacuum source.

6.2.5 Thermometer(s), capable of checking conformity to the specified test temperature.

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6.2.6 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.

**Key**

- 1 end seal
- 2 joint under test
- 3 pressure measurement device
- 4 to vacuum pump

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Figure 2 — Typical test arrangement

7 Test pieces

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The test specimen shall consist of one or more fittings and two or more pieces of plastic pressure pipe of the size and quality for which the fitting is designed. The fittings and pipes shall not be tested until 24 h after their production. For practical reasons, the manufacturer may wait for a shorter period of time before testing. In case of dispute, a duration of 24 h shall apply.

In case of using procedure B, 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.

The assembly of the joint should be carried out in accordance with the manufacturer's instructions.

The mean outside diameter, d_{em} , of the pipe should preferably conform to the minimum specified value, and the fitting dimensions (mean inside diameter, d_{im}) should preferably conform to the maximum values stated by the manufacturer, in order to have dimensions as close as possible to the extreme limits of their relevant tolerances.

8 Procedure A: Pressure outside

8.1 Secure the test specimen in the water tank. Fill the tank with water at the specified temperature and that variations in the test temperature do not exceed ± 2 °C. Condition the test specimen at least 20 minutes.

8.2 Remove any condensation from the inside of the test specimen. Wait for 10 min and ensure that the inside of the test specimen is completely dry.