
Cevni sistemi iz polimernih materialov - Sestavni deli iz duromernih materialov, ojačenih s steklenimi vlakni (GRP) - Preskusne metode za preverjanje modela vijačenih prirobničnih spojev

Plastics piping systems - Glass-reinforced thermosetting plastics (GRP) components - Test methods to prove the design of bolted flange joints

Kunststoff-Rohrleitungssysteme - Bauteile aus glasfaserverstärkten duroplastischen Kunststoffen (GFK) - Prüfverfahren zur Bauartprüfung von geschraubten Flansch-Verbindungen

Systemes de canalisations en plastiques - Composants en plastiques thermodurcissables renforcés de verre (PRV) - Méthodes d'essai pour confirmer la conception d'assemblages a brides boulonnées

Ta slovenski standard je istoveten z: EN 1450:1996

ICS:

23.040.60	Prirobnice, oglavki in spojni elementi	Flanges, couplings and joints
83.120	Ojačani polimeri	Reinforced plastics

SIST EN 1450:1997 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1450:1997](#)

<https://standards.iteh.ai/catalog/standards/sist/9ce17784-e8df-4b6b-a449-7084d675d478/sist-en-1450-1997>

EUROPEAN STANDARD

EN 1450

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1996

ICS 23.040.60

Descriptors: plastic tubes, pipe fittings, reinforced plastics, thermosetting resins, tests, joining, flange connections, flexural strength, pressure resistance, hydrostatic pressure

English version

**Plastics piping systems - Glass-reinforced
thermosetting plastics (GRP) components - Test
methods to prove the design of bolted flange
joints**

Systèmes de canalisations en plastiques -
Composants en plastiques thermodurcissables
renforcés de verre (PRV) - Méthodes d'essai
pour confirmer la conception d'assemblages à
brides boulonnées

Kunststoff-Rohrleitungssysteme - Bauteile aus
glasfaserverstärkten duroplastischen
Kunststoffen (GFK) - Prüfverfahren zur
Bauartprüfung von geschraubten
Flansch-Verbindungen

<https://standards.iteh.ai/catalog/standards/sist/9ce17784-e8df-4b6b-a449-7084d675d478/sist-en-1450-1997>

This European Standard was approved by CEN on 1996-05-09. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the Secretariat of which is held by NNI.

This standard is based on the proposed draft International Standard ISO/DP 8483 "Glass reinforced thermosetting plastics (GRP) pipes and fittings - Bolted flange joints - Initial performance requirements and methods of test (working draft for updating ISO/DP 8483 to a DIS)", prepared by the International Organization for Standardization (ISO). It is a modification of ISO/DP 8483 for reasons of possible applicability to other test conditions and alignment with texts of other standards on test methods.

The modifications are as follows:

- test parameters (pressure, time, temperature) are not specified;
- performance requirements are not given;
- editorial changes have been introduced.

The material-dependent parameters and/or performance requirements are incorporated in the referring standard.

This standard is one of a series of standards on test methods which support System Standards for plastics piping systems and ducting systems.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 1997, and conflicting national standards shall be withdrawn at the latest by March 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

In a pipework system, pipes and fittings of different nominal pressures and stiffnesses may be used.

A joint may be made between pipes and/or fittings and should be designed such that its performance is equal to or better than the requirements of the pipeline, but not necessarily of the components being joined.

The requirements for the assembly of the joint are not included in this standard, but they should be in accordance with the manufacturer's recommendations.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 1450:1997

<https://standards.iteh.ai/catalog/standards/sist/9ce17784-e8df-4b6b-a449-7084d675d478/sist-en-1450-1997>

1 Scope

This standard specifies methods of test for joints with bolted flanges for plastics piping systems of glass-reinforced thermosetting plastics (GRP) for buried and above ground pipelines. This standard is only applicable to the joint and covers methods of test to prove its design.

This test procedure is applicable to joints for pipes and fittings of all nominal sizes.

The tests detailed in 6.1 to 6.6 inclusive are applicable to bolted flange joints intended to be used in buried or above-ground applications.

NOTE 1: The only intention of testing the resistance to negative pressure is to give adequate safety against infiltration of pollutants through the joint into the fluid carried in the piping system. Under these test conditions pipes with low stiffnesses may require support to prevent them from buckling.

NOTE 2: The test methods are dependent upon having a declared value for the bolt torque to be used for assembling the joints appropriate to, for example, the design of the joint, the relevant nominal pressure and the temperature of test. The results are only valid for the type of flanged joint tested.

All tests given in this standard are applicable for evaluating joints intended for applications conveying liquids at temperatures up to 50 °C and may be applicable to joints for use at higher temperatures (see clause 2).

2 Principle

A joint is subjected to specified internal pressures. The procedure includes prolonged static tests at elevated pressures and also cyclic testing.

A method is included to test the resistance of the joint to an internal negative pressure.

A method to assess resistance to bolt tightening torque is included.

At the end of each test the joint is inspected for signs of leakage and damage.

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

- a) the number of test pieces to be used (see 4.1);
- b) the length, L, of the assembled test piece (see 4.2);
- c) the nominal pressure relevant to the joint under test (see 4.2 and 6.2 to 6.4);

- d) if applicable, conditioning other than as given in 4.3;
- e) the test temperature and its permissible deviations (see clause 5);
- f) if applicable, any criteria indicative of damage to the joint components [see clause 6 and k) of clause 7];
- g) acceptable increase in pressure over one hour for negative pressure test (see 6.3);
- h) the factor to be used with the torque [see 6.6.3 and m) of clause 7].

3 Apparatus

3.1 End sealing devices of size and type appropriate to the joint system under test. The end-sealing devices shall be anchored to the pipes when end thrust loads are to be applied (see 6.2 to 6.4), and shall permit free axial movement of the test pipes when end thrust loads are not to be applied (see 6.5).

3.2 A source of hydrostatic pressure to meet the needs of the test (see 6.2 to 6.5).

3.3 A means to measure the gauge pressure at the top of the pipe and check conformity to the specified pressures (see 6.2 to 6.5).

3.4 Vacuum pump or equivalent, capable of applying the required negative gauge pressure (see 6.3).

3.5 Bolt torque test apparatus, incorporating the following items (see 6.6):

- a) a steel flange drilled to the same pitch circle diameter as the flange to be tested;
- b) a calibrated torque wrench for tightening the bolts;
- c) bolts, nuts and washers for assembling the steel flange to the flange under test.

4 Test pieces

4.1 Number

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

4.2 Arrangement

4.2.1 For pressure testing

The test piece shall be an assembly of one or two pieces of pipe, as applicable, of the correct size and nominal pressure, and the joint to be tested.

The length, L , of the assembly shall be not less than that specified in the referring standard.

The joint shall be assembled in accordance with the manufacturer's recommendations and, if applicable, the requirements of the referring standard.

4.2.2 For bolt torque testing

The test piece shall be an assembly of the flange to be tested and a compatible steel flange (see 6.6).

NOTE: Overtightening of the bolts can result in damage to the flange.

4.3 Conditioning

Unless otherwise specified in the referring standard, condition the test piece at the test temperature (see clause 5) for at least 24 h prior to testing.

5 Test temperature

Conduct the following procedure at the temperature specified in the referring standard.

6 Procedure

6.1 Sequence for pressure testing

Subject each test piece (see 4.2) to those of the following tests specified in the referring standard, in the sequence as given in table 1 and 6.2 to 6.5.

NOTE: Each reference to hydrostatic pressure specifies an internal gauge pressure (i.e. relative to atmospheric pressure) and the nominal pressure is that relevant to the joint under test.

If a test is interrupted, record the details in the test report and repeat the particular test before carrying on to the next in the series of tests, if applicable. Failure of a component in the test arrangement other than the joint under test shall not constitute failure. If the test conditions are invalidated thereby, repeat the particular test after replacing the failed component.

Table 1: Summary of test conditions for pressure testing

Test	Tests and sequence	Minimum test pressure	Minimum duration
Initial leakage	Initial pressure	$1,5 \times [PN]$	15 min
Resistance to internal pressure	Preliminary hydrostatic pressure	$1,5 \times [PN]$	15 min
	Maintained hydrostatic pressure	$2 \times [PN]$	24 h
	Positive cyclic pressure	Atmospheric to $1,5 \times [PN]$ to atmospheric	10 cycles of 1,5 min to 3 min each
External 1) pressure differential	Negative pressure 2)	$-0,8 \text{ bar}^3)$ ($-0,08 \text{ MPa}$)	1 h
Short duration resistance	Preliminary hydrostatic pressure	$1,5 \times [PN]$	15 min
	Maintained hydrostatic pressure	$4 \times [PN]$	6 min
1) This test can be performed at any point in the sequence detailed. 2) Relative to atmospheric pressure, i.e. approximately 0,2 bar (0,02 MPa) absolute. 3) If the referring standard requires a different negative pressure then that shall be used.			

6.2 Resistance to internal pressure including hydrostatic end thrust

6.2.1 Using a conditioned test piece conforming to clause 4, assemble the test arrangement as shown in figure 1a).