

Plastics piping and ducting
Thermoplastics spirally-formed structured-wall pipes
Determination of the tensile strength of a seam
English version of DIN EN 1979

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ICS 23.040.20

Descriptors: Plastics, pipes, seams, tensile strength, testing.

Kunststoff-Rohrleitungs- und Schutzrohrsysteme – Thermoplastische Spiralrohre mit profilierter Wandung – Bestimmung der Zugfestigkeit einer Verbindungsnaht

European Standard EN 1979 : 1999 has the status of a DIN Standard.

A comma is used as the decimal marker.

National foreword

This standard has been prepared by CEN/TC 155.

The responsible German body involved in its preparation was the *Normenausschuß Kunststoffe* (Plastics Standards Committee), Technical Committees *Prüfverfahren für Rohre* and *Profilierte Rohre aus thermoplastischen Kunststoffen mit glatter Innenwand*.

EN comprises 5 pages.

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English version

Plastics piping and ducting systems
Thermoplastics spirally-formed structured-wall pipes
Determination of the tensile strength of a seam

Systèmes de canalisations et de gaines en matières plastiques – Tubes thermoplastiques à paroi structurée enroulés en hélice – Détermination de la résistance en traction de la ligne de soudure

Kunststoff-Rohrleitungs- und Schutzrohrsysteme – Thermoplastische Spiralrohre mit profilierter Wandung – Bestimmung der Zugfestigkeit einer Verbindungsnaht

This European Standard was approved by CEN on 1998-11-28.

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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the 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 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 July 1999, and conflicting national standards shall be withdrawn at the latest by July 1999.

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

The material-dependent parameters and/or performance requirements are incorporated in the System Standard(s) concerned.

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

1 Scope

This standard specifies a method for determining the tensile strength of a seam in a spirally-formed thermoplastics pipe. It is applicable to all such thermoplastics pipes, regardless of their intended use.

2 Normative references

This standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter.

For dated references, subsequent amendments to, or revisions of, any of these publications apply to this standard only when incorporated in it by amendment or revision.

For undated references the latest edition of the publication referred to applies.

ISO 5893:1993, *Rubber and plastics test equipment - Tensile, flexural and compression types (constant rate of traverse) - Description*

3 Principle

Test pieces of specified shape and dimensions are taken from a thermoplastics pipe with a spirally-formed seam in the direction perpendicular to the seam, by cutting or machining.

The tensile forces necessary to rupture test pieces including the seam are determined using a tensile testing machine under specified conditions.

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

- a) rate of movement of the driven grip (see 4.1 and 8.2).

4 Apparatus

4.1 Tensile testing machine, conforming to ISO 5893:1993 for the specified rate of movement of the driven grip. It shall be capable of applying the necessary force and travel (see 4.3 and 8.3).

4.2 Grips, for holding the test piece, conforming to ISO 5893:1993, which shall be fixed to the machine in such a way that they move freely into alignment as soon as any force is applied, so that the longitudinal axis of the test piece coincides with the direction of the force along the centreline of the grip assembly.

4.3 Force indicator, capable of showing or recording with an accuracy conforming to grade A of ISO 5893:1993 the total tensile force to which the test piece held in the grips is subjected when tested at the speed specified.

4.4 Micrometer or equivalent, with an accuracy and ability to determine the width of the test piece with an accuracy of 0,05 mm or smaller.

5 Test pieces

5.1 Shape of the test piece

The alignment and dimensions of the test piece shall be as shown in figure 1. Test piece shall consist of the overall wall thickness (construction height) of the pipe from which it is taken.

5.2 Test piece preparation

5.2.1 General

At least 15 h after production of the pipe, divide the circumference of the pipe into five equal sectors. Without heating or flattening the sectors, cut one rectangular test piece, perpendicular to the seam, from each sector of the pipe (see figure 1).

5.2.2 Adjustment of test piece dimensions

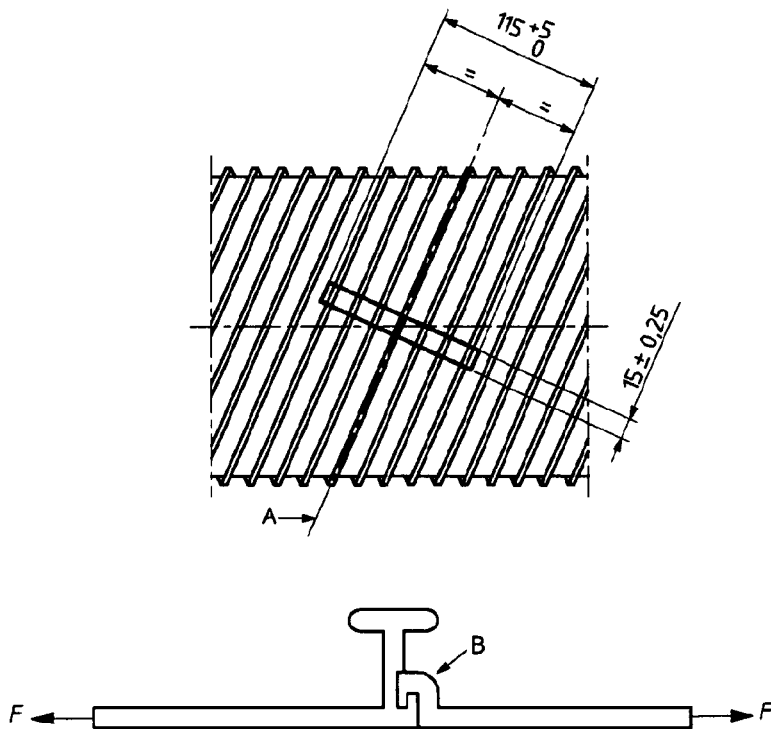
If the test pieces, after having been cut from the pipe, do not conform to 5.1, their size may be reduced by milling, provided that the milling conditions are chosen so as to avoid:

- a) any tangible heating of the test piece;
- b) damage to its surface, such as cracks, scratches or other visible flaws;

to an extent that would affect the tensile properties to be measured.

If the width of the wound profile is such that more than one seam is included in the length of the test piece, the test piece shall be cut in such a way that the seams are symmetrically located over the test piece.

If it is not possible to cut the test piece without getting a rib in the grip area, the test piece may be cut slightly longer or shorter as needed to avoid this situation. Individual ribs in the grip area may be removed if needed for a proper attachment of the grips.



- A Seam
- B Example of a seam

NOTE The lower figure is schematically only.

Dimensions in millimetres

Figure 1 — Location and dimensions of a test piece

6 Conditioning

The test pieces shall be conditioned at (23 ± 2) °C for not less than 1 h in water or 2 h in air, except in cases of dispute when the minimum period shall be 2 h in water or 4 h in air.

7 Test temperature

The test temperature shall be (23 ± 2) °C.

8 Procedure

8.1 Place the test piece in the tensile testing machine so that there is axial alignment with the direction of pull. Clamp the grips uniformly and sufficiently tightly to prevent any slipping of the test piece.

8.2 Set the rate of movement of the grips to the value specified in the referring standard and start the machine.

8.3 Record the maximum force necessary during testing to rupture of the test piece.

8.4 Repeat the test until five results have been obtained, after discarding any test pieces which have slipped in the grips.

9 Expression of results

For each test piece note the maximum force, in newtons, recorded during the test to rupture of the seam. Express the result as the tensile strength of the seam in newtons per 15 mm width.

10 Test report

The test report shall include the following information:

- a) a reference to this standard and to the referring standard;
- b) the complete identification of the pipe tested, including the constituent material, wall construction type, origin and nominal size;
- c) the conditioning medium (water or air) and conditioning period;
- d) the number of test pieces tested;
- e) the rate of movement of the grips;
- f) the tensile strength of the seam, in newtons per 15 mm width, for each test piece;
- g) any factors which may have affected the results, such as any incidents or any operating details not specified in this standard;
- h) the date of test.