
Cevni sistemi iz polimernih materialov - Cevi iz polietilena (PE) in zamreženega polietilena (PE-X) - Metoda za preskus odpornosti proti notranjemu tlaku po izvedenem stiskanju cevi (squeeze-of)

Plastics piping systems - Polyethylene (PE) and crosslinked polyethylene (PE-X) pipes - Test method for the resistance to internal pressure after application of squeeze-of

Kunststoff-Rohrleitungssysteme - Rohre aus Polyethylen (PE) und vernetztem Polyethylen (PE-X) - Bestimmung der Widerstandsfähigkeit gegen Innendruck nach Abquetschen

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Systèmes de canalisations en plastique - Tubes en polyéthylène (PE) et polyéthylène réticulé (PE-X) - Méthode d'essai de résistance à la pression interne après application de l'écrasement

Ta slovenski standard je istoveten z: prEN 12106

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Plastics piping systems - Polyethylene (PE) and crosslinked polyethylene (PE-X) pipes - Test method for the resistance to internal pressure after application of squeeze-of

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 155.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (prEN 12106:2014) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

This document supersedes EN 12106:1997.

It has been prepared in liaison with Technical Committee CEN/TC 234 “Gas Infrastructure”.

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

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

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1 Scope

This European Standard specifies a method for determining the resistance to internal pressure of polyethylene (PE) and crosslinked polyethylene (PE-X) pipes after being subjected to a squeeze-off procedure.

2 Normative reference

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references the latest edition of the referenced document (including any amendments) applies.

EN ISO 1167-1, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method (ISO 1167-1)*

EN ISO 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces (ISO 1167-2)*

3 Principle

The pipe, conditioned to 0 °C, is squeezed between two parallel circular-section bars located at right angles to the pipe centreline, at a position midway between the pipe ends. The squeeze is subsequently released after an appropriate time period. The pipe is then subjected to hydrostatic strength tests.

NOTE 1 In certain countries the technique of squeeze-off is used to restrict the flow of fluid in PE piping systems whilst effecting maintenance and repair operations. The test described herein may be used to assess the effect of squeeze-off on the strength of pipes. The equipment and procedure used should be specified by the pipeline operator in accordance with EN 12007-2 Clause 5.4.2.

NOTE 2 It is assumed that the following test parameters are set by the standard making reference to this standard:

- the diameter and series of the pipe to be tested (see 5.1);
- the number of test pieces (see 5.2);
- the parameters for the hydrostatic strength tests (see 6.5).

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4 Apparatus

4.1 Squeeze-off equipment, comprising a compressive loading device with a combination of a fixed bar and a moveable bar contained within a framework designed to withstand the forces generated by the squeeze-off action.

Each bar shall have a circular cross section having sufficient rigidity to ensure a uniform separation between and along the bars in the course of squeeze-off. Each bar shall have the same diameter which shall be not less than the applicable minimum value given in table 1.

The moveable bar may be hydraulically or mechanically operated to achieve the applicable level of squeeze-off given in Table 1.

Means shall be provided for the measurement and maintenance of the bar displacement to within $\pm 0,2$ mm of the required squeeze-off level L during the squeeze-off phase.

4.2 Temperature conditioning apparatus, capable of establishing and maintaining the test piece temperature (before squeeze-off) at $(0 \pm 1,5)$ °C.

4.3 Pipe test equipment, conforming to EN ISO 1167-1 and EN ISO 1167-2 for the following items:

- a) pressurizing equipment;
- b) timer;
- c) tank filled with water or other liquid for immersion of test pieces, maintained at (80 ± 1) °C;

— d) end caps of type A, see EN ISO 1167-1.

Table 1 — Squeeze-off levels

Nominal outside diameter D_n	Minimum bar diameter Mm	Squeeze-off level L % 1)
$d_n \leq 63$	25,0	80
$63 < d_n \leq 250$	38,0	80
$250 < d_n \leq 630$	50,0	90

1) The squeeze-off level, L , is the percentage ratio of the distance between the squeeze-off bars, in millimetres, and twice the nominal wall thickness of the pipe, e_n , in millimetres.

5 Test pieces

5.1 Preparation

The test piece shall be a pipe of which the minimum free length, between end caps of any type, shall be 250 mm or six times the nominal outside diameter, d_n , of the pipe, whichever is the greater. In case of testing peelable layer pipe, the layer shall be removed from the whole length of the test piece.

NOTE For practical reasons the length of the test piece may be reduced to three times the diameter for carrying out hydrostatic pressure tests.

NOTE The diameter and series of the pipe should be specified by agreement with the end user.

For pressure testing (see 6.5) the test piece shall be closed with end caps of type A, in accordance with EN ISO 1167-1.

5.2 Number

The number of test pieces shall be as specified in EN ISO 1167-2.

6 Procedure

6.1 Calculate the final distance, e_q , to be applied between the squeeze-off bars, in millimetres, using the following equation:

$$e_q = 0,01L \times 2e_n$$

where:

e_n is the nominal wall thickness specified for the pipe;

L is the squeeze-off level conforming to Table 1.

6.2 Condition the pipe at 0 °C for a time at least in accordance with EN ISO 1167-1 for the appropriate pipe wall thickness. Any conditioning fluids used shall not affect the properties of the test piece.

6.3 Position the conditioned test piece between squeeze bars set at right angles to the pipe centreline and midway between the pipe ends.

The squeeze off is carried out at an ambient temperature of not more than 25 °C