



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 12061:1999

ICS 23.040.45

**PLASTICS PIPING SYSTEMS -
THERMOPLASTICS FITTINGS - TEST
METHOD FOR IMPLACT STRENGTH**

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*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland
and comes into effect on
June 18, 1999*

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

EN 12061

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 1999

ICS 23.040.45

Descriptors: plastic tubes, pipe fittings, thermoplastic resins, impact tests, shock resistance

English version

Plastics piping systems - Thermoplastics fittings - Test method for impact resistance

Systèmes de canalisation en plastique - Raccords en
thermoplastique - Méthode d'essai de résistance au choc

Kunststoff-Rohrleitungssysteme - Formstücke aus
Thermoplasten - Prüfverfahren der Schalgzähigkeit

This European Standard was approved by CEN on 30 November 1998.

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This European Standard exists 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITE EUROPÉEN DE NORMALISATION
EUROPAISCHES 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of an identical text or by endorsement, at the latest by July 1999, and conflicting national standards shall be withdrawn at the latest by July 1999.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.

This standard is based on the test method described in 6.2.1 of ISO 4435:1991 "Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings for buried drainage and sewerage systems - Specifications", prepared by the International Organization for Standardization (ISO). It is a modification of ISO 4435:1991 for reasons of applicability to other plastics materials and/or other test conditions and alignment with texts of other standards on test methods.

The modifications are:

- editorial changes have been introduced;
- the possibility of specifying the position from which the fitting shall be dropped is introduced;
- assessment of the effect of the test impact on watertightness is introduced.

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 testing the impact resistance of fittings by dropping them onto a rigid surface. For a fitting with seal retaining components, such as seal retaining caps or rings, the method includes assessment of the watertightness of the fittings when the fixing elements show disturbance as a result of the test.

This standard is applicable to fittings made from thermoplastics materials intended to be used for buried and above ground applications.

2 Principle

The impact resistance of a fitting is tested by dropping the fitting onto a rigid surface. After impact, the fitting is inspected for any cracks visible without magnification. In the case of fittings with separate fixing elements, e.g. for seal retention, these elements are inspected for any permanent disturbance that could cause loss of watertightness.

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

- a) test temperature (see clause 3);
- b) sampling procedure and frequency (see clause 4);
- c) conditioning time and temperature as applicable (see clause 5);
- d) the height through which the test piece is to be dropped (see clause 6);
- e) the point of impact that is to hit the test base when dropped (see clause 6);
- f) test conditions for assessment of watertightness (see clauses 6 and 7);

3 Apparatus

3.1 Refrigerator or liquid bath, capable of maintaining the conditioning temperature within ± 2 °C.

3.2 Temperature-controlled environment, capable of maintaining the test temperature within ± 2 °C.

3.3 Test base, comprising a solid floor made of concrete or stone at least 100 mm thick or alternatively a slab of concrete with a minimum thickness of 100 mm and a mass at least 20 times that of the test piece. The surface shall be rigid, flat, smooth and horizontal.

4 Test pieces

4.1 Test piece form

The test piece shall comprise a sample fitting complete, where applicable, with the sealing element and any associated means of fixing element(s) in place.

4.2 Sampling

The sampling procedure and frequency shall be as specified in the referring standard.

4.3 Number

Unless otherwise specified in the referring standard, the number of test pieces shall be five for sizes up to and including 200 mm and three for sizes greater than 200 mm.

5 Conditioning

Determine and measure the maximum wall thickness, e , of the sample fitting.

Place the test piece in the refrigerator, liquid bath or temperature-controlled environment (3.1 and 3.2) at the specified test temperature for at least the applicable minimum period given in table 1, unless otherwise specified in the referring standard.

Table 1 — Minimum conditioning temperature

Wall thickness e mm	Minimum conditioning period h
$e < 3$	1
$3 \leq e < 8$	3
$8 \leq e < 16$	6
$16 \leq e$	16

6 Procedure

6.1 For each test piece in turn, remove the fitting from the conditioning environment and drop it on the test base in accordance with 6.2 within the applicable time limits given in table 2.

Table 2 — Maximum period between conditioning and testing

Conditions for testing in accordance with 6.2	Maximum time limit s
Without temperature control conforming to 3.2	for: $d_n < 200$: 10 $200 \leq d_n \leq 630$: 30 $d_n > 630$: 60
Temperature controlled environment (3.2) with refrigerator or liquid bath in the same environment	60

6.2 Release the fitting from the specified drop height in such an attitude that the specified point of impact hits the test base.

NOTE The position from which the fitting shall be dropped in order to hit the specified impact point, may be decided by preliminary testing with each specific fitting type.

6.3 Inspect each fitting for and record the presence and positions of any cracks or splits visible without magnification. Disregard any surface scratches, scuffing or chipping of edges which may occur during the test.

Assess the condition and/or assembly of the test piece for watertightness as necessary using the applicable test method(s) as specified by the referring standard to express the result in accordance with clause 7.

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