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Termoplastrør – Bestemmelse af modstandsdygtighed over for ydre slagpåvirkning – Trappemetoden

Thermoplastics pipes – Determination of resistance to external blows – Staircase method (ISO 11173:1994)

DANSK STANDARD
Danish Standards Association

Göteborg Plads 1
DK-2150 Nordhavn

Tel: +45 39 96 61 01

Tel: +45 39 96 61 01

dansk.standard@ds.dk

www.ds.dk

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DS/EN ISO, hvilket betyder, at det er en international standard, der har status både som europæisk og dansk standard.

Denne publikations overensstemmelse er:

IDT med: ISO 11173:1994

IDT med: EN ISO 11173:2017

DS-publikationen er på engelsk.

Denne publikation erstatter: [DS/EN 1411:1996](#)

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EUROPÄISCHE NORM

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English Version

Thermoplastics pipes - Determination of resistance to external blows - Staircase method (ISO 11173:1994)

Tubes en matières thermoplastiques -
Détermination de la résistance aux chocs extérieurs
- Méthode en escalier (ISO 11173:1994)

Rohre aus Thermoplasten - Bestimmung
der Widerstandsfähigkeit gegen
äußere Schlagbeanspruchung -
Stufenverfahren (ISO 11173:1994)

This European Standard was approved by CEN on 19 September 2017.

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Contents

Page

European Foreword	3
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European Foreword

The text of [ISO 11173:1994](#) has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" of the International Organization for Standardization (ISO) and has been taken over as [EN ISO 11173:2017](#) by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems" the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by April 2018 and conflicting national standards shall be withdrawn at the latest by October 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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The text of [ISO 11173:1994](#) has been approved by CEN as a [EN ISO 11173:2017](#) without any modification.

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Thermoplastics pipes — Determination of resistance to external blows — Staircase method

Tubes en matières thermoplastiques — Détermination de la résistance aux chocs extérieurs — Méthode en escalier



Reference number
ISO 11173:1994(E)

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11173 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*.

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Thermoplastics pipes — Determination of resistance to external blows — Staircase method

1 Scope

This International Standard specifies a method for determining the resistance to external blows of thermoplastic pipes of circular cross-section; it is called the staircase method.

This method is applicable to isolated batches of pipe to be tested at 0 °C.

NOTE 1 If testing below 0 °C is necessary, the temperature of – 20 °C is recommended.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6603-1:1985, *Plastics — Determination of multi-axial impact behaviour of rigid plastics — Part 1: Falling dart method.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 drop height for 50 % failure, H_{50} : Height of fall of a striker of specified mass, which provokes failure of 50 % of test pieces from samples of pipe taken to represent a batch.

NOTE 2 In practice, test pieces are drawn at random from the batch and the result is only an estimate of the H_{50} for that batch.

3.2 failure: Unless otherwise specified in the product standard, shattering or any crack or split on the inside of the pipe that was caused by the impact and that can be seen by the naked eye (lighting devices may be used to assist in examining the specimens).

Indentation of the test piece or a crease on the surface shall not be considered a failure.

4 Principle

Test pieces, comprising cut lengths of pipe, are each subjected to a single blow by a falling striker of specified mass and shape dropped from one of a sequence of different heights onto a random position around the circumference of the pipe.

If a test piece fails, the drop height for the next blow is decreased by a predetermined amount. If a test piece does not fail, the drop height for the next blow is increased accordingly. If sufficient test pieces are used, the H_{50} value of a batch, or a production run from an extruder, can be calculated.

The severity of this test method can be adjusted by changing the mass of the striker and/or the test temperature.

5 Apparatus

5.1 Falling-weight testing machine, incorporating the following basic components (see figure 1).

5.1.1 Main frame, with guide rails or a guiding tube rigidly fixed in the vertical position, to accommodate a striker (5.1.2) and release it to fall vertically and freely. When calibrated, the speed of the striker at the moment of impact shall be not less than 95 % of the theoretical speed.