INTERNATIONAL STANDARD

ISO 6259-3

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Thermoplastics pipes — Determination of tensile properties —

Part 3:
Polyolefin pipes

Tubes en matières thermoplastiques — Détermination des caractéristiques en traction —

Partie 3: Tubes en polyoléfines

Reference number
ISO 6259-3:1997(E)

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 6259-3 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*.

ISO 6259 consists of the following parts, under the general title *Thermoplastics pipes — Determination of tensile properties*:

— *Part 1: General test method*

— *Part 2: Pipes made of unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C) and high-impact poly(vinyl chloride) (PVC-HI)*

— *Part 3: Polyolefin pipes*

Annexes A to E of this part of ISO 6259 are for information only.

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Thermoplastics pipes — Determination of tensile properties —

Part 3:
Polyolefin pipes

1 Scope

This part of ISO 6259 specifies a method of determining the tensile properties of polyolefin (polyethylene, cross-linked polyethylene, polypropylene and polybutene) pipes, and in particular the following properties:

— the stress at yield;

— the elongation at break.

NOTES

1 The properties of butt fusion welds may be assessed by using machined test pieces of the types specified in this document.

2 The general method of test for the determination of the tensile properties of thermoplastics pipes is given in ISO 6259-1.

This part of ISO 6259 also gives, for information purposes only, the corresponding basic specifications in annexes A to D.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 6259. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6259 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 6259-1:1997, *Thermoplastics pipes — Determination of tensile properties — Part 1: General test method.*

3 Principle

See clause 3 of ISO 6259-1:1997, as applicable to thermoplastics covered by this part of ISO 6259.

4 Apparatus

See clause 4 of ISO 6259-1:1997.

5 Test pieces

5.1 Nature of the test pieces

5.1.1 General

Where the thickness of the pipe is less than or equal to 12 mm, the test pieces shall be cut using a die or obtained by machining. Where the thickness of the pipes is greater then 12 mm the test pieces shall be machined.

5.1.2 Dimensions of test pieces

Test pieces shall be either of type 1, the shape and dimensions of which are given in figure 1 and table 1, type 2, the shape and dimensions of which are given in figure 2 and table 2 or type 3, the shape and dimensions of which are given in figure 3 and table 3. The choice of test piece is dependent on the wall thickness of the pipe from which it is taken (see 5.2).

NOTES

1 The type 1 test piece is identical to the type 1B specified in ISO 527-2:1993. The smaller test piece is identical to the type 2 specified in ISO 6259-2.

2 In order to avoid slippage in the grips, it is recommended that the width of the ends of the test piece (b_2) be increased in proportion to the thickness (e_n) in accordance with the following equation:

$$b_2 = e_n + 15 \text{ (mm)}$$

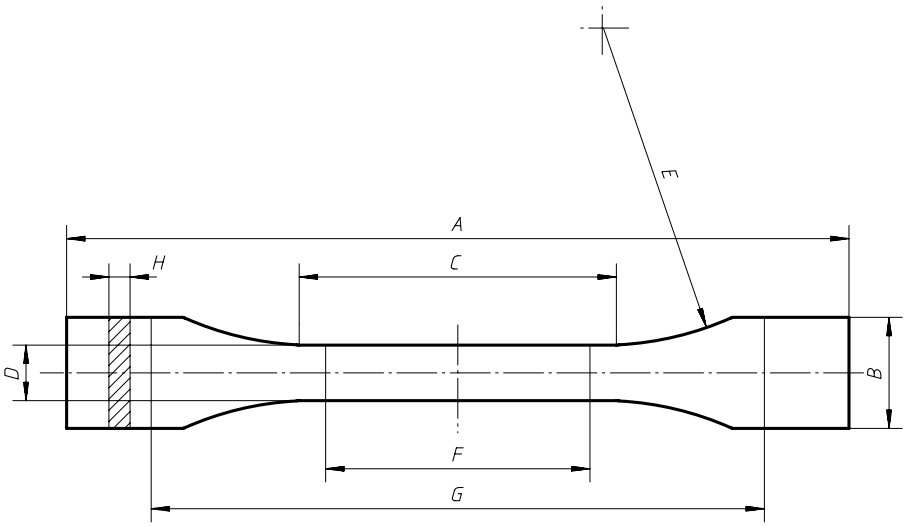

Figure 1 — Type 1 test piece

Table 1 — Dimensions of type 1 test pieces

Symbol	Description	Dimensions mm
A	Overall length (min.)	150
B	Width of ends	20 ± 0,2
C	Length of narrow, parallel-sided portion	60 ± 0,5
D	Width of narrow, parallel-sided portion	10 ± 0,2
E	Radius	60
F	Gauge length	50 ± 0,5
G	Initial distance between grips	115 ± 0,5
H	Thickness	That of the pipe

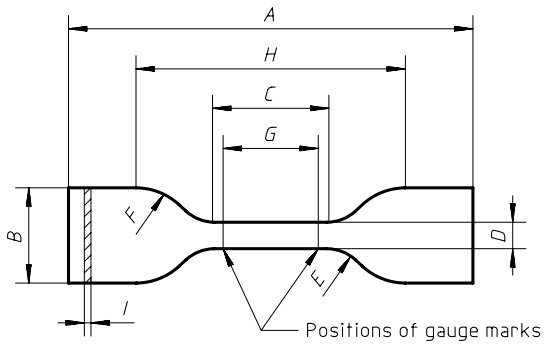

Figure 2 — Type 2 test piece

Table 2 — Dimensions of type 2 test pieces

Symbol	Description	Dimensions mm
A	Overall length (min.)	115
B	Width of ends	25 ± 1
C	Length of narrow, parallel-sided portion	33 ± 2
D	Width of narrow, parallel-sided portion	$6\ ^{+0,4}_{0}$
E	Small radius	14 ± 1
F	Large radius	25 ± 2
G	Gauge length	25 ± 1
H	Initial distance between grips	80 ± 5
I	Thickness	That of the pipe

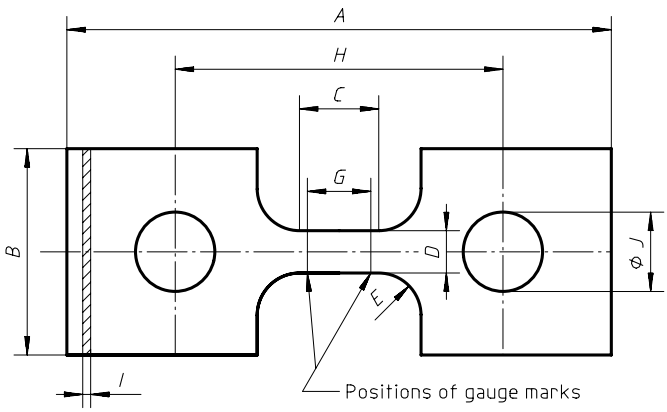

Figure 3 — Type 3 test piece

Table 3 — Dimensions of type 3 test pieces

Symbol	Description	Dimensions mm
A	Overall length (min.)	250
B	Width of ends	100 ± 3
C	Length of narrow, parallel-sided portion	25 ± 1
D	Width of narrow, parallel-sided portion	25 ± 1
E	Radius	25 ± 1
G	Gauge length	20 ± 1
H	Initial distance between centres of loading pins	165 ± 5
I	Thickness	That of the pipe
J	Diameter of hole	30 ± 5

5.2 Preparation of test pieces

The test pieces shall be taken from the centre of strips cut from the length of pipe in accordance with 5.2.1 of ISO 6259-1:1997 and with item a) or item b) below, as applicable.

a) Pipes of wall thickness less than or equal to 12 mm

The test pieces shall be prepared by cutting with a die or machining to the following shape:

— type 1, for wall thicknesses less than or equal to 12 mm but greater than 5 mm;

— type 2, for wall thicknesses less than or equal to 5 mm.

b) Pipes of wall thickness greater than 12 mm

Test pieces shall be prepared by machining. They shall be of type 1 or type 3.

5.3 Cutting method (see 5.2.2.2 in ISO 6259-1:1997)

Use a cutting die (4.6 in ISO 6259-1:1997) with a profile corresponding to that of the type 1 or type 2 test piece, depending on thickness of the pipe.

Cut out the test piece at ambient temperature, applying the die cutter to the inner surface of the strip and exerting a continuous uniform pressure.