INTERNATIONAL STANDARD

ISO 13957

First edition
1997-12-15

Plastics pipes and fittings — Polyethylene (PE) tapping tees — Test method for impact resistance

Tubes et raccords en matières plastiques — Prises de branchement en polyéthylène (PE) — Méthode d'essai de la résistance au choc

Reference number
ISO 13957:1997(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 13957 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.*

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

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Plastics pipes and fittings — Polyethylene (PE) tapping tees — Test method for impact resistance

1 Scope

This International Standard specifies a test method for the impact resistance of polyethylene (PE) tapping tees.

This International Standard is applicable to PE tapping tees intended for the conveyance of fluids.

2 Principle

The cap (or the top of the branch) of a tapping tee is subjected to impact by means of a weight, falling from a constant height, parallel to the axis of the pipe to which the tapping tee is fused.

After two impacts from opposite directions parallel to the axis of the pipe, the tee is inspected for visible damage and for loss of airtightness.

The test is carried out at 0 °C ± 2 °C or another specified temperature.

3 Apparatus

3.1 Falling-weight test machine, incorporating a main frame with guide bars or a guide tube fixed in the vertical position to guide a striker so that, when the striker is released, it falls vertically and freely and the velocity of the striker at the moment of impact with the tapping tee is not less than 95 % of the theoretical velocity.

3.2 Striker, with a mass of 2 500 g ± 20 g or 5 000 g ± 20 g and with a hemispherical striking surface of diameter 50 mm.

3.3 Rigid test piece holder with a steel mandrel, capable of maintaining the test piece in the position indicated in figure 1 and preventing any rotation of the test piece during the test.

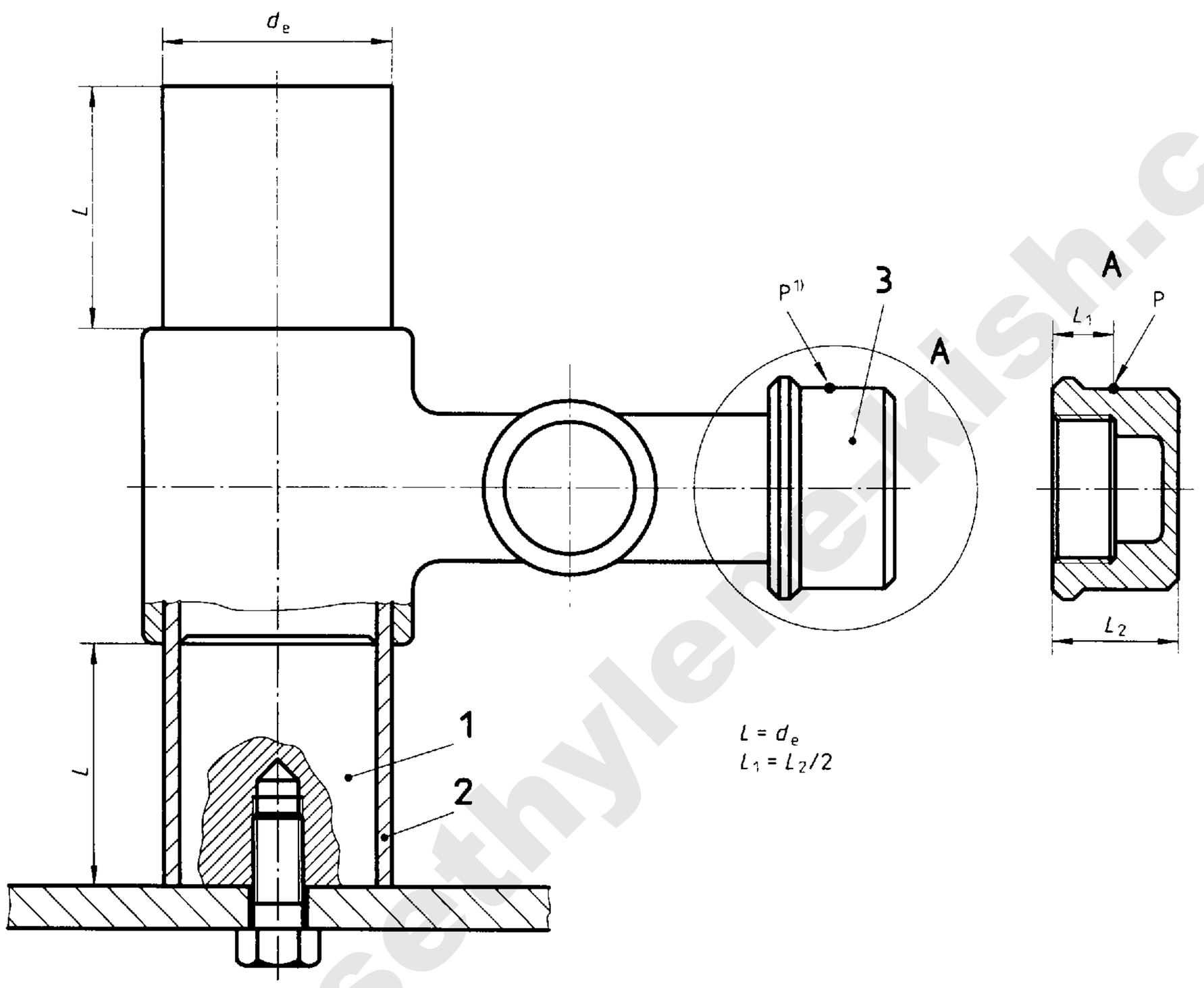
4 Test pieces

At least three test pieces shall be tested for any given size of tapping tee.

Each test piece shall comprise a complete pipe/tapping tee assembly in which the length L is at least equal to d_e (see figure 1). If necessary, the positioning clamp shall be removed.

All joints shall be assembled in accordance with the tapping tee manufacturer's instructions, including the cutting of the main pipe, or in accordance with instructions given in the relevant standards.

Prior to testing, each test piece shall be checked for airtightness at 25 mbar or 6 bar and at a temperature of 23 °C ± 2 °C (see clause 6).



Key

1 Steel mandrel
2 Pipe
3 Cap

1) P = point of impact

Figure 1 (given as an example only)

5 Conditioning

Not less than 8 h after fusion of the tapping tee to the pipe, condition the test piece at a temperature of 0 °C ± 2 °C for 4 h in air or 2 h in a liquid bath.

6 Procedure

Carry out steps 6.1 to 6.4 inclusive within 30 s after removal of the test piece from the conditioning fluid.

If this time is exceeded, the test piece shall be reconditioned for a minimum period of 5 min, providing the test piece has not been out of the conditioning fluid for more than 3 min.

6.1 Slide the test piece over the mandrel as shown in figure 1.

6.2 Drop the striker (3.2) on to the cap (or the top of the branch) of the tapping tee from a height of 2 000 mm ± 10 mm along an axis parallel to that of the pipe to which the tapping tee is fused. The point of impact P shall be situated at a distance of 30 mm at the most from the top of the branch. If the tee is fitted with a cap (as in figure 1), P should preferably be on a cylindrical part of the cap.

6.3 Turn the assembly in order to strike the opposite side of the cap or branch.

6.4 Repeat the procedure given in 6.2 under the same conditions.

6.5 Examine the joint visually, without magnification, and note any crack or rupture, as well as its position and its extent.

6.6 Verify the airtightness of the test piece at 23 °C ± 2 °C using an internal pressure of 25 mbar or 6 bar.

7 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) complete identification of the sample tested, including type of material, manufacturer's code and dimensions of pipe and tapping tee;

c) the test temperature;

d) the mass of the falling weight;

e) the drop height;

f) the number of test pieces tested;

g) the type(s) of failure;

h) any observations made during the test;

i) any factors which may have affected the results, such as any incidents noted or any operational details not specified in this International Standard;

j) the date of the test;

k) the laboratory which carried out the test.

ICS 23.040.45

Descriptors: fluid pipelines, plastics products, pipes (tubes), polyethylene, plastic tubes, pipe fittings, tapping tees, tests, impact tests, determination, shock resistance.

Price based on 3 pages