
**Plastics piping systems for water supply
and for buried and above-ground
drainage and sewerage under pressure —
Unplasticized poly(vinyl chloride)
(PVC-U) —**

**Part 1:
General**

*Systèmes de canalisations en plastique pour l'alimentation en eau, pour
branchements et collecteurs d'assainissement enterrés et aériens avec
pression — Poly(chlorure de vinyle) non plastifié (PVC-U) —*

Partie 1: Généralités



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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

ISO 1452-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in collaboration with ISO Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 2, *Plastics pipes and fittings for water supplies*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO 4422-1:1996, which has been technically revised.

ISO 1452 consists of the following parts, under the general title *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U)*:

- *Part 1: General*
- *Part 2: Pipes*
- *Part 3: Fittings*
- *Part 4: Valves*
- *Part 5: Fitness for purpose of the system*

Guidance for the assessment of conformity is to form the subject of a part 7.

Introduction

The System Standard, of which this is Part 1, specifies the requirements for a piping system and its components made from unplasticized poly(vinyl chloride) (PVC-U). The piping system is intended to be used for water supply and for buried and above-ground drainage and sewerage under pressure.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the products covered by this part of ISO 1452, the following are relevant.

- a) This part of ISO 1452 provides no information as to whether or not the products can be used without restriction.
- b) Existing national regulations concerning the use and/or the characteristics of these products remain in force.

Requirements and test methods for components are specified in ISO 1452-2, ISO 1452-3 and ISO 1452-4. Characteristics for fitness for purpose (mainly for joints) are established in ISO 1452-5.

This part of ISO 1452 specifies the general aspects of PVC-U.

Guidance for installation is given in ISO/TR 4191^[1].

Guidance for assessment of conformity is provided in ENV 1452-7^[2].

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Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U) —

Part 1: General

1 Scope

This part of ISO 1452 specifies the general aspects of unplasticized poly(vinyl chloride) (PVC-U) solid-wall piping systems intended for water supply and for buried and above-ground drainage and sewerage under pressure.

In conjunction with ISO 1452-2, ISO 1452-3, ISO 1452-4 and ISO 1452-5, it is applicable to PVC-U pipes, fittings, valves and ancillary equipment, their joints and to joints with components of other plastics and non-plastics materials intended to be used for the following:

- a) water mains and services buried in the ground;
- b) conveyance of water above ground for both outside and inside buildings;
- c) buried and above-ground drainage and sewerage under pressure.

It is applicable to piping systems intended for the supply of water under pressure up to and including 25 °C (cold water), intended for human consumption and for general purposes as well as for waste water under pressure.

This part of ISO 1452 is also applicable to components for the conveyance of water and waste water up to and including 45 °C. For temperatures between 25 °C and 45 °C, Figure A.1 of ISO 1452-2:2009 applies.

NOTE The producer and the end-user can come to agreement on the possibilities of use for temperatures above 45 °C on a case-by-case basis.

2 Normative references

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

ISO 472:1999, *Plastics — Vocabulary*

ISO 1043-1:2005, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

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 1167-2, *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 6401:2008, *Plastics — Poly(vinyl chloride) — Determination of residual vinyl chloride monomer — Gas-chromatographic method*

ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification, design coefficient and designation*

3 Terms, definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and ISO 1043-1 and the following apply.

NOTE If not included in this part of ISO 1452, see the designations given in EN 805^[3] and EN 806-1^[4].

3.1.1 Wall construction definition

3.1.1.1

solid-wall

having smooth internal and external surface and the same homogeneous compound/formulation throughout the wall

NOTE This term can be applied to pipes, fittings and valves.

3.1.2 Geometrical definitions

3.1.2.1

nominal size

DN

numerical designation of the size of a component, other than a component designated by thread size, which is a convenient round number approximately equal to the manufacturing dimension in millimetres (mm)

3.1.2.2

nominal size

DN/OD

nominal size, related to the outside diameter

3.1.2.3

nominal size

DN/ID

nominal size, related to the inside diameter

3.1.2.4

nominal diameter

d_n

specified diameter assigned to a nominal size

NOTE 1 According to ISO 1452, the nominal (outside) diameter of a thermoplastics pipe or a spigot, is equal to its minimum mean outside diameter, $d_{em,min}$.

NOTE 2 The nominal (inside) diameter of the socket of a fitting, pipe, valve or of ancillary equipment is equal to the nominal (outside) diameter of the connecting pipe for which they are designed.

NOTE 3 The nominal diameter is expressed in millimetres.