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**Plastics piping systems for the supply  
of gaseous fuels — Polyethylene (PE) —**

**Part 4:  
Valves**

*Systèmes de canalisations en plastique pour la distribution des  
combustibles gazeux — Polyéthylène (PE) —*

*Partie 4: Robinets*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 7, *Valves and auxiliary equipment of plastics materials*.

This first edition cancels and replaces ISO 10933:1997.

ISO 4437 consists of the following parts, under the general title *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE)*:

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

## Introduction

Characteristics for fitness for purpose are covered in ISO 4437-5. ISO/TS 10839 gives recommended practices for installation.



# Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) —

## Part 4: Valves

### 1 Scope

This part of ISO 4437 specifies the characteristics of valves made from polyethylene (PE) for piping systems in the field of the supply of gaseous fuels.

It also specifies the test parameters for the test methods referred to in this part of ISO 4437.

In conjunction with ISO 4437-1, ISO 4437-2, ISO 4437-3:2014, and ISO 4437-5, it is applicable to PE valves, their joints, and to joints with components of PE and other materials intended to be used under the following conditions:

- a) the maximum operating pressure, MOP, is based on the design stress determined from the compound MRS divided by the C factor and taking into account RCP requirements;
- b) temperature of 20 °C as reference temperature;

NOTE 1 For other operating temperatures, derating coefficients are given in ISO 4437-5:2014.

- c) operating temperature between –20 °C and +40 °C.

This International Standard covers a range of maximum operating pressures and gives requirements concerning colours and additives.

NOTE 2 It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

It is applicable to bi-directional valves with spigot ends or electrofusion sockets intended to be jointed with PE pipes conforming to ISO 4437-2 without any fittings or with PE fittings conforming to ISO 4437-3:2014.

This part of ISO 4437 covers valves for pipes with a nominal outside diameter  $d_n \leq 400$  mm.

NOTE 3 Valves made from materials other than polyethylene designed for the supply of gaseous fuels conforming to the relevant standards are permitted to be used in PE piping systems according to ISO 4437 provided that they have relevant PE connections for butt fusion or electrofusion ends (see ISO 4437-3). The component, i.e. the complete valve, shall fulfil the requirements of this part of ISO 4437.

### 2 Normative references

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

ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method*

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 1167-4, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 4: Preparation of assemblies*

ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions*

ISO 3127, *Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method*

ISO 4437-1, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*

ISO 4437-2, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes*

ISO 4437-3:2014, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*

ISO 4437-5, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

ISO 8233, *Thermoplastics valves — Torque — Test method*

ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)*

ISO 12176-4, *Plastics pipes and fittings — Equipment for fusion jointing polyethylene systems — Part 4: Traceability coding*

ISO 16010, *Elastomeric seals — Material requirements for seals used in pipes and fittings carrying gaseous fuels and hydrocarbon fluids*

ISO 17778, *Plastics piping systems — Fittings, valves and ancillaries — Determination of gaseous flow rate/pressure drop relationships*

EN 736-1, *Valves — Terminology — Part 1: Definition of types of valves*

EN 736-2, *Valves — Terminology — Part 2: Definition of components of valves*

EN 1680, *Plastics piping systems — Valves for polyethylene (PE) piping systems — Test method for leaktightness under and after bending applied to the operating mechanisms*

EN 1704, *Plastics piping systems — Thermoplastics valves — Test method for the integrity of a valve after temperature cycling under bending*

EN 1705, *Plastics piping systems — Thermoplastics valves — Test method for the integrity of a valve after an external blow*

EN 12100, *Plastics piping systems — Polyethylene (PE) valves — Test method for resistance to bending between supports*

EN 12119, *Plastics piping systems — Polyethylene (PE) valves — Test method for resistance to thermal cycling*

### 3 Terms, definitions, symbols, and abbreviations

For the purposes of this document, the terms, definitions, symbols, and abbreviations given in ISO 4437-1, EN 736-1, EN 736-2, and the following apply.

#### 3.1 General terms

##### 3.1.1

##### **external leaktightness**

leaktightness of the valve body enveloping the space containing the gas with respect to the atmosphere

##### 3.1.2

##### **internal leaktightness**

leaktightness between the inlet and the outlet of the valve with the valve in the closed position