

Plastics piping systems — Multilayer piping systems for outdoor gas installations — Specifications for systems

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National foreword

This British Standard is the UK implementation of ISO 18225:2007.

The UK participation in its preparation was entrusted by Technical Committee PRI/88, Plastics piping systems, to Subcommittee PRI/88/2, Plastics piping for pressure applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Plastics piping systems — Multilayer piping systems for outdoor gas installations — Specifications for systems

*Systèmes de canalisations en plastique — Tubes multicouches
destinés à l'alimentation en gaz à l'extérieur des bâtiments —
Spécifications pour les systèmes*



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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 18225 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 4, *Plastics pipes and fittings for the supply of gaseous fuels*.

Introduction

The test methods used in this International Standard have been developed by ISO TC 138/SC 5 as far as possible. However, not all the required methods were in the SC 5 standards development work programme at the time of publication of this International Standard, so they have been placed in its annexes. When those methods are developed for other International Standards, these annexes will be redundant.

For multilayer pipe construction — consisting of a layer of a reference standard material, an adhesive and a non-stress designed layer — Procedure I and the relevant product standards are required to be followed for all aspects, excepting for those of delamination and — if applicable — oxygen permeation.

For example, layers can have the following purposes:

- the ability to withstand pressure;
- the ability to realize interlayer adhesion;
- the ability to block or greatly diminish incoming UV light and/or sunlight;
- the ability to mechanically protect the outside layer;
- the ability to control longitudinal expansion;
- the ability to give the multilayer pipe a colour (inside or outside layer).

Moreover, some characteristics can be combined in one layer.

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1 Scope

This International Standard specifies general and performance requirements for multilayer pipe systems based on pipes made from thermoplastics and intended to be used for gas supply.

It gives requirements for the design of pipe systems consisting of multilayer pipes based on thermoplastics and for which at least 60 % of the wall thickness is of a polymeric material. The polymeric material used for stress design layers and all inner layers must be polyethylene (PE) and/or crosslinked polyethylene (PE-X), in accordance with Annex A. The outer layers of metal multilayer pipes must be of either PE or PE-X.

NOTE For the purposes of this International Standard, PE-RT is considered as PE, while PE-X and adhesive layers are considered as thermoplastics materials.

This International Standard is applicable to systems intended to be operated at temperatures ranging from $-20\text{ }^{\circ}\text{C}$ to $40\text{ }^{\circ}\text{C}$. It is applicable to pipes in these systems having a nominal diameter up to and including 630 mm, and to the supply of gaseous fuels of categories D (natural gas) and E (LPG vapour and natural gas or LPG vapour) (see ISO 13623).

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 161-1, *Thermoplastics pipes for the conveyance of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*

ISO 497, *Guide to the choice of series of preferred numbers and of series containing more rounded values of preferred numbers*

ISO 1167 (all parts), *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure*

ISO 3126, *Plastics pipes — Measurement of dimensions*

ISO 4437, *Buried polyethylene (PE) pipes for the supply of gaseous fuels — Metric series — Specifications*

ISO 6447, *Rubber seals — Joint rings used for gas supply pipes and fittings — Specification for material*

ISO 8085-3, *Polyethylene fittings for use with polyethylene pipes for the supply of gaseous fuels — Metric series — Specifications — Part 3: Electrofusion fittings*

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

ISO 9969, *Thermoplastics pipes — Determination of ring stiffness*

ISO 10146, *Crosslinked polyethylene (PE-X) pipes — Effect of time and temperature on the expected strength*