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Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications —

Part 3: Fittings

Systèmes de canalisations en polyéthylène renforcé de fibres de verre courtes (PE-sGF) pour les applications industrielles —

Partie 3: Raccords

Reference number
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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 document 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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 3, *Plastics pipes and fittings for industrial applications*.

A list of all parts in the ISO 22101 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Polyethylene reinforced with short glass fibres (PE-sGF) piping systems are pipe systems which consist of fittings produced by adding short glass fibres into high density polyethylene resins. Their physical and mechanical properties are influenced by short glass fibre orientation.

For the material subject of this document, the mechanical performances are obtained on the basis of standards dedicated to thermoplastics. The geometrical characteristics are defined for this material in line with ISO 3 and ISO 4065.

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Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications —

Part 3: Fittings

1 Scope

This document specifies the fittings made from short glass fibre reinforced polyethylene (PE-sGF) manufactured by the spiral cross winding method used below ground for the conveyance of fluids in the following industrial and agricultural contexts:

— chemical plants;

— industrial sewerage engineering;

— power engineering (cooling and general-purpose water supply);

— agricultural production plants;

— water treatment;

— small hydraulic power plants (general-purpose water supply).

This document also specifies the test parameters for the test methods it references.

In conjunction with the other parts of the ISO 22101 series, this document is applicable to PE-sGF fittings, and to joints with components of PE-sGF or other materials, intended to be used under the following conditions:

a) a maximum allowable operating pressure (PFA) up to and including 25 bar;[1)]

b) an operating temperature of 20 °C as the reference temperature.

NOTE 1 For other operating temperatures, guidance is given in ISO/PAS 22101-1:2022, Annex A.

This document covers a range of maximum allowable 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 guidance or regulations and installation practices or codes.

This document is applicable to fittings of the following types:

— electrofusion socket fittings;

— loose backing flanges and flange adapters;

— fabricated fittings (see Annex A).

1) 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm^2.

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 527-1, *Plastics — Determination of tensile properties — Part 1: General principles*

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 2505, *Thermoplastics pipes — Longitudinal reversion — Test method and parameters*

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

ISO 4427-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 2: Pipes*

ISO 4433-1, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 1: Immersion test method*

ISO 4433-2, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 2: Polyolefin pipes*

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

ISO 13953, *Polyethylene (PE) pipes and fittings — Determination of the tensile strength and failure mode of test pieces from a butt-fused joint*

ISO 13954, *Plastics pipes and fittings — Peel decohesion test for polyethylene (PE) electrofusion assemblies of nominal outside diameter greater than or equal to 90 mm*

ISO 13955, *Plastics pipes and fittings — Crushing decohesion test for polyethylene (PE) electrofusion assemblies*

ISO/PAS 22101-1, *Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications — Part 1: General*

ISO/PAS 22101-2, *Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications — Part 2: Pipes*

ISO/PAS 22101-5, *Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications — Part 5: Fitness for purpose of the system*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
electrofusion socket fitting
PE-sGF fitting which contains one or more integral heating elements that are capable of transforming electrical energy into heat to realize a fusion joint with a spigot end or pipe

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