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**Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications** — **ISO/DPAS 22101-3**

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**Part 3:  
Fittings**

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<b>Contents</b>	<b>page</b>
Foreword.....	v
Introduction.....	vi
1 Scope.....	1
2 Normative references.....	2
3 Terms and definitions.....	3
3.1 Electrofusion socket fitting.....	3
3.2 Mechanical fitting.....	3
4 Material.....	Errore. Il segnalibro non è definito.
4.1 PE compound.....	3
4.2 PE sGF compound.....	3
4.3 Material for non polyethylene based parts.....	3
5 General characteristics.....	4
5.1 Appearance.....	4
5.2 Design.....	4
5.3 Colour.....	4
5.4 Electrical characteristics for electrofusion fittings.....	4
5.5 Appearance of factory-made joints.....	5
6 Geometrical characteristics.....	5
6.1 Measurement of dimensions.....	5
6.2 Dimensions of electrofusion socket.....	5
6.3 Dimensions of fabricated fittings.....	6
6.4 Dimensions of loose backing flanges and flange adapters.....	6
7 Mechanical characteristics.....	9
7.1 General.....	9
7.2 Conditioning.....	9
7.3 Requirements.....	9
8 Physical characteristics.....	11
8.1 Conditioning.....	11
8.2 Requirements.....	11
9 Chemical resistance of fittings in contact with chemicals.....	12
10 Performance requirements.....	12
11 Marking.....	12
11.1 General.....	12
11.2 Minimum required marking.....	13
11.3 Fusion system recognition.....	13
12 Packaging.....	13
Annex A (normative) Fabricated fittings.....	15
Annex B (normative) Short-term pressure test method.....	21
Annex C (normative) Specific characteristics for butt fused joint of polyethylene reinforced with short glass fibre(PE sGF)piping systems for industrial applications.....	23
Bibliography.....	28

ISO/DPAS-22101-3:2023(E)(en)

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ISO/DPAS 22101-3

<https://standards.itih.ai/catalog/standards/iso/79824a74-1b6b-4256-a01e-848acfc4a6f5/iso-dpas-22101-3>

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**Contents**

Foreword .....	viii
Introduction .....	ix
1 Scope .....	1
2 Normative references .....	2
3 Terms and definitions .....	3
4 Material .....	3
4.1 PE compound .....	3
4.2 PE-sGF compound .....	3
4.3 Material for non-polyethylene-based parts .....	3
4.3.1 General .....	3
4.3.2 Metal parts .....	4
5 General characteristics .....	4
5.1 Appearance .....	4
5.2 Design .....	4
5.3 Colour .....	4
5.4 Electrical characteristics for electrofusion fittings .....	4
5.5 Appearance of factory-made joints .....	4
6 Geometrical characteristics .....	5
6.1 Measurement of dimensions .....	5
6.2 Dimensions of electrofusion socket .....	5
6.2.1 Diameters and lengths of electrofusion socket fitting .....	5
6.2.2 Wall thickness of the fitting body .....	7
6.3 Dimensions of fabricated fittings .....	7
6.4 Dimensions of loose backing flanges and flange adapters .....	7
7 Mechanical characteristics .....	10
7.1 General .....	10
7.2 Conditioning .....	10
7.3 Requirements .....	10
8 Physical characteristics .....	12
8.1 Conditioning .....	12
8.2 Requirements .....	13
9 Chemical resistance of fittings in contact with chemicals .....	14
10 Performance requirements .....	14
11 Marking .....	14
11.1 General .....	14
11.2 Minimum required marking .....	14
11.3 Fusion system recognition .....	15

ISO/DPAS-22101-3:2023(E)(en)

12	Packaging .....	15
	Annex A (normative) Fabricated fittings.....	16
A.1	General .....	16
A.2	Dimensions .....	18
A.3	Segmented bends .....	19
A.4	Segmented tees .....	22
	Annex B (normative) Short-term pressure test method.....	25
B.1	Principle.....	25
B.2	Apparatus.....	25
B.3	Test piece.....	25
B.4	Procedure.....	25
B.5	Test report.....	25
	Annex C (normative) Specific characteristics for butt fused joints of polyethylene reinforced with short glass fibre (PE-sGF) piping systems for industrial applications .....	27
C.1	Introduction .....	27
C.2	Assessment of butt fusion joints.....	27
C.3	Procedure.....	28
C.4	Test report.....	29
C.5	Example of test results.....	29
	Bibliography.....	34

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Document Preview

ISO/DPAS 22101-3

<https://standards.iteh.ai/catalog/standards/iso/79824a74-1b6b-4256-a01e-848acfc4a6f5/iso-dpas-22101-3>

## 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~~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](http://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](http://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 033, *Plastics pipes and fittings for industrial applications*.

ISO 22101 consists of the following parts, under the general title *Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications*

~~Part 1: General~~

~~Part 2: Pipes~~

~~Part 3: Fittings~~

~~Part 5: Fitness for purpose of the system~~

[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](http://www.iso.org/members.html)~~www.iso.org/members.html~~.



## 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 3144 and ISO 4065[2].

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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 for the following industrial and agricultural use shown below 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 referred to in this International Standard references.

In conjunction with the other parts of the ISO-PAS 22101-1, ISO-PAS 22101-2 and ISO/DPAS 22101-5 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;<sup>1</sup>
- 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).

<sup>1</sup> 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm<sup>2</sup>.

## ISO/DPAS 22101-3:(en)

### 2 Normative references

The following documents, ~~are referred to in whole the text in such a way that some or in part, are normatively referenced in all of their content constitutes requirements of 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\_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 ~~piping~~ components — ~~Measurement and determination~~Determination of dimensions*

~~ISO-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 13950, *Plastics pipes and fittings — Automatic recognition systems for electrofusion joints*~~

ISO 13953:2001, *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 21307, *Plastics pipes and fittings — Butt fusion jointing procedures for polyethylene (PE) piping systems*~~

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/~~DPAS-PAS~~ 22101-5<sup>2</sup>, *Polyethylene reinforced with short glass fibres (PE-sGF) piping systems for industrial applications — Part 5: Fitness for purpose of the system*

<sup>2</sup> Under preparation. Stage at the time of publication: ISO/DPAS 22101-5:2024.