Plasttorustikusüsteemid tööndusliikele rakendustele. Polüvinülideenfluoriid (PVDF). Komponentide ja süsteemi spetsifikatsioonid

Plastics piping systems for industrial applications - Poly(vinylidene fluoride) (PVDF) - Specifications for components and the system

EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 10931:2006 sisaldab Euroopa standardi EN ISO 10931:2005 ingliskeelset teksti. Käesolev dokument on jõustatud 27.02.2006 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 10931:2006 consists of the English text of the European standard EN ISO 10931:2005. This document is endorsed on 27.02.2006 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This International Standard specifies the characteristics and requirements for components such as pipes, fittings and valves made from poly (vinylidene fluoride) (PVDF), intended to be used for thermoplastics piping systems in the field of industrial applications above-ground.	**Scope:** This International Standard specifies the characteristics and requirements for components such as pipes, fittings and valves made from poly (vinylidene fluoride) (PVDF), intended to be used for thermoplastics piping systems in the field of industrial applications above-ground.

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English Version

Plastics piping systems for industrial applications - Poly(vinylidene fluoride) (PVDF) - Specifications for components and the system (ISO 10931:2005)

Systèmes de canalisations en matières plastiques pour les applications industrielles - Poly(fluorure de vinylidène) (PVDF) - Spécifications pour les composants et le système (ISO 10931:2005)

Kunststoff-Rohrleitungssysteme für industrielle Anwendungen - Polyvinyliden Fluorid - Anforderungen an Rohrleitungsteile und das Rohrleitungssystem (ISO 10931:2005)

This European Standard was approved by CEN on 28 November 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN ISO 10931:2005) has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" in collaboration with Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 10931:2005 has been approved by CEN as EN ISO 10931:2005 without any modifications.

ANNEX ZA
(informative)

Relationship between this International Standard and the Essential Requirements of EU Directive 97/23/EC (PED)

By agreement between ISO and CEN, this CEN annex is included in the DIS and the FDIS but will not appear in the published ISO standard.

This International Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide one means of conforming to Essential Requirements of the New Approach Directive 97/23 EC, Pressure Equipment Directive (PED).

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this International Standard and Directive 97/23/EC (PED)

Clauses/subclauses of this International Standard	Essential requirements (Ers) of EU Directive 97/23/EC	Qualifying remarks/Notes
5.2; 8.1; 14	Design for adequate strength	2.2.1
18	Traceability	3.1.5
A.1.2; A.3.1; A.5	Hydrostatic test pressure	3.2.2
5	Materials	4.1, 4.2 a)
14	Design of piping system	6 a), b), c)

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

INTERNATIONAL STANDARD

ISO 10931

First edition
2005-12-01

Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) — Specifications for components and the system

Systèmes de canalisations en matières plastiques pour les applications industrielles — Poly(fluorure de vinylidène) (PVDF) — Spécifications pour les composants et le système

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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 10931 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*.

This first edition of ISO 10931 cancels and replaces ISO 10931-1:1997, ISO 10931-2:1997, ISO 10931-3:1996, ISO 10931-4:1997 and ISO 10931-5:1998, of which it constitutes a technical revision.

Introduction

This International Standard specifies the characteristics and requirements for a piping system and its components made from poly(vinylidene fluoride) (PVDF) intended to be used for industrial applications, above-ground, by authorities, design engineers, certification bodies, inspection bodies, testing laboratories, manufacturers and users.

At the date of publication of this International Standard, International Standards for piping systems of other plastics used for industrial applications were ISO 15493, for acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C) and ISO 15494, for polybutene (PB), polyethylene (PE), polypropylene (PP).

Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) — Specifications for components and the system

IMPORTANT — Requirements for industrial valves are given in this International Standard and/or in other International Standards. Valves may be used with components conforming to this International Standard provided they conform additionally to its relevant requirements. Where existent, national regulations for specific applications (e.g. water treatment) apply. Other application areas are permitted if the requirements of this International Standard and/or applicable national requirements are fulfilled. Relevant regulations in respect of fire behaviour and explosion risk are applicable if applications are envisaged for inflammable media. Components conforming to any of the product standards listed in the Bibliography or to national standards, as applicable, may be used with components conforming to this International Standard, provided they conform to the requirements for joint dimensions and the relevant requirements of this International Standard.

1 Scope

This International Standard specifies the characteristics and requirements for components such as pipes, fittings and valves made from poly (vinylidene fluoride) (PVDF), intended to be used for thermoplastics piping systems in the field of industrial applications above-ground.

It is applicable to PVDF pipes, fittings, valves and ancillary equipment, their joints and to joints with components of other plastics and non-plastics materials, depending on their suitability, intended to be used for the conveyance of liquid and gaseous fluids as well as of solid matters in fluids for industrial applications including

— chemical plants,

— industrial sewerage engineering,

— power engineering (cooling and general purpose water),

— electroplating and pickling plants,

— semiconductor industry,

— agricultural production plants, and

— water treatment.

This International Standard is applicable to PVDF piping systems for use at temperatures up to 150 °C. However, for applications above 120 °C, which depend upon the crystalline melting point of the PVDF material, it is advisable to seek the advice of the manufacturer of the component (the components have to withstand the mechanical, thermal and chemical demands to be expected and to be resistant to the fluids to be conveyed).

Characteristics and requirements which are applicable for PVDF in general are covered by the relevant clauses of this International Standard. Those characteristics and requirements which depend on the material used are given in Annex A.

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 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 265-1, *Pipes and fittings of plastics materials — Fittings for domestic and industrial waste pipes — Basic dimensions: Metric series — Part 1: Unplasticized poly(vinyl chloride) (PVC-U)*

ISO 472, *Plastics — Vocabulary*

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

ISO 1167:1996, *Thermoplastics pipes for the conveyance of fluids — Resistance to internal pressure — Test method.* Incorporating ISO 1167:1996/Cor 1:1997

ISO 1183-2, *Plastics — Methods for determining the density of non-cellular plastics — Part 2: Density gradient column method*

ISO 2505-1:1994, *Thermoplastics pipes — Longitudinal reversion — Part 1: Determination methods*

ISO 2505-2:1994, *Thermoplastics pipes — Longitudinal reversion — Part 2: Determination parameters*

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

ISO 4065, *Thermoplastics pipes — Universal wall thickness table*

ISO 9080:2003, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

ISO/TR 10358, *Plastics pipes and fittings — Combined chemical-resistance classification table*

ISO 11357-3, *Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization*

ISO 11922-1:1997, *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Part 1: Metric series*

ISO 12092:2000, *Fittings, valves and other piping system components made of unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C), acrylonitrile-butadiene-styrene (ABS) and acrylonitrile-styrene-acrylester (ASA) for pipes under pressure — Resistance to internal pressure — Test method*

ISO 15853:1999, *Thermoplastic materials — Preparation of tubular test pieces for the determination of the hydrostatic strength of materials used for injection moulding*

ISO 12162:1995, *Thermoplastics materials for pipes and fittings for pressure applications — Classification and designation — Overall service (design) coefficient*

ISO 16135, *Industrial valves — Ball valves of thermoplastics materials* [1)]

ISO 16136, *Industrial valves — Butterfly valves of thermoplastics materials* [1)]

ISO 16137, *Industrial valves — Check valves of thermoplastics materials* [1)]

ISO 16138, *Industrial valves — Diaphragm valves of thermoplastics materials* [1)]

ISO 16139, *Industrial valves — Gate valves of thermoplastics materials* [1)]

ISO 21787, *Industrial valves — Globe valves of thermoplastics materials*

IEC 60364-1, *Electrical installations of buildings — Part 1: Scope, object and fundamental principles*

IEC 60449, *Voltage bands for electrical installations of buildings*

IEC 60529, *Degrees of protection provided by enclosures (IP-code)*

3 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.

3.1 Geometrical definitions

NOTE The symbols d_e and e correspond to d_{ey} and e_y given in other International Standards such as ISO 11922-1.

3.1.1
nominal outside diameter
d_n
specified outside diameter of a component which is identical to the minimum mean outside diameter, $d_{em,min}$, in millimetres

NOTE The nominal inside diameter of a socket is equal to the nominal outside diameter of the corresponding pipe.

3.1.2
outside diameter at any point
d_e
measured outside diameter through the cross-section at any point of a pipe or the spigot end of a fitting, rounded up to the next 0,1 mm

3.1.3
mean outside diameter
d_{em}
measured length of the outer circumference of a pipe or the spigot end of a fitting divided by π ($\approx 3{,}142$), rounded up to the next 0,1 mm

3.1.4
mean inside diameter of a socket
arithmetical mean of two measured inside diameters perpendicular to each other

1) To be published.