INTERNATIONAL STANDARD

ISO 10931-5

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Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) —

Part 5:
Fitness for purpose of the system

Systèmes de canalisation en matières plastiques pour les applications industrielles — Poly(fluorure de vinylidène) (PVDF) —

Partie 5: Aptitude à l'emploi du système

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.

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.

International Standard ISO 10931-5 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*.

ISO 10931 consists of the following parts, under the general title *Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF)*:

— *Part 1: General*

— *Part 2: Pipes*

— *Part 3: Fittings*

— *Part 4: Valves*

— *Part 5: Fitness for purpose of the system*

— *Part 6: Recommended practice for installation*

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Introduction

ISO 10931, which is divided into six parts (see Foreword), specifies the properties of pipes and piping system components made of poly(vinylidene fluoride) (PVDF) for industrial applications. It includes recommendations for installation (see ISO 10931-6) and is intended to be used by authorities, design engineers, testing and certification institutes and manufacturers. This part of ISO 10931 specifies the requirements and test conditions for the testing of assembled components.

Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) —

Part 5:
Fitness for purpose of the system

1 Scope

This part of ISO 10931 specifies the requirements for the fitness for purpose of piping systems made from poly(vinylidene fluoride) (PVDF) for industrial applications, i.e. the conveyance of water and chemicals in the liquid or gaseous state. It also specifies the test parameters for the test methods referred to in this part of ISO 10931.

It is applicable to PVDF assemblies for the conveyance of fluids under pressure at temperatures up to 150 °C. However, applications above 120 °C, which depend on the crystalline melting point of the PVDF material, need to verified with the suppliers of the components.

NOTE — For information on the resistance of PVDF materials in contact with chemicals, see ISO/TR 10358:1993, *Plastics pipes and fittings — Combined chemical-resistance classification table.*

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10931. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10931are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 3458:1976, *Assembled joints between fittings and polyethylene (PE) pressure pipes — Test of leakproofness under internal pressure.*

ISO 3459:1976, *Polyethylene (PE) pressure pipes — Joints assembled with mechanical fittings — Internal under-pressure test method and requirements.*

ISO 10931-1:1997, *Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) — Part 1: General.*

3 Definitions

For the purposes of this part of ISO 10931, the definitions, symbols and abbreviations given in ISO 10931-1 apply.

4 Fitness for purpose of assembly

When tested in accordance with the test methods specified in table 1 or 2, as applicable, using the parameters indicated, the assembly shall conform to the requirements specified.

Table 1 — Fitness for purpose of fusion-jointed assemblies[1)]

Test	Minimum test time h	Test pressure MPa	Test temperature °C	Requirement	Test method
Test A[2)] Resistance to internal pressure	200	0,072 × PN	95 °C ± 2 °C	No leak	ISO 1167
Test B[3)] Resistance to internal pressure	200	0,053 × PN	120 °C ± 2 °C	No leak	ISO 1167
Leaktightness under pressure	1	0,15 × PN	ISO 3458	No leak	ISO 3458

1) Due to a lack of test methods for assessing the strength of fusion-jointed PVDF assemblies, further work is necessary to develop suitable procedures.

2) Test A is intended primarily to indicate defects caused by the assembly-production process, and not the long-term performance of the PVDF material.

3) In the case of higher working temperatures, test B may be carried out. This test is not mandatory for assembly assessment. It shall be confirmed separately.

Table 2 — Fitness for purpose of mechanically jointed assemblies

Test	Minimum test time h	Test pressure MPa	Requirement	Test method
Leaktightness under pressure	1	p = 0,15 × PN	No leak	ISO 3458
External pressure test	1 1	Δp = 0,01 Δp = 0,08	No leak	ISO 3459

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Descriptors: piping, industrial piping, plastics products, polyvinylidene fluoride, pipes (tubes), plastic tubes, valves and fittings, pipe joints, specifications, performance, tests.

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