INTERNATIONAL STANDARD

ISO 15493

First edition
2003-04-15

Plastics piping systems for industrial applications — Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) — Specifications for components and the system — Metric series

Systèmes de canalisations en matières plastiques pour les applications industrielles — Acrylonitrile-butadiène-styrène (ABS), poly(chlorure de vinyle) non plastifié (PVC-U) et poly(chlorure de vinyle) chloré (PVC-C) — Spécifications pour les composants et le système — Série métrique

Reference number
ISO 15493:2003(E)

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Published in Switzerland

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15493 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 document has been prepared under a mandate given by the European Commission and the European Free Trade Association and supports essential requirements of EU Directives.

At the date of publication of this International Standard, the following standards had been published for piping systems, used for industrial applications, made from other types of plastic:

ISO 10931 (all parts), *Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF)*

ISO 15494, *Plastics piping systems for industrial applications — Polybutene (PB), polyethylene (PE) and polypropylene (PP) — Specifications for components and the system — Metric series.*

Annexes A, B and C form a normative part of this International Standard.

Introduction

This International Standard specifies the characteristics and requirements for a piping system and its components made from acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) or chlorinated poly(vinyl chloride) (PVC-C), as applicable, intended to be used for industrial applications above ground by authorities, design engineers, certification bodies, inspection bodies, test laboratories, manufacturers and users.

Plastics piping systems for industrial applications — Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) — Specifications for components and the system — Metric series

1 Scope

This International Standard specifies the characteristics and requirements for components such as pipes, fittings and valves made from one of the following materials:

— acrylonitrile-butadiene-styrene (ABS);

— unplasticized poly(vinyl chloride) (PVC-U);

— chlorinated poly(vinyl chloride) (PVC-C);

intended to be used for thermoplastics piping systems in above-ground industrial applications.

This International Standard is applicable to ABS, PVC-U or PVC-C pipes, fittings, valves and ancillary equipment, to their joints and to joints with components made 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 matter in fluids for industrial applications such as:

— chemical plants;

— industrial sewerage engineering;

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

— electroplating and pickling plants;

— the semiconductor industry;

— agricultural production plants;

— water treatment.

NOTE 1 Where relevant, 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.

The components have to withstand the mechanical, thermal and chemical demands to be expected and have to be resistant to the fluids to be conveyed.

Characteristics and requirements which are applicable to all three materials (ABS, PVC-U and PVC-C) are covered by the relevant clauses of this International Standard. Those characteristics and requirements which are dependent on the material are given for each material in the relevant annex (see Table 1).

Table 1 — Material-specific annexes

Material	Annex
Acrylonitrile-butadiene-styrene (ABS)	A
Unplasticized poly(vinyl chloride) (PVC-U)	B
Chlorinated poly(vinyl chloride) (PVC-C)	C

NOTE 2 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 to the other relevant requirements of this standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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 306, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST)*

ISO 472, *Plastics — Vocabulary*

ISO 580:—[1)], *Injection-moulded unplasticized poly(vinyl chloride) (PVC-U) fittings — Oven test — Test method and basic specifications*

ISO 727-1, *Fittings made from unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C) or acrylonitrile/butadiene/styrene (ABS) with plain sockets for pipes under pressure — Part 1: Metric series*

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

ISO 1158, *Plastics — Vinyl chloride homopolymers and copolymers — Determination of chlorine content*

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

1) To be published. (Revision of ISO 580:1990)

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 2507-1, *Thermoplastics pipes and fittings — Vicat softening temperature — Part 1: General test method*

ISO 2507-2, *Thermoplastics pipes and fittings — Vicat softening temperature — Part 2: Test conditions for unplasticized poly(vinyl chloride) (PVC-U) or chlorinated poly(vinyl chloride) (PVC-C) pipes and fittings and for high impact resistance poly(vinyl chloride) (PVC-HI) pipes*

ISO 3126, *Plastics piping systems — Plastics piping components — Measurement and determination of dimensions*

ISO 3127, *Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method*

ISO 3514, *Chlorinated polyvinyl chloride (CPVC) pipes and fittings — Specification and determination of density*

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

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

ISO 9311-1, *Adhesives for thermoplastics piping systems — Part 1: Determination of film properties*

ISO 9852, *Unplasticized poly(vinyl chloride) (PVC-U) pipes — Dichloromethane resistance at specified temperature (DCMT) — Test method*

ISO 9853, *Injection-moulded unplasticized poly(vinyl chloride) (PVC-U) fittings for pressure pipe systems — Crushing test*

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

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

ISO 12092, *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 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification and designation — Overall service (design) coefficient*

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

ISO 16135:—[2)], *Industrial valves — Ball valves of thermoplastics materials*

ISO 16136:—[2)], *Industrial valves — Butterfly valves of thermoplastics materials*

ISO 16137:—[2)], *Industrial valves — Check valves of thermoplastics materials*

ISO 16138:—[2)], *Industrial valves — Diaphragm valves of thermoplastics materials*

ISO 16139:—[2)], *Industrial valves — Gate valves of thermoplastics materials*

ISO 21787:—[2)], *Industrial valves — Globe valves of thermoplastics materials*

2) To be published.