TECHNICAL SPECIFICATION

ISO/TS 21003-7

First edition
2008-07-01

Multilayer piping systems for hot and cold water installations inside buildings —

Part 7: Guidance for the assessment of conformity

Systèmes de canalisations multicouches pour installations d'eau chaude et froide à l'intérieur des bâtiments —

Partie 7: Guide pour l'évaluation de la conformité

Reference number
ISO/TS 21003-7:2008(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 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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

ISO/TS 21003-7 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in collaboration with Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 2, *Plastics pipes and fittings for water supplies*.

This Technical Specification can be used to support elaboration of national third-party certification procedures for products conforming to the applicable part(s) of ISO 21003.

It forms part of a system standard for multilayer piping systems of a particular material for a specified application. System standards are supported by separate standards on test methods to which reference is made throughout the system standard. The system standards are consistent with general standards on functional requirements and on recommended practice for installation.

ISO 21003 consists of the following parts, under the general title *Multilayer piping systems for hot and cold water installations inside buildings*:

— *Part 1: General*

— *Part 2: Pipes*

— *Part 3: Fittings*

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

— *Part 7: Guidance for the assessment of conformity* [Technical Specification]

NOTE 1 ISO 21003 does not include a Part 4: *Ancillary equipment*, or a Part 6: *Guidance for installation*.

For ancillary equipment, separate standards can apply.

For guidance on installation, reference is made to separate documents.

NOTE 2 Guidance on installation of plastics piping systems made from various materials intended to be used for hot and cold water installations is given in ENV 12108 [1].

Other system standards which, at the date of publication of this part of ISO 21003, had been published for plastics piping systems used for the same application are the following:

ISO 15874, *Plastics piping systems for hot and cold water installations — Polypropylene (PP)* (identical to EN ISO 15874)

ISO 15875, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X)* (identical to EN ISO 15876)

ISO 15876, *Plastics piping systems for hot and cold water installations — Polybutylene (PB)* (identical to EN ISO 15876)

ISO 15877, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C)* (identical to EN ISO 15877)

ISO 22391, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT)*

Introduction

ISO 21003 specifies the requirements for multilayer piping systems. The piping system is intended to be used for hot and cold water installations inside buildings.

In respect of potentially adverse effects on the quality of water intended for human consumption, caused by the products covered by ISO 21003:

— no information is provided as to whether the product may be used without restriction in any of the member states of the EU or EFTA;

— it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

Requirements and test methods for material and components are specified in ISO 21003-2 and ISO 21003-3. Characteristics relating to fitness for purpose (mainly for joints) are covered in ISO 21003-5.

This Technical Specification gives guidance for the assessment of conformity of materials, components, joints and assemblies and it is intended to be used by certification bodies, inspection bodies, testing laboratories and manufacturers.

Multilayer piping systems for hot and cold water installations inside buildings —

Part 7: Guidance for the assessment of conformity

1 Scope

This Technical Specification is applicable, in conjunction with the other parts of ISO 21003 (see Foreword), to multilayer piping systems intended to be used for hot and cold water installations inside buildings for the conveyance of water — whether or not the water is intended for human consumption (domestic systems) or for heating systems — under specified design pressures and temperatures appropriate to the class of application (see Table 1 of ISO 21003-1:2008). It gives guidance for the assessment of conformity, to be included in the manufacturer's quality plan as part of the quality system.

It includes:

— requirements for materials, components, joints and assemblies given in the applicable part(s) of ISO 21003;

— requirements for the manufacturer's quality system (e.g. ISO 9001 [2]);

— definitions and procedures to be used if third-party certification is involved.

NOTE If third-party certification is involved, it is recommended that the certification body be accredited to ISO/IEC Guide 65 [3] or ISO/IEC 17021 [4], as applicable.

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 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3951-1, *Sampling procedures for inspection by variables — Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

ISO 17456:2006, *Plastics piping systems — Multilayer pipes — Determination of long-term strength* (identical to EN ISO 17456:2006)

ISO 21003-1:2008, *Multilayer piping systems for hot and cold water installations inside buildings — Part 1: General* (identical to EN ISO 21003-1:2008)

ISO 21003-2:2008, *Multilayer piping systems for hot and cold water installations inside buildings — Part 2: Pipes* (identical to EN ISO 21003-2:2008)

ISO 21003-3:2008, *Multilayer piping systems for hot and cold water installations inside buildings — Part 3: Fittings* (identical to EN ISO 21003-3:2008)

ISO 21003-5:2008, *Multilayer piping systems for hot and cold water installations inside buildings — Part 5: Fitness for purpose of the system* (identical to EN ISO 21003-5:2008)

ISO 22391-2:—[1)], *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 2: Pipes*

3 Definitions, symbols and abbreviated terms

For the purposes of this Technical Specification, the definitions, symbols and abbreviated terms given in ISO 21003-1:2008 apply, together with the following.

3.1 Definitions

3.1.1
certification body
impartial body, governmental or non-governmental, possessing the necessary competence and authority to carry out certification of conformity according to given rules of procedure and management

3.1.2
inspection body
impartial organization or company, approved by a certification body as possessing the necessary competence to verify and/or to carry out initial type testing, audit testing and inspection of the manufacturer's factory production control in accordance with the relevant standard

3.1.3
testing laboratory
laboratory which measures, tests, calibrates or otherwise determines the characteristics of the performance of materials and products

3.1.4
quality system
organizational structure, responsibilities, procedures, processes and resources for implementing quality management

NOTE An example of a quality system is ISO 9001 [2].

3.1.5
quality plan
document setting out the specific quality practices, resources and sequence of activities relevant to a particular product or range of products

3.1.6
type testing
TT
testing performed to verify that the material, component, joint or assembly is capable of conforming to the requirements given in the relevant standard

3.1.7
preliminary type testing
PTT
type testing carried out by or on behalf of the manufacturer

1) To be published. (Revision of ISO 22391-2:2007)

3.1.8
initial type testing
ITT
type testing carried out by or on behalf of a certification body for certification purposes

3.1.9
batch release test
BRT
test performed by or on behalf of the manufacturer on a batch of components, which has to be satisfactorily completed before the batch can be released

3.1.10
process verification test
PVT
test performed by or on behalf of the manufacturer on materials, components, joints or assemblies at specific intervals to confirm that the process continues to be capable of producing components which conform to the requirements given in the relevant standard

NOTE Such tests are not required to release batches of components and are carried out as a measure of process control.

3.1.11
audit test
AT
test performed by or on behalf of a certification body to confirm that the material, component, joint or assembly continues to conform to the requirements given in the relevant standard and to provide information to assess the effectiveness of the quality system

3.1.12
indirect test
IT
test performed by or on behalf of the manufacturer, different from the test specified for that particular characteristic, having previously verified its correlation with the test specified

3.1.13
witness testing
WT
testing accepted by a certification body for initial type testing and/or audit testing, which is carried out by or on behalf of the manufacturer and supervised by a representative of the certification body qualified in testing

3.1.14
material or compound batch
clearly identifiable quantity of a particular material or compound

3.1.15
production batch
clearly identifiable collection of units, manufactured consecutively or continuously under the same conditions, using material or compound conforming to the same specification

3.1.16
lot
clearly identifiable sub-division of a batch for inspection purposes

3.1.17
sample
one or more units of product drawn from a batch or lot, selected at random without regard to their quality

NOTE The number of units of product in the sample is the sample size.

3.1.18
acceptance quality limit
AQL
worst tolerable process fraction nonconforming when a continuing series of lots is submitted for acceptance sampling

NOTE 1 See ISO 2859-1 and ISO 3951-1.

NOTE 2 The designation of an AQL does not imply that a manufacturer has the right knowingly to supply any nonconforming unit of product.

3.1.19
inspection level
relationship between the lot or batch size and the sample size

NOTE See ISO 2859-1.

3.1.20
group
collection of similar components from which samples are selected for testing purposes

3.2 Abbreviated terms

NOTE 1 To avoid misunderstandings, the following abbreviations have been kept the same in each language. For the same reason, the corresponding terms are given here in three languages (en: English, fr: French, de: German).

NOTE 2 In the French language the abbreviation AQL for "acceptance quality limit" is NQA. However, for the purposes of this Technical Specification, the same abbreviation (AQL) is used for all three languages.

AQL en: acceptance quality limit
fr: niveau de qualité acceptable
de: annehmbare Qualitätsgrenzlage

AT en: audit test
fr: essai d'audit
de: Überwachungsprüfung

BRT en: batch release test
fr: essai de libération de campagne de fabrication
de: Freigabeprüfung einer Charge

IT en: indirect test
fr: essai indirect
de: indirekte Prüfung

ITT en: initial type testing
fr: essai de type initial
de: Erst-Typprüfung

PTT en: preliminary type testing
fr: essai de type préliminaire
de: vorausgehende Typprüfung

PVT en: process verification test
fr: essai de vérification du procédé de fabrication
de: Prozeßüberprüfung

TT en: type test
fr: essai de type
de: Typprüfung

WT en: witness testing
fr: essai témoin
de: Prüfung unter Aufsicht

4 Requirements

4.1 General

4.1.1 Materials, components, joints and assemblies shall conform to the requirements given in ISO 21003-1, ISO 21003-2, ISO 21003-3 and ISO 21003-5, as applicable.

4.1.2 Components and/or assemblies shall be produced by the manufacturer under a quality system which includes a quality plan.

4.2 Testing and inspection

4.2.1 Grouping

For the purposes of this Technical Specification, the following groups apply.

4.2.1.1 Pressure groups

Two pressure groups are defined, as given in Table 1.

For testing purposes, one individual operating pressure, p_{oper}, shall be selected from each group.

Table 1 — Pressure groups

Pressure group	Operating pressure, p_{oper} bar
1	4; 6
2	8; 10

4.2.1.2 Size groups

Three size groups are defined for pipes and fittings, as given in Table 2.

For testing purposes, one individual nominal diameter, d_n, shall be selected from each group.

Table 2 — Size groups

Size group	Nominal diameter, d_n mm
1	$10 \leqslant d_n \leqslant 26$
2	$26 < d_n \leqslant 63$
3	$63 < d_n$