
**Plastics piping systems for hot and
cold water installations — Chlorinated
poly(vinyl chloride) (PVC-C) —**

Part 7:

**Guidance for the assessment of
conformity**

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*Systèmes de canalisations en plastique pour les installations d'eau
chaude et froide — Poly(chlorure de vinyle) chloré (PVC-C) —*

Partie 7: Guide pour l'évaluation de la conformité

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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 normative 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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn.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.

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/TS 15877-7 was prepared by the European Committee for Standardization (CEN) 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*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

ISO 15877 consists of the following parts, under the general title *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C)*:

- *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]*

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Foreword

This document (CEN ISO/TS 15877-7:2003) has been prepared by Technical Committee CEN /TC 155, "Plastics piping systems and ducting systems", the Secretariat of which is held by NEN in collaboration with Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids".

This Technical Specification can be used to support elaboration of national third party certification procedures for products conforming to the applicable Part(s) of EN ISO 15877.

This Technical Specification is a Part of a System Standard for plastics piping systems of a particular material for a specified application. There are a number of such System Standards.

System Standards are based on the results of the work undertaken in ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids", which is a Technical Committee of the International Organization for Standardization (ISO).

They are supported by separate standards on test methods to which references are made throughout the System Standard.

The System Standards are consistent with general standards on functional requirements and on recommended practice for installation.

EN ISO 15877 consists of the following Parts ¹⁾, under the general title Plastics piping systems for hot and cold water installations - Chlorinated poly(vinyl chloride) (PVC-C)

— 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 (this Technical Specification)

This Part of EN ISO 15877 includes a bibliography.

At the date of publication of this Technical Specification, System Standards for piping systems of other plastics materials used for hot and cold water installations are the following:

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

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

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1) This System Standard does not incorporate *Part 4: Ancillary equipment* and *Part 6: Guidance for installation*. For ancillary equipment separate standards can apply. For guidance for installation reference is made to separate documents.

NOTE A guidance for installation of plastics piping systems made from different materials, intended to be used for hot and cold water installations, is covered by ENV 12108^[1].

Introduction

The System Standard, of which this is Part 7, specifies the requirements for a piping system when made from chlorinated poly(vinyl chloride) (PVC-C). The piping system is intended to be used for hot and cold water installations.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by EN ISO 15877:

- This Technical Specification provides no information 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 this product remain in force.

When using solvent cement, relevant national safety rules or regulations concerning their use (e.g. protection of workers) are to be observed.

Requirements and test methods for material and components are specified in Part 1 to Part 3 of EN ISO 15877:2003. Characteristics for fitness for purpose (mainly for joints) are covered in Part 5.

This Part of EN ISO 15877 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.

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1 Scope

This Technical Specification gives guidance for the assessment of conformity to be included in the manufacturer's quality plan as part of his quality system.

This Technical Specification includes:

- a) requirements for materials, components, joints and assemblies given in the applicable Part(s) of EN ISO 15877;
- b) requirements for the manufacturer's quality system;

NOTE 1 It is recommended that the quality system conforms to EN ISO 9001:2000^[2].

- c) definitions and procedures to be applied if third party certification is involved.

NOTE 2 If third party certification is involved, it is recommended that the certification body is accredited to EN 45011^[3] or EN 45012^[4], as applicable.

In conjunction with the other Parts of EN ISO 15877 (see Foreword), this Part is applicable to chlorinated poly(vinyl chloride) (PVC-C) piping systems intended to be used for hot and cold water installations within buildings for the conveyance of water, whether or not intended for human consumption (domestic systems), under design pressures and temperatures appropriate to the class of application (see Table 1 of EN ISO 15877-1:2003).

2 Normative references

This Technical Specification incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this Technical Specification only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 15877-1:2003, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 1: General (ISO 15877-1:2003)*

EN ISO 15877-2:2003, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 2: Pipes (ISO 15877-2:2003)*

EN ISO 15877-3:2003, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 3: Fittings (ISO 15877-3:2003)*

EN ISO 15877-5:2003, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 5: Fitness for purpose of the system (ISO 15877-5:2003)*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptable quality limit (AQL) for lot-by-lot inspection*

ISO 3951:1989, *Sampling procedures and charts for inspection by variables for percent nonconforming*

3 Definitions, symbols and abbreviations

For the purposes of this Technical Specification, the definitions, symbols and abbreviations given in Part 1 to Part 3 of EN ISO 15877:2003 apply, together with the following.

3.1 Definitions

3.1.1

certification body

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

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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 (see EN ISO 9000:2000^[5])

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 prove 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

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 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 the manufacturer on materials, components, joints or assemblies at specific intervals to confirm that the process continues to be capable of producing components conforming 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 the manufacturer, different from that specified for that particular characteristic, having verified its correlation with the specified test

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**acceptable quality level (AQL)**

when a continuous series of lots or batches is considered, the quality level which for the purpose of sampling inspection is the limit of a satisfactory process average [see ISO 2859-1:1999 and ISO 3951:1989]

NOTE 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 [see ISO 2859-1:1999]

3.1.20**group**

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

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3.2 Abbreviations

NOTE 1 For reasons of avoiding misunderstanding the following abbreviations are kept the same in each of the languages. For the same reason the terms are given in the three languages (en: English, fr: French, de: German).

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

AQL en : acceptable quality level
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 : Freigabepfung 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 Part 1 to Part 3 and Part 5 of EN ISO 15877:2003, 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

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A group of design pressures, from which one individual design pressure, p_D , shall be selected for testing purposes.

Two pressure groups shall be designated as given in Table 1.

Table 1 — Pressure groups

Pressure group	Design pressure, p_D bar
1	4; 6
2	8; 10

4.2.1.2 Size groups

A group of nominal diameters of pipes and fittings, from which one individual nominal diameter, d_n , shall be selected for testing purposes.

Two size groups shall be designated as given in Table 2.

Table 2 — Size groups

Size group	Nominal diameter, d_n mm
1	$12 \leq d_n \leq 63$
2	$63 < d_n \leq 160$

4.2.1.3 Fitting groups

A group of fittings having a similar design, from which one individual fitting shall be selected for testing purposes. Four fitting groups shall be designated as given in Table 3.

Table 3 — Fitting groups

Fitting group	Type of fitting
1	Bends
2	Elbows, tees
3	Reducers, couplers, double-sockets, end caps
4	Unions, flange adaptors, adaptor pieces and/or their plastics parts

4.2.2 Type testing (TT)

4.2.2.1 General

Type tests shall demonstrate that the products conform to all requirements for the characteristics given in Table 5 to Table 7, as applicable.

In addition, relevant type tests shall be carried out whenever there is a change in design, in material and/or in the production method, other than routine in-process adjustments and/or to extensions of the product range.

For the purposes of defining a change of material, Table 4 applies. The dosage level of ingredients of the material or compound shall not exceed the tolerance bands given in Table 4. The values for X (see Table 4) shall be specified by the manufacturer in his quality plan.

If any characteristic is changed or any level exceeds the dosage band, this variation in formulation constitutes a change in material and the relevant characteristics given in Table 5 to Table 7, as applicable, shall be retested. If third party certification is involved, retesting shall be agreed between certification body and manufacturer.

A change in the material supplier does not necessarily constitute a change in material.

Table 4 — Conditions for change of material

Type of material change	Tolerance band
Change in chlorine content of the resin	$X \pm 0,5 \%$
Change in additive level (e.g. pigments)	$X \pm 20 \%$

For the purposes of defining a change in design, the following characteristics are relevant:

- dimensions;
- geometry of the component;
- jointing system.

In the quality plan of the manufacturer the geometry, dimensions and the applied tolerances at least according and in addition to the requirements given in the relevant Part(s) of EN ISO 15877 shall be specified.

If one or more of these characteristics exceed the defined specifications, the relevant characteristics given in Table 5 to Table 7, as applicable, shall be retested. If third party certification is involved, retesting shall be agreed between certification body and manufacturer.