Unplasticized polyvinyl chloride (PVC-U) pipes and fittings for drainage systems inside buildings

Part 10: Fire behaviour, quality control and installation

DIN 19531-10

ICS 13.220.40; 23.040.20; 23.040.45; 91.140.80

This standard, together with DIN EN 1329-1, December 1999 edition, supersedes DIN 19531, November 1987 edition.

Rohre und Formstücke aus weichmacherfreiem Polyvinylchlorid (PVC-U) für Abwasserleitungen innerhalb von Gebäuden – Teil 10: Brandverhalten, Gütelüberwachung und Verlegehinweise

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Foreword

This standard has been prepared by Technical Committee *Kunststoffrohre in der Abwassertechnik* of the *Normenausschuss Wasserwesen* (Water Practice Standards Committee). Pending publication of European Standards on the fire behaviour, quality control and installation of PVC-U pipes, the specifications set out in DIN 19531 have been adopted for this standard.

Amendments

This standard differs from the November 1987 edition of DIN 19531 as follows:

a) Specifications given in DIN 19531 regarding fire behaviour, quality control and installation and not covered in DIN EN 1329-1 have been included in this standard.

b) Specifications regarding quality control have been modified in accordance with DIN EN 1329-1.

c) The scope has been extended to cover unplasticized polyvinyl chloride pipes and fittings with spigot ends and those with solvent cement sockets.

d) Wall thickness is no longer specified.

Previous editions

DIN 19531: 1964-09, 1968-01, 1977-03, 1980-03, 1987-11.

Continued on pages 2 to 7.

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original should be consulted as the authoritative text.

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All dimensions are in millimetres.

1 Scope

This standard sets out requirements for fire behaviour, conformity assessment and installation of unplasticized polyvinyl chloride (PVC-U) pipes and fittings for draining water in applications as in DIN 1986-4. Such pipes and fittings are generally joined using push-in joints, although solvent cement joints may be used in exceptional circumstances[1]).

2 Normative references

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

DIN 1986-1	Site drainage systems – Principles, design and installation
DIN 1986-4	Site drainage systems – Use of sewer pipes and fittings made of different materials
DIN 4102-1	Fire behaviour of building materials and elements – Classification of building materials – Requirements and testing
DIN 4102-4	Fire behaviour of building materials and elements – Overview and design of classified building materials, elements and components
DIN 4102-11	Fire behaviour of building materials and elements – Pipe encasements, pipe sleeves, service shafts and ducts, and barriers across inspection openings – Terminology, requirements and testing
DIN EN 1329-1	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Unplasticized poly(vinyl chloride) (PVC-U) – Part 1: Specifications for pipes, fittings and the system
DIN EN ISO 9002	Quality systems – Model for quality assurance in production and installation (ISO 9002 : 1994)
DIN EN ISO 1628-1	Plastics – Determination of the viscosity of polymers in dilute solution using capillary viscometers – Part 1: General principles (ISO 1628-1 : 1998)
ISO 48 : 1994	Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)

3 Fire behaviour

3.1 Requirements and testing

The material used for pipes and fittings shall fulfil the requirements for class B1 building materials, as specified in DIN 4102-1. Fire behaviour shall be tested as in DIN 4102-1, with the exception of pipes and fittings with wall thicknesses as in DIN 4102-4.

3.2 Marking

In addition to being marked as specified in DIN EN 1329-1, pipes shall be marked as follows in blue letters at least 3,2 mm in height:

PVC DIN 4102 – B1, for adhesive jointing
Note usage restrictions!

Fittings shall be similarly marked, either by stamping or applying an adhesive label. Pipes 150 mm to 500 mm in length may be marked in the same way as fittings. Components which have fulfilled the requirements of this standard shall also be marked as conforming to DIN 19531.

4 Conformity assessment (quality control)

4.1 General

Pipes and fittings shall be checked at each production site for conformity with DIN EN 1329-1 and with clause 3 of this standard.

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[1]) For requirements for solvent cement, the *Bau- und Prüfgrundsätze* (Construction and Testing Specifications) of the *Deutsches Institut für Bautechnik* (DIBt), Kolonnenstr. 30, 10829 Berlin, Germany, shall apply.

Quality control for PVC-U pipes and fittings for drainage systems inside buildings shall comprise:

- type testing by an accredited body;
- factory production control (by the manufacturer), on the lines of DIN EN ISO 9002;
- third-party inspection.

Third-party inspection shall be carried out by a recognized quality assurance association (e.g. *Gütegemeinschaft Kunststoffrohre e.V.*[2]) or by an accredited body[3]).

4.1.1 Classification

For the purposes of this standard, pipes and fittings are classified as follows.

4.1.1.1 Size groups

Groups based on nominal sizes (DN), from which one representative size per group is to be selected (see table 1).

Table 1: Size groups

Size group	Nominal sizes
1	DN 32, DN 40, DN 50, DN 63, DN 75, DN 80, DN 90 and DN 100
2	DN 110, DN 125 and DN 160

4.1.1.2 Fitting groups

Groups of fittings of the types listed in table 2. Fittings for push-in and solvent cement joints shall be dealt with separately.

Table 2: Fitting groups

Fitting group	Fitting type
1	Bend
2	Branch
3	Other

4.2 Material

For the purposes of this standard, the material specification shall comprise a listing of the PVC types and additives. No constituent may exceed the limits given in table 3. If these limits are exceeded or a constituent type is changed, this shall be considered a change in material. The values for x shall be specified in the manufacturer's quality assurance plan.

Table 3: Material specifications

Constituent	Type	Tolerance
PVC resin (viscosity)	K-value*): ± 3 units	x: 100 parts
Stabiliser system or master batch	Pb, CaZn, Sn, CaSn, or other	x_2: ± 25 %
Lubricant	Optional	x_3: ± 50 % where x_3 is less than or equal to 0,2 x_3: ± 0,1 parts where x_3 is greater than 0,2
Filler	1) $CaCO_3$ 2) Other	x_4: ± 3 parts x_5: ± 25 %
Impact modifier	Optional	x_6: 1 part
Flux	Optional	x_7: ± 25 % where x_7 is less than or equal to 2 x_7: ± 0,5 parts where x_7 is greater than 2
Pigment	No requirements.	–
Other	To be specified by manufacturer.	$x_{8.1}$: ± 25 % ... $x_{8.n}$: ± 25 %
Recycled material	With agreed specification[1])	x_9: zero or greater[2])
Recycled material	Without agreed specification[2])	x_{10}: zero or greater[2])

*) As defined in DIN EN ISO 1628-1.

[1]) The manufacturer shall supply the certification body with specifications.

[2]) The restrictions given in Appendix A.2.2.2 of DIN EN 1392-1 shall be taken into consideration.

[2]) Dyroffstr. 2, 53113 Bonn, Germany

[3]) A register of quality assurance associations and testing laboratories accredited by the building inspectorate is maintained by the *Deutsches Institut für Bautechnik*.