BRITISH STANDARD

BS EN
607:2004

Eaves gutters and fittings made of PVC-U — Definitions, requirements and testing

The European Standard EN 607:2004 has the status of a British Standard

ICS 01.040.91; 91.060.20

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British Standards

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National foreword

This British Standard is the official English language version of EN 607:2004. It supersedes BS EN 607:1996. Together with BS EN 12200-1:2000 and BS EN 1462:2005 it will replace BS 4576-1:1989 which is scheduled for withdrawal in September 2007.

The UK participation in its preparation was entrusted by Technical Committee PRI/88, Plastics piping systems, to Subcommittee PRI/88/1, Plastics piping systems for non-pressure applications, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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November 2004

ICS 01.040.91; 91.060.20

Supersedes EN 607:1995

English version

Eaves gutters and fittings made of PVC-U - Definitions, requirements and testing

Gouttières pendantes et leurs raccords en PVC-U - Définitions, exigences et méthodes d'essai

Hängedachrinnen und Zubehörteile aus PVC-U - Begriffe, Anforderungen und Prüfung

This European Standard was approved by CEN on 15 July 2004.

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Foreword

This document (EN 607:2004) has been prepared by Technical Committee CEN/TC 128 “Roof covering products for discontinuous laying and products for wall cladding”, the secretariat of which is held by IBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document supersedes EN 607:1995.

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1 Scope

This document specifies requirements and test methods of eaves gutters and fittings made from unplasticized poly(vinyl chloride) (PVC-U), and intended to be used for rainwater drainage.

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.

EN 513 *Unplasticized polyvinyl chloride (PVC-U) profiles for the fabrication of windows and doors – Determination of the resistance to artificial weathering*

EN 638 *Plastics piping and ducting systems – Thermoplastics pipes – Determination of tensile properties*

EN 681-1 *Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber*

EN 681-2 *Elastomeric Seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 2: Thermoplastic elastomers*

EN 681-3 *Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 3: Cellular materials of vulcanized rubber*

EN 681-4 *Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications – Part 4: Cast polyurethane sealing elements*

EN 727 *Plastics piping and ducting systems – Thermoplastics pipes and fittings – Determination of Vicat softening temperature (VST)*

EN 743 *Plastics piping and ducting systems – Thermoplastics pipes – Determination of the longitudinal reversion*

EN 763 *Plastics piping and ducting systems - Injection-moulded thermoplastics fittings - Test method for visually assessing effects of heating*

EN 922 *Plastics piping and ducting systems – Pipes and fittings of unplasticized poly(vinyl chloride) (PVC-U) – Specimen preparation for determination of the viscosity number and calculation of the K-value*

EN 1905 *Plastics piping systems – Unplasticized poly(vinyl chloride) (PVC-U) pipes, fittings and material – Method for assessment of the PVC content based on total chlorine content*

EN 10204:1991 *Metallic products – Types of inspection documents*

EN 20105-A02 *Textiles - Tests for colour fastness – Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

EN ISO 527-2 *Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*

EN ISO 1183-3 *Plastics - Methods for determining the density of non-cellular plastics - Gas pyknometer method (ISO 1183-3:1999)*

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EN ISO 4892-2 *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon arc sources (ISO 4892-2:1994)*

EN ISO 4892-3 *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps (ISO 4892-3:1994)*

EN ISO 8256 *Plastics - Determination of tensile-impact strength (ISO 8256:1990, including Technical Corrigendum 1:1991)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
eaves gutter
gutter situated outside the building and supported by brackets

3.2
down-pipe
pipe fitted to a gutter to lead rainwater from the gutter to the drainage system or sewer

3.3
union-clip (gutter-union)
fitting for joining two gutters and supported only by those gutters

3.4
joint bracket (union-bracket)
fitting for joining two gutters which is supported by the building structure

3.5
gutter adaptor
fitting for joining two different shaped gutters

3.6
angle
fitting for joining two gutters installed in two different directions

3.7
stop end
fitting for stopping the flow, fixed at the end of a gutter or an outlet

3.8
outlet
fitting for draining off the rainwater from the gutter into the down-pipe

3.9
commercial length
length of a gutter or a down-pipe which was produced in a factory

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4 Material

4.1 Raw material

The raw material shall be PVC-U to which are added those additives that are needed to facilitate the manufacture of components conforming to the requirements of this document.

When calculated on the basis of a known formulation or in case of dispute or not known formulation, determined in accordance with EN 1905 the PVC content shall be at least 80 % by mass for profiles and 85 % by mass for injection-moulded fittings.

4.2 Utilisation of non virgin material

Requirements for the utilisation of non-virgin materials are given in Annex A (normative).

5 General characteristics of profiles - Appearance

When viewed without magnification the internal and external surfaces of gutters shall be smooth, clean and free from scoring, cavities, and other surface defects. The ends of gutters shall be cut cleanly and square to the axis of the profile.

6 Geometrical characteristics of profiles

6.1 Width

Gutters shall be designated by their upper opening width (size) (See examples of cross section areas in Annex E). The manufacturer shall declare the usable area of the cross-section of the gutter at its designed top opening width for the calculation of flow capacity. This usable area shall be either marked on the gutter or given in commercial documents.

6.2 Length

The commercial length of a gutter shall have a positive tolerance when measured at 20 °C.

7 Physical and mechanical characteristics of profiles

The requirements for the physical and mechanical characteristics and the conditions for the respective test methods shall conform to those given in Table 1.

NOTE Any conflicting parameters and requirements given in the test method standards referred to do not apply here.

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Table 1 — Physical and mechanical characteristics of profiles

Characteristics	Requirement	Test parameters		Test method
Hammer impact strength (type test)	No break or crack visible without magnification	Temperature	(0 ± 2) °C	Annex B
Tensile strength (type test)	≥ 42 N/mm²	Speed Specimen type	5 mm/min type 2, 3 or 5 [a] conforming to EN ISO 527-2	EN 638
Elongation at break (type test)	≥ 100 %	Speed Specimen type	5 mm/min type 2, 3 or 5 [a] conforming to EN ISO 527-2	EN 638
Tensile impact strength (type test)	≥ 500 kJ/m²	Specimen type Temperature	type 2, 3 or 5 [a] conforming to EN ISO 8256 (23 ± 2) °C	EN ISO 8256
Heat reversion (type and production control test)	≤ 3 %	Test temperature Time	(100 ± 2) °C (30 ± 2) min	EN 743
Vicat softening temperature (type test)	≥ 75 °C	Conforming to EN 727		EN 727

[a] In case of dispute, test specimen 5 shall be used.

8 General characteristics of fittings

8.1 General

The following types of fittings shall conform to the requirements given in 8.2, 8.3 and Clause 8: union clip, joint-bracket, gutter adaptor, angle, stop-end, outlet and expansion piece.

8.2 Appearance

When viewed without magnification the internal and external surfaces of fittings shall be smooth, clean and free from scoring, cavities, and other surface defects.

8.3 Shape and dimensions

The fittings shall be compatible with the shape and the dimensions of the profile or the gutter. The outlets shall be compatible with down-pipes and fittings.

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9 Physical characteristics of fittings

The requirements for the physical characteristics and the conditions for the respective test methods shall conform to those given in Table 2.

NOTE Any conflicting parameters and requirements given in the test method standards referred to do not apply.

Table 2 — Physical characteristics of fittings

Characteristics	Requirement	Test parameters		Test method
Effect of heating [a] (production control test)	[c] and [d]	Temperature Time	(150 ± 2) °C (15 ± 2) min.	Method A of EN 763 in air
Heat reversion [b] (type test)	No visible deformation without magnification	Temperature Time	(65 ± 2) °C (30 ± 2) min.	Annex C
Vicat softening temperature (type test)	≥ 75 °C	Conforming to EN 727		EN 727

a Without seal and only for injection-moulded fittings.

b For fittings produced by processes other than injection moulding.

c 1) Within a radius of 15 times the wall thickness around the injection point, the depth of cracks, delamination or blisters shall not exceed 50 % of the wall thickness at that point.

2) Within a distance of 10 times the wall thickness from the diaphragm zone, the depth of cracks, delamination or blisters shall not exceed 50 % of the wall thickness at that point.

3) Within a distance of 10 times the wall thickness from the ring gate, the length of cracks shall not exceed 50 % of the wall thickness at that point.

4) The weld line shall not have opened more than 50 % of the wall thickness at the line.

5) In all other parts of the surface the depth of cracks and delaminations shall not exceed 30 % of the wall thickness at that point. Blisters shall not exceed a length 10 times of the wall thickness.

d After cutting through the fitting, the cut surfaces shall show no foreign particles, when viewed without magnification.

10 Gutter sealing rings

10.1 The gutter seals shall have no detrimental effect on the properties of gutters and fittings and shall enable the test assembly to conform to Table 3.

10.2 Materials for sealing rings shall conform to EN 681-1, EN 681-2, EN 681-3 or EN 681-4 as applicable.

11 Solvent cements

The adhesive shall be solvent cement and shall be as specified by the manufacturer of profiles and/or fittings.

The adhesive shall have no detrimental effects on the properties of the profiles and of the fittings and shall not cause the test assembly to fail to conform to Table 3.

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12 Designation

Eaves gutters and fittings shall be designated by:

a) description of the product, e.g. gutter, stop end, outlet ;

b) number of this document (EN 607) ;

c) identity block comprising :

— width of the gutter or, in case of a fitting, the width of the appropriate gutter, in millimetres ;

— material symbol (PVC-U).

EXAMPLE Designation of an eaves gutter of PVC-U with a width of 150 mm :

Eaves gutter EN 607 – 150 – PVC-U

13 Marking

13.1 The marking shall be printed or formed directly on the gutter or, if applicable, on the fitting in such a way that it does not initiate cracks or other types of failure and that with normal storage, weathering and processing, and the permissible method of installation and use, legibility shall be durably maintained. Alternatively for fittings, the marking may be on a permanently attached label.

If printing is used, the colour of the printed information shall differ from the basic colouring of the product.

The marking shall be easily readable without magnification.

13.2 The marking shall include at least the following details:

a) name, which may be abbreviated, or trade-mark of the manufacturer ;

b) upper opening width, in millimetres ;

c) quality mark, if a certification scheme is set up ;

d) number of this document (EN 607).

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14 Fitness for purpose of gutter systems

Gutter systems shall conform to the requirements given in Table 3 when tested in accordance with the test methods and associated conditions given there.

Table 3 — Requirements for gutter systems

Characteristics	Requirement	Test parameters		Test method
Artificial ageing [b] (type test)		Radiation energy Cycling and temperature regime	2,6 GJ/m² Method 1 of EN 513	Method A of EN ISO 4892-2 (Xenon Test) Artificial weathering [a]
		or [a]		
		Exposure time Cycle : - Irradiation - Condensation	1600 h UVA 351 lamp 6 h at (50 ± 2) °C 2 h at (50 ± 2) °C	EN ISO 4892-3 (QUV Test)
	Colour : The change of colour shall not exceed stage 3 of the grey scale according to EN 20105-A02			EN 20105-A02
	Tensile impact strength : ≥ 50 % of the value before ageing (see Table 1)	Sample type Test temperature	According to Table 1 (23 ± 2) °C	Method A of EN ISO 8256
Watertightness (type test)	No leakage	See Annex D		Annex D

[a] In case of dispute, the method EN ISO 4892-2 (Xenon test) shall be used.

[b] This test is a type test for each formulation and colour. It can be used for other products (e.g. for pipes and fittings conforming to EN 12200-1).

15 Production control

Eaves gutters shall be controlled by the manufacturer during their production process on their place of production. This control based on the appropriate sampling rules shall demonstrate the compliance of the products with the requirements of this document.

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Annex A
(normative)
Utilisation of non-virgin material

A.1 Material definitions

A.1.1 Virgin material

Material in a form such as granules or powder that has not been subjected to use or processing other than that required for its manufacture and to which no reprocessable or recyclable material has been added.

A.1.2 Own reprocessable material

Material prepared from rejected unused profiles or fittings, including trimmings from the production of profiles or fittings, that will be reprocessed in a manufacturer's plant after having been previously processed by the same manufacturer by a process such as moulding or extrusion, and for which the complete formulation is known.

A.1.3 External reprocessable material

Material comprising either one of the following forms:

a) material from rejected unused profiles or fittings or trimmings therefrom, that will be reprocessed and that were originally processed by another manufacturer;

b) material from the production of unused PVC-U products other than profiles and fittings, regardless of where they are manufactured.

A.1.4 Recyclable material

Material comprising either of the following forms:

a) material from used profiles or fittings which have been cleaned and crushed or ground;

b) material from used PVC-U products other than profiles or fittings which have been cleaned and crushed or ground.

A.2 Reprocessable and recyclable material

NOTE For the purposes of this paragraph the term profiles means extruded profiles and any parts of a fabricated fitting which is made from an extruded profile. The term fitting means injection-moulded fittings and injection-moulded parts of a fabricated fitting.

A.2.1 Own reprocessable material

The use of clean own reprocessable material with agreed specification for the production of profiles and fittings is permitted without limitations.

If fitting material is used for the production of profiles it shall be considered as recyclable material.

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A.2.2 External reprocessable and recyclable materials with agreed specification

A.2.2.1 Material from PVC-U profiles and fittings

External reprocessable and recyclable material with an agreed specification from PVC-U profiles and fittings that are available in relevant quantities and intervals of time is permitted to be added to virgin or own reprocessable material or a mixture of those two materials for the production of profiles and fittings provided that all of the following conditions are met.

a) A specification for each material shall be agreed between the supplier of external reprocessable or recyclable material and the profile manufacturer plus, if applicable, a certification body. It shall at least cover the characteristics given in Table A.1. When determined in accordance with the test method given in Table A.1, the actual values for these characteristics shall conform to the agreed value, and the permitted deviations shall conform to those given in Table A.1. The quality plan of the supplier of external reprocessable or recyclable material should conform to EN ISO 9001.

NOTE For the purposes of A.2.2.1, the manufacturer is responsible for claiming and ensuring that the quality plan conforms to or is no less stringent than the relevant requirements of EN ISO 9001: it is not essential for the manufacturer to be approved and registered for operation in accordance with EN ISO 9001.

Table A.1 — Specification of characteristics to be covered by an agreement and the maximum permitted deviations for these characteristics

Characteristic	Permitted deviations	Test method
PVC-content [a]	± 4 % absolute by mass	EN 1905
K-value [a]	± 3 units	EN 922
Density [a]	± 20 kg/m^3	EN ISO 1183-3
Vicat softening temperature (VST) [a]	± 2 °C	EN 727
Particle size [b]	Requirements and test method shall be agreed and stated in the specification.	
Type of stabilizer [a] [b]	Requirements and test method shall be agreed and stated in the specification.	
Impurities [b]	Based on the source of material and the recycling process a relevant test method and requirements shall be agreed and stated in the specification. Both the test method and the requirements shall be published.	

[a] If the source of the material are pipes and fittings produced under a European nationally recognised quality mark or a European quality mark, it is not required to test this material's characteristics if the requirement covered by the quality mark conforms to the requirement given in this Table.

[b] The relevant requirements and test method are depending on the recycling process and on the end product.

b) Each delivery shall be covered by a certificate according to 3.1.B of EN 10204:1991, showing conformity to the agreed specification.

c) The maximum quantity of external reprocessable and recyclable material that is intended to be added shall be specified by the profile or fitting manufacturer.

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d) The quantity of external reprocessable and recyclable material that is actually added in each production series shall be recorded by the profile or fitting manufacturer.

e) The PVC-content of the end product shall conform to the requirements specified in 4.1.

f) Type testing shall be carried out on the end product with the maximum specified amount of and with each form of external reprocessable or recyclable material with an agreed specification. Approved results shall be taken as proving conformity also of components containing lower levels of additions of external reprocessable or recyclable material.

A.2.2.2 Material from other PVC-U products than profiles and fittings

External reprocessable and recyclable material with an agreed specification from PVC-U bottles or window frames that are available in relevant quantities and intervals of time is permitted to be added to virgin or own reprocessable material or a mixture of those two materials for the production of profiles and fittings provided that all of the following conditions are met.

a) The material shall conform to all of the conditions given in a) to f) of A.2.2.1, inclusive, and to all of the additional characteristics and requirements given in Table A.2.

Table A.2 — Requirements for external reprocessable and recyclable material from other PVC-U products than profiles and fittings

Characteristic	Requirements	Test method
PVC-content	≥ 80 %	EN 1905
K-value	56 ≤ K-value ≤ 70	EN 922
Density	1390 kg/m^3 ≤ density ≤ 1500 kg/m^3	EN ISO 1183-3
Vicat softening temperature (VST)	≥ 62 °C	EN 727
Impurities	≤ 1500 ppm for particle size ≤ 1000 μm ≤ 1500 ppm for 1000 μm < particle size < 1400 μm	a
Particle size	> 1000 μm: max 15 % < 1400 μm: 100 %	
Application source of the material	one source: bottles or window frames	
NOTE If the source of the material is unused products for which the complete formulation is known and is such that all the requirements given in this table are fulfilled the material does not have to be tested and does not have to meet the requirements for particle size.		
[a] Based on the source of material and the recycling process a relevant test method and requirements shall be agreed and stated in the specification. Both the test method and the requirements shall be published.		

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b) The material shall be clean and dry.

c) The maximum allowed amount of reprocessable and recyclable materials shall depend on the difference in K-value of the virgin material and the reprocessable and recyclable material as follows:

   1) if the difference in K-value, when determined in accordance with EN 922, is ≤ 4 units, then up to 20 % by mass may be added;

   2) if the difference in K-value is > 4 units, or not determined, then up to 5 % by mass may be added.

d) The quantity of external reprocessable and recyclable materials that is actually added in each production series shall be recorded by the profile and fitting manufacturer.

NOTE Attention is drawn to possible national and European regulations regarding heavy metals, e.g. cadmium.

A.2.3 External reprocessable and recyclable material not covered by an agreed specification

A.2.3.1 Material from PVC-U profiles and fittings

External reprocessable and recyclable material not covered by an agreed specification from PVC-U profiles and fittings that are available in random quantities and intervals of time is permitted to be added to virgin or own reprocessable material or a mixture of those two materials for the production of profiles provided that all of the following conditions are met.

a) When this material is used the production shall be considered as at least one batch and shall be tested accordingly.

b) The material shall be clean and dry.

c) The maximum allowed amount of external reprocessable and recyclable materials that may be added shall depend on the difference in K-value of the virgin material and the external reprocessable and recyclable material as follows:

   1) if the difference in K-value, when determined in accordance with EN 922, is ≤ 4 units, then up to 10 % by mass may be added;

   2) if the difference in K-value is > 4 units, or not determined, then up to 5 % by mass may be added.

d) The quantity of external reprocessable and recyclable materials that is actually added in each production series shall be recorded by the profile manufacturer.

A.2.3.2 Material from other PVC-U products than profiles and fittings

External reprocessable and recyclable material not covered by an agreed specification from other PVC-U products than profiles and fittings shall not be used for the production of profiles and fittings conforming to this document.

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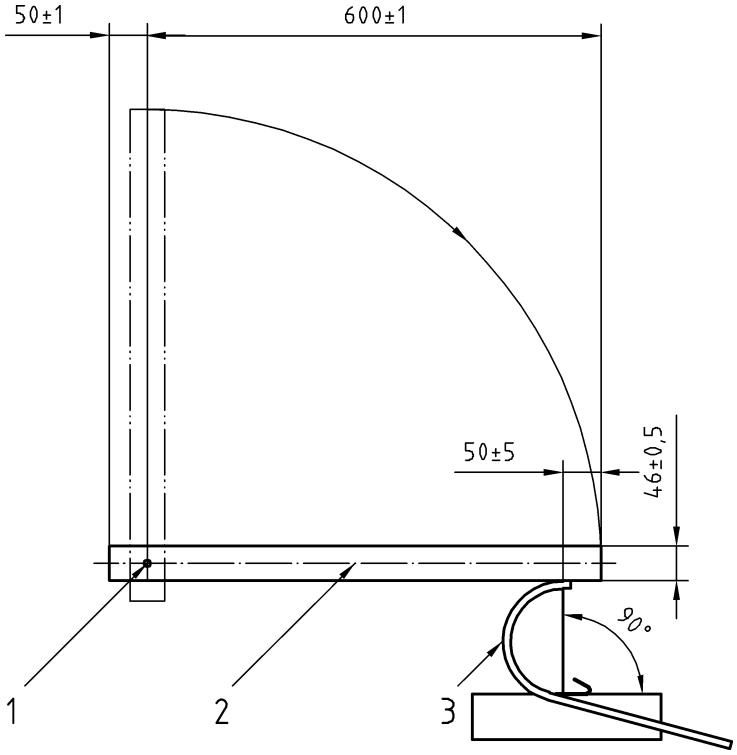
Annex B
(normative)
Impact test

The following impact test shall be carried out on each of three test pieces each not less than 900 mm in length.

The test piece shall be conditioned in ice water for 1 h or in a refrigerator at (0 ± 2) °C for 4 h. The test piece shall be mounted in two brackets (700 ± 2) mm apart on a rigid support in such a way that the normal water line of its cross section is vertical, as shown in Figure B.1.

The pendulum shall be dropped on the test piece within 15 s of removal of the test piece from the iced-water or refrigerator.

Dimensions in millimetres



Key

1 Axis
2 Pendulum made of round steel
3 Gutter

Figure B.1 — Arrangement for impact test

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Annex C
(normative)
Heat reversion test for fittings

The following test shall be carried out on three test pieces each comprising a complete fitting. Each test piece shall be placed in an oven, in a horizontal position, free to expand, and maintained at (65 ± 2) °C for (30 ± 2) min.

After the test pieces have cooled to room temperature, they shall be examined visually for any signs of deformation and surfaces defects that may have occurred.

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Annex D
(normative)
Watertightness test

An assembly of a gutter system shall be arranged as shown in Figure D.1 and the slope shall be 3 mm/m. The distance between the centre lines of two successive brackets shall be 500 mm or as recommended by the manufacturer.

The following test cycle shall be carried out five times consecutively:

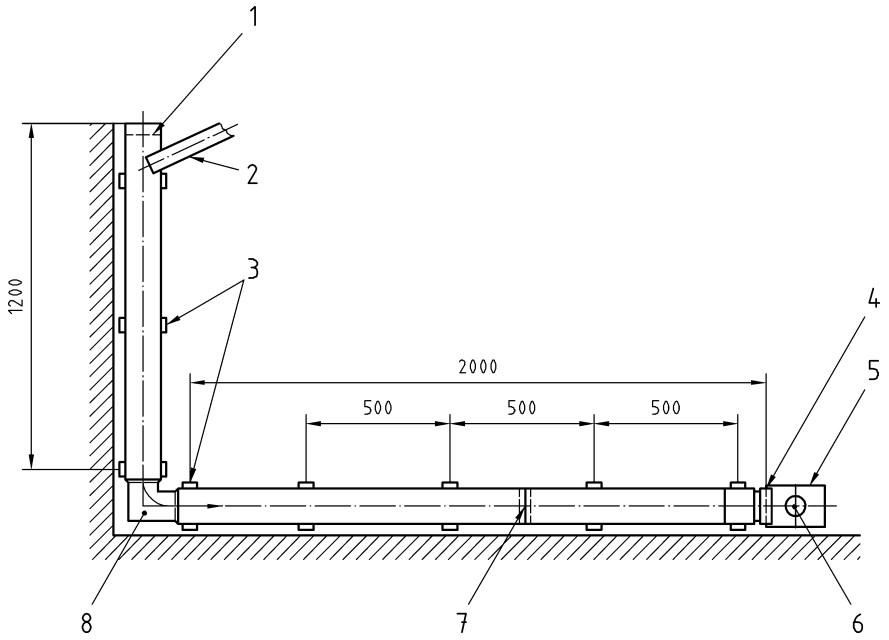
— hot water at (50 ± 2) °C shall be circulated for 15 min and

— cold water at (15 ± 2) °C shall be circulated for 10 min.

each at a flow rate of 0,3 l/s (18 l/min).

The gutter shall be partially blocked by an obstruction of half of the height of the gutter near the outlet to hold back the flow of the water. It shall have a drainage opening at the bottom to allow a flow of not more than 0,3 l/s.

Dimensions in millimetres



Key

1 Stop end
2 Water feed
3 Brackets
4 Obstruction
5 Stop end
6 Outlet
7 Union clip or joint-bracket
8 Angle

Figure D.1 — Arrangement for watertightness test (horizontal projection)

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Annex E
(informative)
Cross section areas

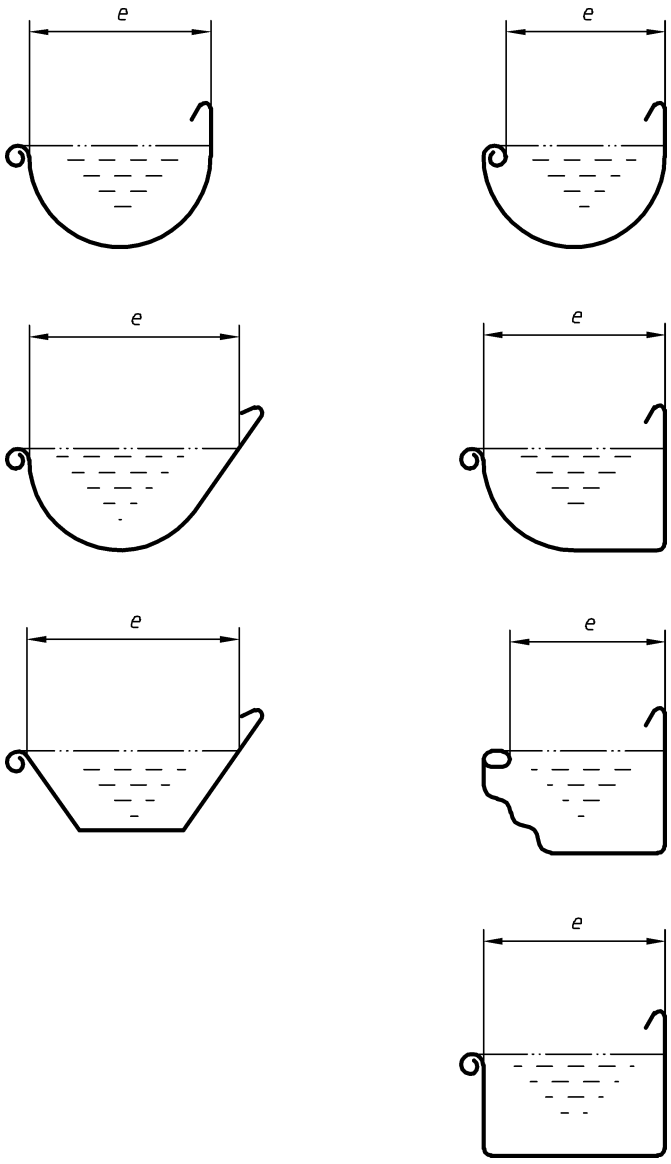

Figure E.1 – Examples of cross section areas

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Bibliography

[1] EN 12200-1 *Plastics rainwater piping systems for above ground external use – Unplasticized poly(vinyl chloride) (PVC-U) – Part 1: Specifications for pipes, fittings and the system*

[2] EN ISO 9001 *Quality management systems – Requirements (ISO 9001:2000)*

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