BRITISH STANDARD

BS EN
12585:1999

Glass plant, pipeline and fittings — Pipeline and fittings DN 15 to 1 000 — Compatibility and interchangeability

The European Standard EN 12585:1998 has the status of a British Standard

ICS 23.040.50

National foreword

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The UK participation in its preparation was entrusted to Technical Committee PSE/13, Glass piping, which has the responsibility to:

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

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 7 and a back cover.

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Descriptors: glassware, glass, borosilicate glass, glass tubes, pipe fittings, glass fittings, dimensions, compatibility, interchangeability

English version

Glass plant, pipeline and fittings — Pipeline and fittings DN 15 to 1 000 — Compatibility and interchangeability

Appareillage, tuyauterie et raccords en verre — Tuyauterie et raccords DN 15 à DN 1 000 — Compatabilité et interchangeabilité

Apparate, Rohrleitungen und Fittings aus Glas — Rohrleitungen und Fittings DN 15 bis 1 000 — Verbindbarkeit und Austauschbarkeit

This European Standard was approved by CEN on 8 November 1998.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 12585:1998 E

Foreword

This European Standard has been prepared by Technical Committee CEN/CS, the Secretariat of which is held by DIN (Köln).

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of an identical text or by endorsement, at the latest by May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

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

Contents

1 Scope

This standard specifies the essential requirements for compatibility and interchangeability of borosilicate glass plant, piping and fittings from DN 15 to DN 1 000.

2 Normative references

This European 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 publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1595, *Pressure equipment made from borosilicate glass 3.3 — General rules for design, manufacture and testing.*

ISO 3585, *Borosilicate glass 3.3 — Properties.*

3 Definitions

For the purposes of this standard the following definitions apply.

3.1
plant
complete installation consisting of components, piping and fittings which are connected by flange couplings

3.2
piping
complete assembly consisting of pipe sections and fittings which are connected by flange couplings

3.3
pipe section
straight length of pipe fitted with buttress ends

3.4
buttress end
specially shaped end of a glass component, the joint face being either plain (flat or with gasket location groove) or spherical (convex or concave)

3.5
fittings
items such as spacers, reducers, bends, tees, crosses, and valves used in conjunction with pipe sections within piping

3.6
flange coupling
complete assembly of backing flanges, inserts, gaskets, and the appropriate bolts and nuts for connecting two buttress ends

3.7
adaptor flange
special backing flange for coupling buttress ends of different design (see **6.2**)

3.8
insert
sleeve or ring between the buttress end and the backing flange

4 Material and working conditions

4.1 Material properties

The glass parts referred to in this specification shall be manufactured from borosilicate glass 3.3, which is resistant to both heat and chemical attack. Its properties are specified in ISO 3585.

4.2 Working conditions

The maximum allowable temperatures and pressures of installed systems shall not exceed those recommended by the manufacturer. There may be further limits, such as temperature differences and rates of heating and cooling, where reference shall be made to the manufacturer's recommendations.

5 Basic dimensions

5.1 Nominal sizes (DN)

The nominal sizes DN are:
15, 25, 40, 50, 80, 100, 150, 200, 225, 300, 400, 450, 600, 800, 1 000.

5.2 Length

All lengths of pipe sections size DN 15 to 150 shall be dimensioned in multiples of 25 mm.

The length L:

— of components with plain buttress ends is the distance between the joint faces (see Figure 1);

— of components with spherical buttress ends is the distance between the diameters d_0 (see Figure 2).

5.3 Wall thickness

The required wall thicknesses shall be determined in accordance with EN 1595.

6 Mating requirements

6.1 Components with plain and spherical buttress ends

In order to ensure the compatibility of components with plain and spherical buttress ends, the dimensions given in Table 1 shall be adhered to.

6.2 Adaptor flanges

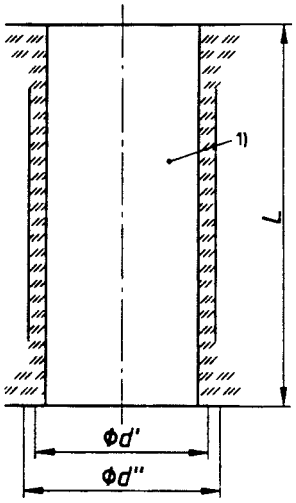
Because of the availability of glass components with different buttress end forms, backing flanges supplied by manufacturers of glass plant differ in shape, pitch circle diameter and number and diameter of bolt holes. To ensure that these various forms of buttress end can be bolted together, an adaptor flange shall be used.

6.3 Gaskets

For sealing between spherical buttress ends of different shapes, the gasket for the concave buttress end shall be used. For plain buttress ends a gasket with a diameter within the annular mating zone shall be used (see Figure 1 and Table 1). Where one of the buttress ends has a gasket location groove the gasket appropriate to the grooved buttress end shall be used.

Table 1 — Dimensions for compatibility of plain and spherical buttress ends

DN	15	25	40	50	80	100	150	200	225	300	400	450	600	800	1 000
r **radius of spherical buttress end** mm	18	25	40	50	80	100	150								
d_0 **reference diameter of spherical buttress end** mm	21	34	50	62	90	118	170								
d' max.	21	31	46	58	87	112	165	220	235	313	435	479	630	856	1 035
d'' min. **diameter of annular mating zone for plain buttress end** mm	24	36	51	64	95	125	174	230	250	330	460	505	650	886	1 065



1) DN

Figure 1 — Length of components with plain buttress ends and annular zone required for mating plain buttress ends with reference to diameters d' and d''

6.4 Alignment of coupled spherical piping and fittings

The spherical end pipe sections and fittings shall allow a deviation between the axes of two components fitted together of not less than the angular values given in Table 2.

Table 2 — Minimum possible deviation from alignment

DN	15	25	40	50	80	100	150
Angle	3°	3°	3°	3°	3°	2°	1,5°

7 Essential dimensions for interchangeability

7.1 Tolerances on length

The length and tolerances on length L of straight pipe sections and components shall be as given in Table 3.

Table 3 — Length and tolerances on length

DN	Length L mm							
	≤ 300	400	500	700	1 000	1 500	2 000	3 000
15	±2	±2	±2	±2	±2	±3	±3	
25								±4
40								
50	±3	±3	±3	±3	±3			
80						±4	±4	±5
100								
150								
200							±5	
225								
300	±4	±4	±4	±4	±4	±5		
400			±5		±5			
450								
600			±7		±7	±7		
800			±10		±10	±10		
1 000								

7.2 Permissible bow of pipe sections

Bow is the longitudinal curvature of a pipe section expressed as the maximum deviation from the straight line connecting two points at the extremities of its length within the buttress ends. The limits of permissible bow are given in Table 4.

Table 4 — Permissible bow of pipe sections

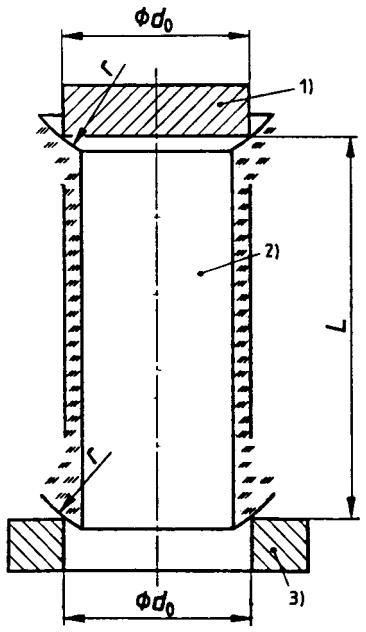
DN	Bow for length of pipe section mm					
	≤ 500	700	1 000	1 500	2 000	3 000
15	2	2	3	4	5	—
25	2	2	3	4	5	8
40	2	2	3	4	5	8
50	2	2	3	5	6	8
80	2	2	3	5	6	8
100	2	2	3	5	6	8
150	2	3	4	6	7	10

7.3 Reducers

The lengths and tolerances of reducers are given in Table 5. Figure 3 shows the reducer with plain buttress ends. For spherical buttress ends the length L is measured from the reference diameters d_0 (see Figure 2).

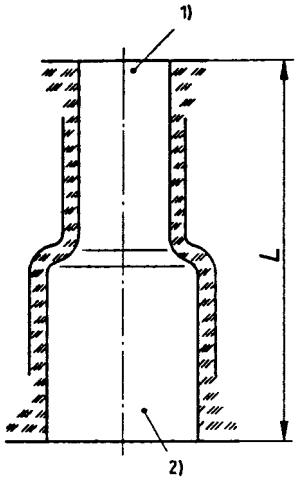
Table 5 — Lengths and tolerances of reducers

DN_1	DN_2	L mm
25	15	100 ± 2
40	15	100 ± 2
	25	100 ± 2
50	15	100 ± 3
	25	100 ± 3
	40	100 ± 3
80	25	125 ± 3
	40	125 ± 3
	50	125 ± 3
100	25	150 ± 3
	40	150 ± 3
	50	150 ± 3
	80	150 ± 3
150	25	200 ± 3
	40	200 ± 3
	50	200 ± 3
	80	200 ± 3
	100	200 ± 3



1) Plug gauge
2) DN
3) Ring gauge

Figure 2 — Length of components with spherical buttress ends with reference to diameter d_0



1) DN_2
2) DN_1

Figure 3 — Reducer

7.4 Bends, tees, crosses and angle valves

Lengths and tolerances of 90° bends, equal tees, crosses and angle valves are given in Table 6, dimensions of 45° bends are given in Table 7. The Figures 4 to 8 show such items with plain buttress ends. In the case of spherical buttress ends the length L is measured from the reference diameters d_0 (see Figure 2).

NOTE 90° bends, equal tees, crosses and angle valves are interchangeable with each other because of the same length L.

8 Marking

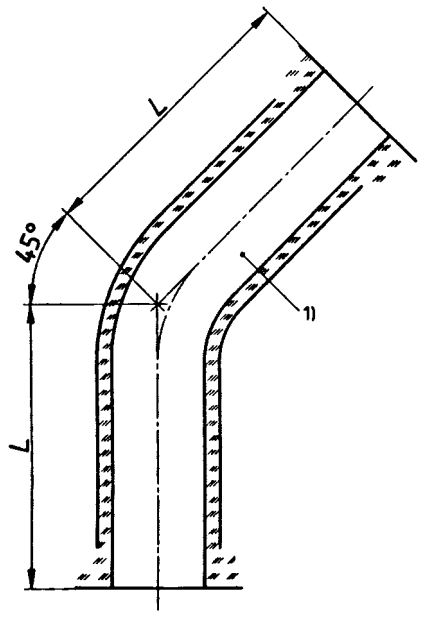
The glass components shall be marked permanently with the name of the manufacturer or processor and the type of glass or brand name.

Table 6 — Lengths and tolerances of 90° bends, equal tees, crosses and angle valves

DN	*L* mm
15	50 ± 2
25	100 ± 2
40	150 ± 2
50	150 ± 3
80	200 ± 3
100	250 ± 3
150	250 ± 3

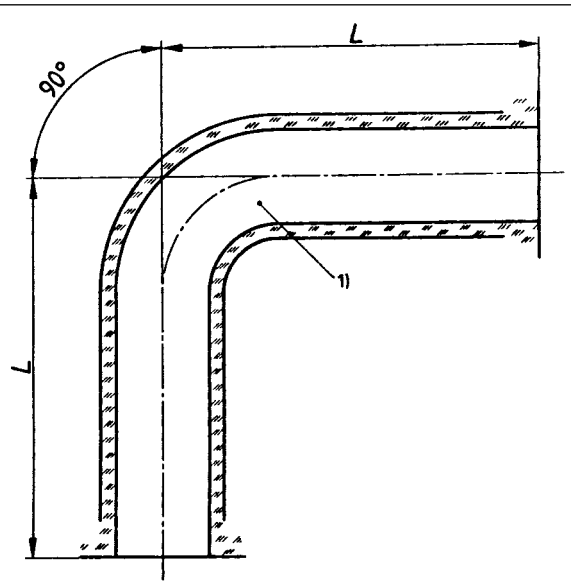
Table 7 — Lengths and tolerances of 45° bends

DN	*L* mm
15	50 ± 2
25	75 ± 2
40	100 ± 2
50	100 ± 3
80	125 ± 3
100	175 ± 3
150	200 ± 3



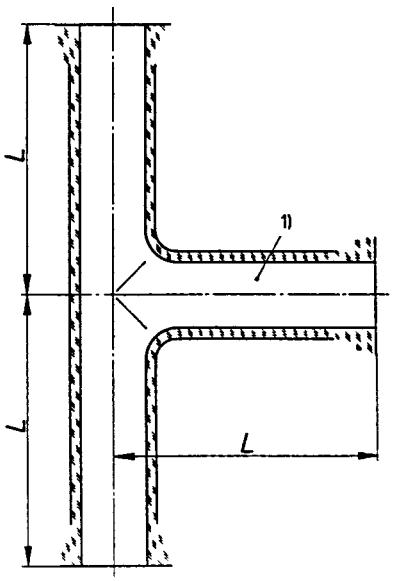
1) DN

Figure 4 — 45° bend



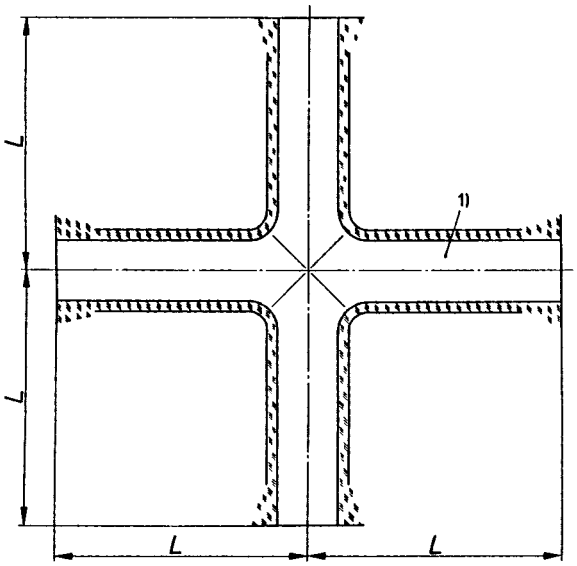
1) DN

Figure 5 — 90° bend



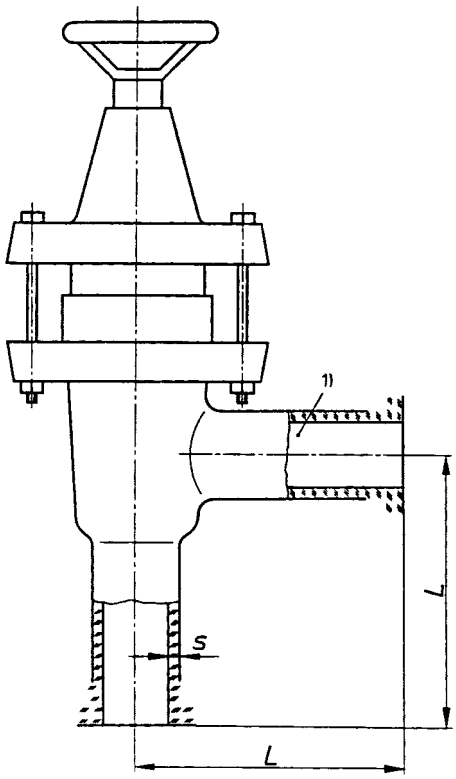
1) DN

Figure 6 — Equal tee



1) DN

Figure 7 — Cross



1) DN

Figure 8 — Angle valve

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