

Specification for

Clay flue linings and flue terminals

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The preparation of this British Standard was entrusted by the Clay Products Standards Policy Committee (CLB/-) to Technical Committee CLB/3, upon which the following bodies were represented:

- British Ceramic Research Ltd.
- British Gas plc
- Clay Pipe Development Association Limited
- Coal Research Establishment
- Institution of Civil Engineers
- Local Authority Organizations
- National Association of Plumbing, Heating and Mechanical Services Contractors
- National Clayware Federation

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Foreword

This British Standard, prepared under the direction of the Clay Products Standards Policy Committee, is a revision of BS 1181:1971 which is withdrawn. The 1971 edition has proved to be a useful and adequate specification but has been revised in respect of testing and inspection procedures to facilitate quality control and to enable certification to be applied. The inspection schedules are consistent with BS 6001-1, at an acceptable quality level (AQL) of 10 % and inspection level S2.

Whilst amendments have been made to the heat resistance test, further research is to be carried out to define the necessary parameters and test procedures. The findings will be incorporated into this standard by an amendment in due course. A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard specifies requirements for the following.

- a) Clay flue linings and terminals for use with domestic appliances as detailed in BS 6461-1¹⁾.
- b) Clay flue linings for use with gas appliances not exceeding 60 KW as detailed in BS 5440-1.
- c) Clay flue terminals for use where flue linings are not involved.
- d) Clay flue linings for ventilation.

This standard applies to both glazed and unglazed products and specifies certain dimensions and tolerances, physical and performance characteristics, marking, sampling, and testing and inspection procedures to verify compliance and to facilitate quality control.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purpose of this British Standard the following definitions apply.

2.1

flue linings

flue linings comprise the following two types:

- a) Type 1. Circular in cross section with rebated or spigot and socket ends;
- b) Type 2. Square in cross section with rebated ends and rounded internal and external corners.

2.2

flue terminals

flue terminals comprise the following two types:

- a) Type A. For use with flue linings;
- b) Type B. For use with systems where flue linings are not involved.

2.3

nominal height

a numerical designation of the height of a straight flue lining which is a convenient round number approximately equal to a manufacturing dimension

2.4

nominal size

a numerical designation of the bore or internal width of a unit which is a convenient round number approximately equal to a manufacturing dimension

2.5

curvature

the angle subtended by a curved flue lining at the centre of the curve (see Figure 1)

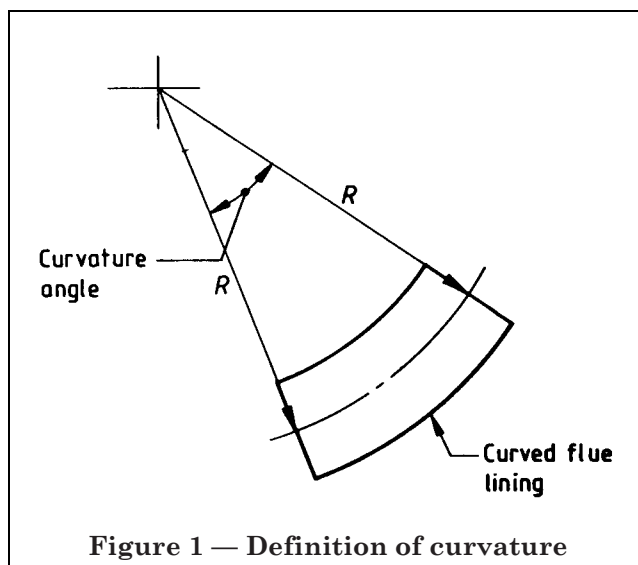


Figure 1 — Definition of curvature

3 Materials and manufacture

3.1 Flue linings and flue terminals

Flue linings and flue terminals shall be manufactured from suitable clays.

NOTE The suitability of clays is assessed by chemical and other tests carried out by the manufacturer.

3.2 Flue lining joint

The design and dimensions of the rebates and sockets shall be such that the male end shall be capable of entering the female end of another lining of the same type, made by the same manufacturer, leaving a jointing space. The width of the top of the rebate shall be not less than 4 mm, and the height/depth of the rebate shall be not less than 6 mm.

¹⁾ Clay flue blocks and terminals for use with domestic gas appliances are specified in BS 1289-2.

Section 2. Flue linings

4 Dimensions and tolerances

4.1 Cross-sectional dimensions

The limits of bore (for type 1) and internal width (for type 2) and maximum dimensions of flue linings shall be as given in Table 1.

Table 1 — Cross-sectional dimensions of linings

Type	Nominal size (DN)	Limits of bore or internal width		Maximum external diameter or width
		min.	max.	
1	125	119	135	175
	150	145	160	200
	175	169	186	230
	185	179	198	242
	210	200	220	268
	225	219	239	287
	250	242	266	314
	300	292	317	385
	350	342	366	424
2	175 × 175	169	186	240
	185 × 185	179	198	250
	200 × 200	193	213	260
	225 × 225	219	239	295
	250 × 250	242	266	320
	300 × 300	292	317	400

4.2 Nominal height

The nominal height of straight flue linings shall be not less than 180 mm and not greater than 600 mm.

The limits of tolerance on the stated nominal height shall be $-2\% + 5\%$ subject to a minimum value of ± 10 mm.

4.3 Curvature and radius

Flue lining bends shall have a nominal radius of 550 mm and a curvature of either 11.25, 22.5 or 37.5 degrees.

The tolerances shall be ± 55 mm on radius and ± 5 degrees on curvature.

4.4 Straightness

The permissible deviations from straightness of type 1 and type 2 straight flue linings of nominal height equal to or greater than 450 mm, when tested in accordance with Appendix A, shall be not greater than the values given in Table 2.

For intermediate nominal heights the permissible deviation from straightness shall be interpolated linearly.

Table 2 — Straightness

Nominal height	Maximum permissible deviation
mm	mm
450	5
600	7

4.5 Squareness of ends

The permissible deviation from square of the ends of type 1 and type 2 straight flue linings, when tested in accordance with Appendix B, shall not be greater than an angle of slope 30 mm/m.

4.6 Deviation from shape of cross section

The permissible deviation from square of the angles of, and flatness of walls for type 2 straight flue linings, when tested in accordance with Appendix C, shall not be greater than the values given in Table 3.

Table 3 — Deviations from shape of cross section

Nominal size	Maximum permissible deviation
mm	mm
175 × 175	7
185 × 185	7
200 × 200	8
225 × 225	9
250 × 250	10
300 × 300	11

5 Performance requirements for flue linings

5.1 Crushing strength

When tested in accordance with Appendix D, straight flue linings shall withstand an intensity of loading of 3.5 MN/m^2 .

Where curved flue linings are fired in a plant alongside straight flue linings, using the same materials and firing process, the crushing strength of these curved flue linings is deemed to be that of the straight flue linings when tested in accordance with Appendix D.

If curved flue linings are not normally fired alongside straight flue linings, straight flue linings or short lengths of straight flue linings made for test purposes, using the same materials and firing process as for curved flue linings, shall be type-tested (see 8.5) for compliance with the requirements of this clause.