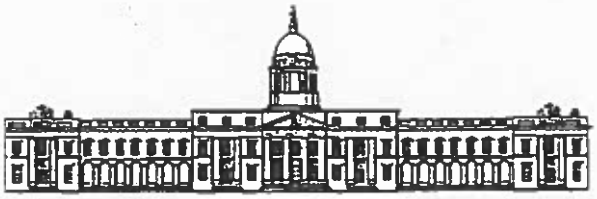
Building Regulations, 1991

TECHNICAL GUIDANCE DOCUMENT J
HEAT PRODUCING APPLIANCES



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Contents

BUILDING REGULATIONS, 1991

TECHNICAL GUIDANCE DOCUMENT J HEAT PRODUCING APPLIANCES

INTRODUCTION

This document has been published by the Minister for the Environment under article 5 of the Building Regulations, 1991, for the purpose of providing guidance with regard to compliance with the requirements of Part J of the First Schedule to the Regulations. Where works are carried out in accordance with this guidance, this will, prima facie, indicate compliance with these requirements.

This document should be read in conjunction with the Regulations.

Guidance contained in this document with respect to the use of a particular material, method of construction, standard or other specification does not preclude the use of any other suitable material, method of construction, standard or specification.

TECHNICAL SPECIFICATIONS

Building Regulations are made for specific purposes i.e. health, safety and welfare of persons, energy conservation and the special needs of disabled people. Technical Specifications (including Harmonised European Standards, European Technical Approvals, National Standards and Agrément Certificates) are relevant to the extent that they relate to these considerations. Technical Specifications may also address other aspects of performance not covered by the Regulations.

The references in this document to named Technical Specifications, or to materials and methods which are likely to be suitable for the purposes of the Regulations, are not exclusive and other materials and methods may be suitable in particular circumstances. A reference to a Technical Specification is to the latest edition (including any amendments, supplements or addenda) current at the date of publication of this Technical Guidance Document.

MATERIALS AND WORKMANSHIP

Under Part D of the First Schedule to the Regulations, building work must be carried out with proper materials and in a workmanlike manner. Relevant guidance is contained in Technical Guidance Document D.

Part D of the First Schedule to the Regulations defines "proper materials" as materials which are fit for the use for which they are intended and for the conditions in which they are to be used, and includes materials which:

(a) bear a CE Mark in accordance with the provisions of the Construction Products Directive (89/106/EEC); or

(b) comply with an appropriate harmonized standard or European technical approval, as defined in the Construction Products Directive (89/106/EEC); or

(c) comply with an appropriate Irish Standard or Irish Agrément Board Certificate or with an alternative national technical specification of any Member State of the European Community, which provides in use an equivalent level of safety and suitability.

HEAT PRODUCING APPLIANCES

Building Regulations - The Requirement

Part J of the First Schedule to the Building Regulations, 1991 provides as follows:

Air supply.	J1	A heat producing appliance shall be so installed that there is an adequate supply of air to it for combustion and for the efficient working of any flue pipe or chimney.
Discharge of products of combustion.	J2	A heat producing appliance shall have adequate provision for the discharge of the products of combustion to the outside air.
Protection of building.	J3	A heat producing appliance and any flue pipe shall be so designed and installed, and any fire place and any chimney shall be so designed and constructed, as to reduce to a reasonable level the risk of the building catching fire in consequence of its use.
Definition for this Part.	J4	In this Part, "heat producing appliance" means an appliance (including a cooker and an open fire) which is designed to burn solid fuel, oil or gas and includes an incinerator.

Section 1

GENERAL

1.1 In this document, non-combustible means capable of being classified as non-combustible if subjected to the test for non-combustibility prescribed in BS 476, Fire tests on building materials and structures, Part 4: 1970 (1984): Non combustibility tests for materials.

AIR SUPPLY TO APPLIANCES

1.2 Each appliance should be:

(a) room sealed, or

(b) contained in a room or space which has a permanent ventilation opening. If this opening is to an adjoining room or space, then the adjoining room or space should have a permanent opening of the same size direct to external air.

Ventilation openings should not be provided in internal construction required to have fire resistance under the requirements of Part B of the First Schedule to the Regulations.

Where ventilation openings are provided in external walls, see Technical Guidance Document B.

AIR EXTRACT FANS

1.3 If an air extract fan is fitted in a building containing a heat producing appliance (other than a room-sealed appliance), the appliance and flue should be able to operate effectively whether or not the fan is running.

FLUE PIPES AND CHIMNEYS

1.4 Unless an appliance is designed to operate without discharging the products of combustion to the outside air, it should have a balanced or low level flue or be connected to a flue pipe or chimney which discharges to the external air.

1.5 Provision should be made to enable a flue to be inspected and cleaned. An opening should only be made into a flue for the purpose of:

(a) inspection or cleaning, and an opening for this purpose should have a rigid, non-combustible and gastight cover, or

(b) fitting an explosion door, draught stabilizer or draught diverter.

1.6 A flue should not open into more than one room or space except for the purpose of inspection or cleaning, but may serve more than one appliance in the same room.

Section 2

ADDITIONAL PROVISIONS FOR SOLID FUEL BURNING APPLIANCES WITH A RATED OUTPUT UP TO 45 kW

2.1 Guidance on the installation of solid fuel burning appliances is contained in the following standards:

I.S. 258 : Parts 1 and 2 : 1984 Domestic Solid Fuel Cookers with Integral Boilers, Part 1 Safety Requirements, Part 2 General Requirements.

Part 1 of this standard specifies requirements for electrical, boiler and environmental safety.

Part 2 of the standard specifies general, constructional and performance requirements, together with methods of test for freestanding cookers, with integral boilers, which supply domestic hot water with or without provision for space heating.

BS 8303 : 1986 Code of practice for installation of domestic heating and cooking appliances burning solid mineral fuels.

AIR SUPPLY TO APPLIANCES

2.2 Any room or space containing an appliance should have a ventilation opening of at least the size shown in Table 1.

Table 1 Air supply to appliances

Type of appliance	Type of ventilation
Solid fuel burning open appliance	An air entry opening or openings with total free area of at least 50% of the appliance throat opening area - as defined in BS 8303: 1986 Code of practice for installation of domestic heating and cooking appliances burning solid mineral fuels.
Other solid fuel appliance	An air entry opening or openings with a total free area of at least 550mm² per kW of rated output above 5 kW. Where a flue draught stabiliser is used the total free area should be increased by 300 mm² for each kW of rated output.

SIZE OF FLUES

2.3 Flue sizes should be at least:

(a) for flue pipes, equal to that of the flue outlet on the appliance, or

(b) for chimneys, at least the size shown in Table 2, but never less than the size of the flue outlet on the appliance or that recommended by the appliance manufacturer.

OUTLETS FROM FLUES

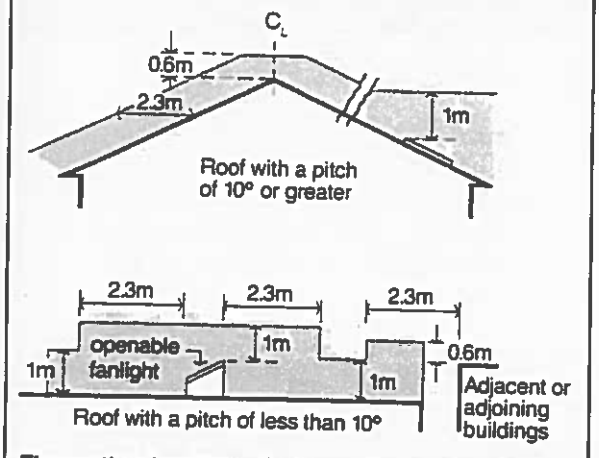
2.4 The outlet from a flue should be positioned above the roof of a building as shown in Diagram 1.

Table 2 Size of flues

Installation	Minimum flue size
Fireplace recess with an opening up to 500 mm x 550 mm	200 mm diameter or square section of equivalent area
Open fire	200 mm diameter or square section of equivalent area
Closed appliance up to 2 kW rated output burning bituminous coal	150 mm diameter or square section of equivalent area
Closed appliance up to 20 kW rated output	125 mm diameter or square section of equivalent area
Closed appliance above 20 kW and up to 30 kW rated ouptut	150 mm diameter or square section of equivalent area

Note:
Should an offset be necessary in a flue run then the flue size should be increased by 25 mm on each dimension (diameter or each side of square flue).

Diagram 1 Flue outlets



Flue outlet should terminate outside the shaded area

DIRECTION OF FLUES

2.5 Flues should be vertical wherever possible. Horizontal flue runs should be avoided except in the case of a back outlet appliance, when the length of the horizontal section should not exceed 150 mm.

2.6 Where a bend is necessary in a flue, it should not make an angle of more than 30° with the vertical.

FLUE PIPES

2.7 A flue pipe should only be used to connect an appliance to a chimney and should not pass through any roof space.

2.8 Flue pipes may be of any of the following materials:

(a) cast iron as described in BS 41: 1973 (1981) Specification for cast iron spigot and socket flue or smoke pipes and fittings, or

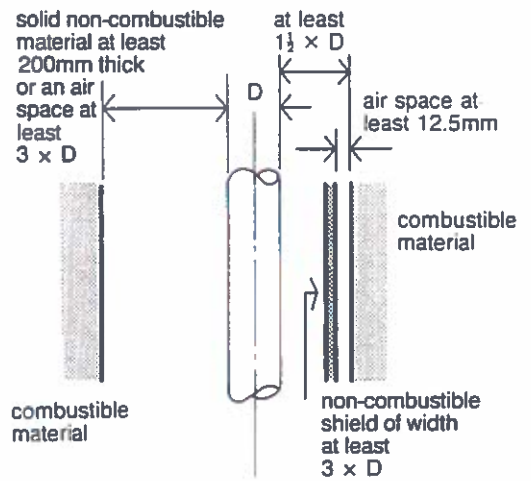
(b) mild steel with a wall thickness of at least 3 mm, or

(c) stainless steel with a wall thickness of at least 1 mm and as described in BS 1449: Steel plate, sheet and strip, Part 2: 1983 Specification for stainless and heat resisting steel plate, sheet and strip, for Grade 316 S11, 316 S13, 316 S16, 316 S31, 316 S33, or the equivalent Euronorm 88-71 designation, or

(d) vitreous enamelled steel complying with BS 6999: 1989 Specification for vitreous enamelled low carbon steel flue pipes, other components and accessories for solid fuel burning appliances with a maximum rated output of 45 kW.

2.9 Flue pipes with spigot and socket joints should be fitted with the socket uppermost.

Diagram 2 Separating flue-pipe from surface of adjacent combustible material



SHIELDING OF FLUE PIPES

2.10 Flue pipes should be separated from combustible material by at least the distances shown in Diagram 2.

CHIMNEYS GENERALLY

2.11 Chimneys for use with solid fuel appliances should be capable of withstanding a temperature of 1100° C without any structural change which would impair the stability or performance of the chimney.

2.12 Where a chimney is not directly over an appliance, a debris collecting space should be provided which is accessible for emptying.

BRICK/BLOCK CHIMNEYS

2.13 Brick/block chimneys should be lined with: -

(a) clay flue liners with rebated or socketed joints as described in I.S. 51: 1983 Clay Flue Linings and Flue Terminals, or

(b) imperforate clay pipes with socketed joints as described in I.S. 106: 1970 Clayware Sewer and Drain Pipes, or

(c) high alumina cement and kiln burnt or pumice aggregate pipes, with rebated or socketed joints or steel collars around joints.

The linings should be fitted with the sockets or rebates uppermost. Liners should be jointed with fire-proof mortar, and any space between the liners and the brickwork should be filled with weak mortar or insulating concrete.

REFRACTORY BLOCKWORK CHIMNEYS

2.14 These are chimneys constructed of purpose made blocks which may incorporate a flue or be lined. They should be made of refractory material, or a combination of high alumina cement and kiln burnt or pumice aggregates, or lined as in paragraph 2.13.

WALL THICKNESS

2.15 The thickness of the walls of a brick or blockwork chimney, excluding the thickness of any liner should be at least:

(a) 100 mm thick between one flue and another or

(b) 100 mm thick between a flue and the outside air or between a flue and another part of the same building (but not another part which is a dwelling or is constructed as a separate fire compartment), or

(c) 200 mm thick between a flue and another compartment of the same building, another building or another dwelling. This thickness should be carried up to the underside of the roof covering.

(d) 200 mm thick between one flue and another where flues serve appliances located in separate compartments, buildings, or dwellings. This thickness should be carried up to the underside of the roof covering.

COMBUSTIBLE MATERIAL

2.16 Combustible material should be separated from a brick or blockwork chimney by at least the following distance:

(a) 200 mm from a flue, or

(b) 40 mm from the outer surface of a brick or blockwork chimney or fireplace recess unless it is a floorboard, skirting, dado or picture rail, mantelshelf or architrave. Metal fixings in contact with combustible materials should be at least 50 mm from a flue.

FACTORY-MADE INSULATED CHIMNEYS

2.17 Factory-made insulated chimneys should be:

(a) constructed and tested to meet the relevant recommendations given in BS 4543 Factory-made insulated chimneys, Part 1: 1990 Methods of test, and Part 2: 1990 Specification for chimneys with stainless steel flue linings for use with solid fuel fired appliances, and

(b) installed in accordance with the manufacturers' instructions or to meet the relevant recommendations of BS 6461: Installation of chimneys and flues for domestic appliances burning solid fuel (including wood and peat): Part 2: 1984: Code of practice for factory-made insulated chimneys for internal applications.

2.18 A factory-made insulated chimney should not:

(a) pass through any part of the building forming a separate compartment, unless it is cased in non-combustible material giving at least half the fire resistance of the compartment wall or floor (see Technical Guidance Document B, Fire).

(b) be placed with its outer wall nearer to combustible material than a distance x, or

(c) pass through a cupboard, storage space or roof space, unless it is surrounded by a non-combustible guard at a distance of at least x from the outer wall of the chimney.

For (b) and (c) above the distance x is to be found by test in accordance with BS 4543 Part 1: 1990.

CONSTRUCTIONAL HEARTHS

2.19 A constructional hearth should be provided of solid, non-combustible material at least 125 mm thick (which may include the thickness of any solid, non-combustible floor under a hearth), and at least the size shown in Diagram 3.

2.20 Combustible material should not be placed under a constructional hearth unless:

(a) it is to support the edges of the hearth, or

(b) there is an air space of at least 50 mm between the material and the underside of the hearth, or there is a distance of at least 250 mm between the material and the top of the hearth (see Diagram 4).

FIREPLACE RECESSES

2.21 Fireplace recesses should be constructed of solid non-combustible material to the appropriate size given in Diagram 5.

WALLS ADJACENT TO HEARTHS

2.22 Walls which do not form part of a fireplace recess should be constructed as indicated in Diagram 6.

LOCATION OF APPLIANCES

2.23 An appliance:

(a) should not be placed closer to the edges of a constructional hearth or any combustible material laid on it than shown in Diagram 7, and

(b) should be separated from combustible materials as shown in Diagram 8.

Diagram 3 Hearth sizes

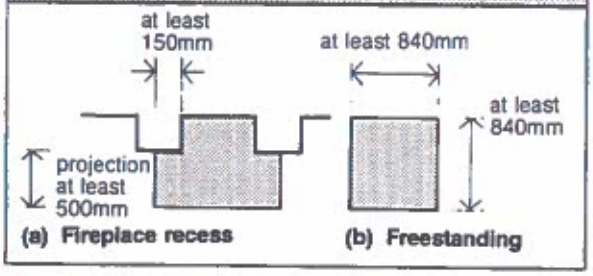


Diagram 4 Combustible material under hearth

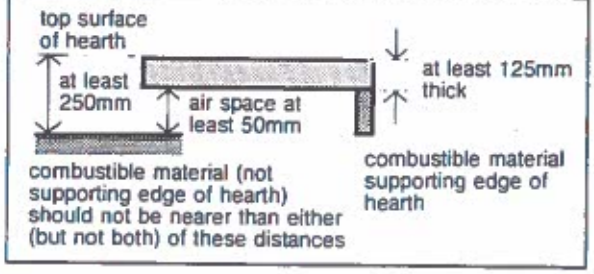


Diagram 5 Fireplace recesses

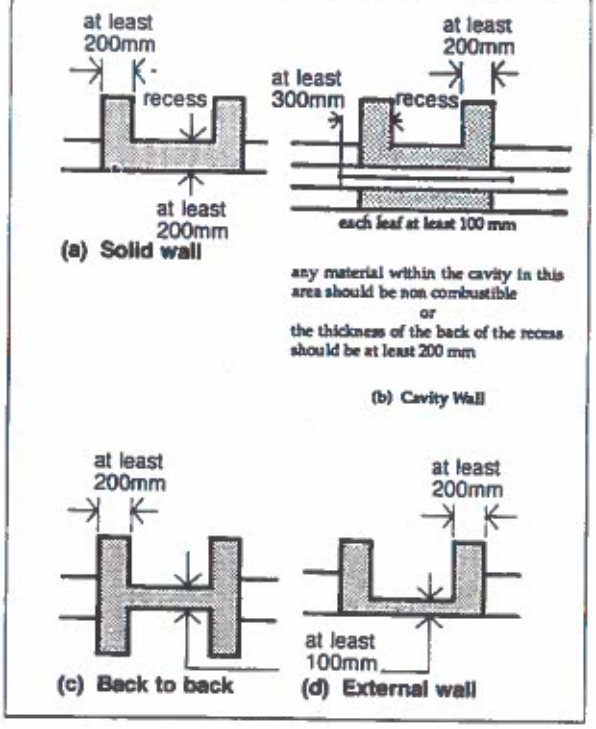


Diagram 6 Wall next hearth

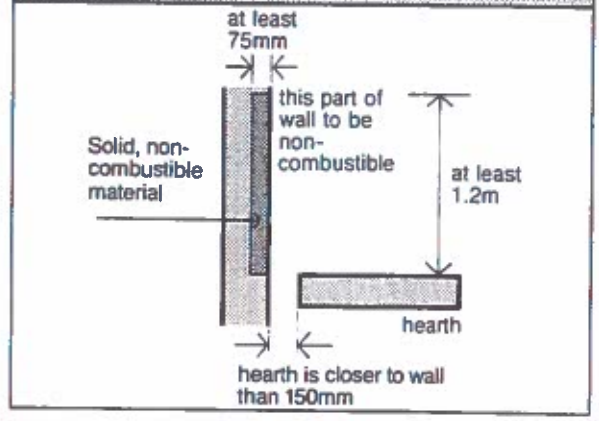


Diagram 7 Placing appliance on construction hearth

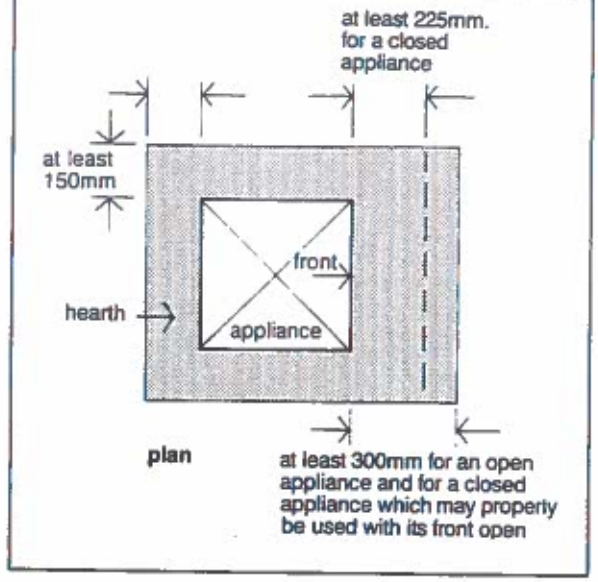
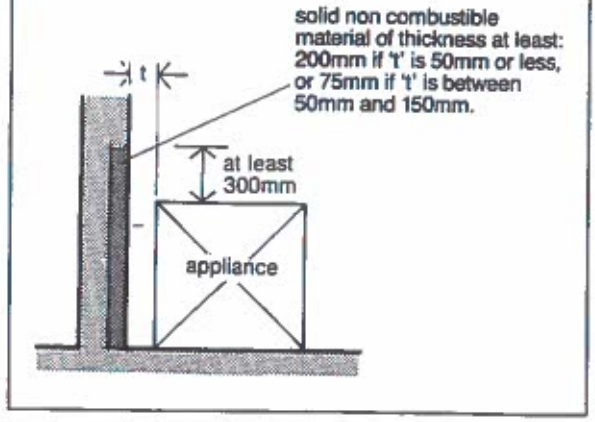


Diagram 8 Separating appliance from combustible materials in walls



Section 3

ADDITIONAL PROVISIONS FOR INDIVIDUALLY FLUED (NON-FAN ASSISTED) GAS BURNING APPLIANCES WITH A RATED INPUT UP TO 60 kW (AND AIR SUPPLY FOR COOKING APPLIANCES)

3.1 Guidance on the installation of gas burning appliances is contained in the following standards and codes of practice:

ICP 3 : 1989 Domestic Installations for Manufactured and Natural Gas (Edition 2). ICP 4 : 1989 Non-Domestic Installations for Manufactured and Natural Gas (Edition 2). I.S. 327 : 1990 Domestic Installations using Liquified Petroleum Gases (Edition 2). BS 5546 : 1990 Specification for installation of gas hot water supplies for domestic purposes (1st, 2nd and 3rd family gases).

BS 5864 : 1989 Specification for installation in domestic premises of gas fired ducted-air heaters of rated input not exceeding 60 kW. Selection, installation, inspection and commissioning. Includes commentary and recommendations.

BS 5871 : 1980 (1983) Code of practice for the installation of gas fires, convectors and fire/back boilers (2nd family gases). Recommendations for the selection and installation of radiant gas fires, radiant convector gas fires, gas convectors and fire/back boilers, intended mainly for heating single rooms in domestic and other premises. The fire/back boilers may be intended for providing domestic hot water only or for central heating with or without domestic hot water.

BS 6172 : 1990 Specification for installation of domestic gas cooking appliances (1st, 2nd and 3rd family gases)

BS 6173 : 1990 Specification for installation of gas-fired catering appliances for use in all types of catering establishments (1st, 2nd and 3rd family gases)

BS 6798 : 1987 Specification for installation of gas-fired hot water boilers of rated input not exceeding 60 kW.

SOLID FUEL EFFECT APPLIANCES

3.2 These appliances simulate the burning of coal and wood with a live flame. Installation should be in accordance with the relevant recommendations of I.S. 327: 1990 Domestic Installations using Liquified Petroleum Gases (Edition 2); ICP 3 : 1989 Domestic Installations for Manufactured and Natural Gas (Edition 2); ICP 4 : 1989 Non-domestic Installations for Manufactured and Natural Gas; BS 6714: 1986 Specification for installation of decorative log and other fuel effect appliances (1st, 2nd and 3rd family gases) or with Section 2 of this Technical Guidance Document.

APPLIANCES IN BATHROOMS AND GARAGES

3.3 Any appliance in a bath or shower room or a private garage must be of the room-sealed type.

AIR SUPPLY TO APPLIANCES

(Other than for balanced flued or solid fuel effect appliances)

3.4 Any room or space containing a cooker should have an openable window or other means of providing ventilation. If the room or space has a volume less than 10 m^3, then, in addition, a permanent ventilation opening of at least 5000 mm^2 should be provided.

3.5 Any room or space containing an open-flued appliance should have a permanent ventilation opening of at least 450 mm^2 for each kW of appliance input rating exceeding 7 kW.

SIZE OF FLUES

(Other than for balanced flued or solid fuel effect appliances)

3.6 The flue size should be at least that stated below:

(a) in the case of a gas fire, a cross-section area of at least 12000 mm^2 if the flue is round, or 16500 mm^2 if the flue is rectangular, and have a minimum dimension of 90 mm or

(b) for any other appliance a cross-sectional area of at least that of the outlet from the appliance.

DIRECTION OF FLUES
(Other than balanced flues)

3.7 Horizontal flue runs should be avoided, and if a bend is necessary in a flue it should not make an angle of more than 45° with the vertical.

OUTLETS FROM FLUES

3.8 The outlet from a balanced-flued appliance should be:

(a) so situated externally as to allow free intake of air and dispersal of products of combustion, and

(b) at least 300 mm from any opening into the building which is wholly or partly above the terminal, and

(c) protected with a guard if persons could come into contact with the terminal or if it could be subject to damage, and

(d) designed so as to prevent the entry of any matter which might restrict the flue.

3.9 The outlet from any other appliance should be:

(a) so situated, at roof level, that air may pass freely across it at all times, and

(b) at least 600 mm from any opening into the building, and

(c) fitted with a flue terminal if the flue outlet exceeds 175 mm measured across the axis of the flue. This does not apply to a gas fire.

FLUE PIPES

3.10 Flue pipes may be of any of the following materials:

(a) sheet metal as described in BS 715: 1989: Specification for metal flue pipes, fittings, terminals and accessories for gasfired appliances with a rated input not exceeding 60 kW, or

(b) asbestos cement as described in BS 567: 1973 (1989) Specification for asbestos-cement flue pipes and fittings, light quality, or BS 835: 1973 (1989) Specification for asbestos-cement flue pipes and fittings, heavy quality, or

(c) cast iron as described in BS 41: 1973 (1981) Specification for case iron spigot and socket flue or smoke pipes and fittings.

(d) any material described in Section 1 for a solid flue appliance, or

(e) any other material fit for its intended purpose.

Flue pipes with spigot and socket joints should be fitted with the sockets uppermost.

SHIELDING OF FLUE PIPES

3.11 Flue pipes should:

(a) be at least 25 mm from any combustible material, or

(b) where passing through a wall, floor or roof, be separated from any combustible material by a non-combustible sleeve enclosing an air space of at least 25 mm around the flue pipe, or

(c) where passing through a compartment wall or a compartment floor, be cased with non-combustible material with at least half the fire resistance needed for the wall or floor (see Technical Guidance Document B, Fire).

For a double-walled flue pipe, the 25 mm distance may be measured from the outside of the inner pipe.

BRICK/BLOCK CHIMNEYS

3.12 Brick/block chimneys should be lined with:

(a) clay flue liners with rebated or socketed joints as described in I.S. 51: 1983 Clay Flue Linings and Flue Terminals, or

(b) imperforate clay flue pipes as described in I.S. 106: 1970 Clay Sewer and Drain Pipes, or

(c) any material described in Section 1 for a solid fuel appliance.

Linings should be fitted with the sockets or rebates uppermost to prevent condensate running out and to prevent any caulking material from being adversely affected. Joints between the liners and brickwork should be filled with mortar.

FLUE BLOCK CHIMNEYS

3.13 Flue blocks should be as described in BS 1289: Flue blocks and masonry terminals for gas appliances: Part 1: 1986 Specification for precast concrete flue blocks and terminals and Part 2: 1989 Specification for clay flue blocks and terminals.

FLEXIBLE FLUE LINERS

3.14 A flexible flue liner may be used in a chimney if:

(a) the liner complies with the requirements of BS 715: 1989 Specification for metal flue pipes, fittings, terminals and accessories for gas-fired appliances with a rated input not exceeding 60 kW, and

(b) the chimney -

(i) was built before the coming into operation of Building Regulations, or

(ii) is already lined or constructed of flue blocks as recommended in this Technical Guidance Document.

DEBRIS COLLECTION SPACE

3.15 If the chimney is not lined or not constructed of flue blocks as recommended in this Technical Guidance Document, then a debris collection space should be provided at the bottom of the chimney with a volume of at least 0.012 m^3 and a depth of at least 250 mm below the point of connection of the appliance with the chimney. The space should be readily accessible for clearance of debris, for example by removal of the appliance.

WALL THICKNESS

3.16 The wall thickness of a brick or blockwork chimney should be at least 25 mm. Any chimney wall which:

(a) is part of the wall of a compartment of the same building, another building or another dwelling, should give at least the fire resistance needed for the compartment or separating wall (see Technical Guidance Document B, Fire) or

(b) passes through a compartment wall or a compartment floor, should have at least half the fire resistance needed for the compartment wall or floor (see Technical Guidance Document B, Fire). If the compartment wall or floor is masonry material, it may also form the chimney wall.

FACTORY-MADE INSULATED CHIMNEYS

3.17 Any factory-made insulated chimney should be as described in Section 2 or Section 4 of this Technical Guidance Document.

HEARTHS

(Other than for solid fuel effect appliances)

3.18 A hearth should always be provided for an appliance unless:

(a) every part of any flame or incandescent material in the appliance will be at least 225 mm above the floor, or

(b) the appliance complies with the recommendations of the appropriate parts of the following standards:

I.S. 281: Gas Fired Central Heating Boilers and Circulators;
I.S 282: Gas Fires;
I.S. 803: Gas-Fired Fanned-Circulated Ducted Air-Heaters;
I.S. 805: Gas Fired Storage Water Heaters;
I.S. 280: Combined Appliances, Gas Fire/Back Boiler;
I.S. 285: Decorative Gas Log and Other Fuel Effect Appliances for 2nd and 3rd family gases;
BS 5258 Safety of domestic gas appliances, or
BS 5386 Gas burning appliances.

3.19 In case of a back boiler the hearth should be constructed:

(a) of solid, non-combustible material at least:

(i) 125 mm thick, or

(ii) 25 mm thick placed on non-combustible supports at least 25 mm high, and

(b) to the size given in Diagram 9.

3.20 In the case of any other appliance, the hearth should be constructed of solid, non-combustible material at least 12 mm thick and to the size given in Diagram 9.

SHIELDING OF APPLIANCES

3.21 Unless the appliance complies with the relevant recommendations of the appropriate parts of the standards in the list of standards following, the backs, tops and sides of appliances, and any draught-diverters should be separated from any combustible material by either (a) a shield of non-combustible material at least 25 mm thick, or (b) an air space of at least 75 mm (see Diagram 10).

Diagram 9 Hearth size

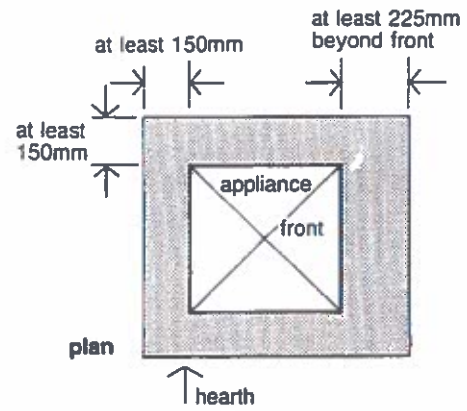
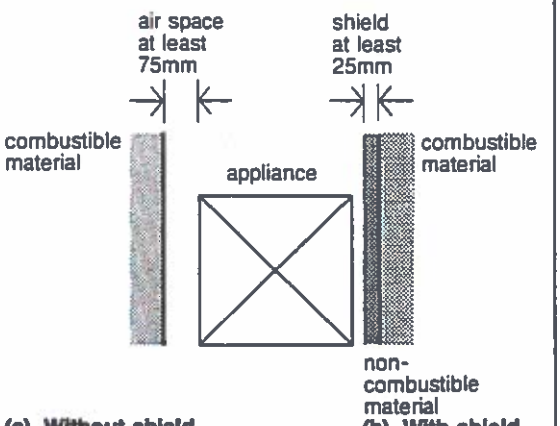


Diagram 10 Separating appliance from combustible material



List of standards

I.S. 281: Gas Fired Central Heating Boilers and Circulators;
I.S. 282: Gas Fires;
I.S. 803: Gas-Fired Fanned-Circulation Ducted Air-Heaters;
I.S. 805: Gas Fired Storage Water Heaters;
I.S. 280: Combined Appliances Gas Fire/Back Boiler;
I.S. 285: Decorative Gas Log and Other Fuel Effect Appliances for 2nd and 3rd family gases;
I.S. 645 (EN 26) Gas Burning Appliances for Instantaneous Production of Hot Water for Domestic Use:
I.S. 644 (EN 30) Domestic Cooking Appliances Burning Gas;
BS 5258 or BS 5386,

Section 4

ADDITIONAL PROVISIONS FOR OIL BURNING APPLIANCES WITH A RATED OUTPUT UP TO 45 kW

Guidance on the installation of oil burning appliances is contained in:

> BS 5410 : Code of practice for oil firing : Part 1 : 1977 Installations up to 44 kW output capacity for space heating and hot water supply purposes. Applies, where relevant, to oil fired cookers where these are connected to flues.

AIR SUPPLY TO APPLIANCES

4.1 Any room or space containing an appliance (other than a balanced-flued appliance) should have a permanent ventilation opening of free area at least 550 mm² for each kW of rated output above 5 kW.

SIZE OF FLUES

(Other than for balanced and low level flues)

4.2 The flue size should be at least:

(a) for a flue pipe, the same as for the flue outlet from the appliance,

(b) for a chimney: 100 mm diameter for appliances with a rated output up to 20 kW; 125 mm diameter for appliances with a rated output between 20 kW and 32 kW; 150 mm diameter for appliances with a rated output between 32 kW and 45 kW. If the flue is of square section, then it should have a cross-sectional area equivalent to the corresponding circular chimney.

DIRECTION OF FLUES

(Other than for balanced or low level flues)

4.3 Horizontal flue runs should be avoided, and if a bend is required in a flue it should not make an angle of more than 45° with the vertical.

OUTLETS FROM FLUES

4.4 The outlet from a balanced flue or low level discharge appliance should be:

(a) so situated externally as to allow the dispersal of the products of combustion and, with a balanced flue, the free intake of air, and

(b) at least 600 mm from any opening into the building, and

(c) protected with a terminal guard if persons could come into contact with it or if it could be subject to damage, and

(d) designed so as to prevent the entry of any matter which might restrict the flue.

4.5 The outlet from a flue serving a pressure jet appliance may be terminated anywhere above the roof line.

4.6 The outlet from a flue serving any other appliance should be positioned above the roof line as shown in Diagram 1 in Section 2 of this Technical Guidance Document.

FLUE PIPES AND BRICK AND BLOCKWORK CHIMNEYS

4.7 The provision for flue pipes and brick and blockwork chimneys will depend on the temperature of the flue gases under the worst operating conditions. If this temperature:

(a) is likely to exceed 260°C, then the provisions of paragraphs 2.7-2.9 and 2.11-2.15 of Section 2 of this Technical Guidance Document should be applied where relevant; or

(b) is unlikely to exceed 260°C, the provisions of paragraphs 3.10-3.16 of Section 3 should be applied where relevant.

FACTORY-MADE INSULATED CHIMNEYS

4.8 Factory-made insulated chimneys should be:

(a) constructed and tested to meet the relevant recommendations given in BS 4543 Part 1: 1990 Methods of test and Part 3: 1990 Specification for chimneys with stainless steel flue lining for oil fired appliances, and

(b) installed so as to meet the requirements of BS 6461: Part 2: 1984 Code of practice for factory-made insulated chimneys for internal applications.

4.9 An insulated metal chimney should not:

(a) pass through a part of the building forming a separate compartment, unless it is cased in non-combustible material giving at least half the fire resistance of the compartment wall or floor (see Technical Guidance Document B, Fire for more information), or

(b) be placed with its outer wall nearer to combustible material than a distance x, or

(c) pass through a cupboard, storage space or roof space, unless it is cased in a non-combustible material at a distance of at least x from the outer wall of the chimney.

For (b) and (c) above the distance x is to be found by test in accordance with BS 4543: Part 1 : 1990 Methods of test.

HEARTHS

4.10 If the surface temperature of the floor below the appliance is:

(a) likely to exceed 100°C, then a constructional hearth should be provided as described in paragraphs 2.19 and 2.20 of Section 2 of this Technical Guidance Document, or

(b) unlikely to exceed 100°C, the appliance may stand on a rigid, imperforate sheet of non-combustible material without a constructional hearth.

SHIELDING OF APPLIANCES

4.11 If the surface temperature of the sides and back of an appliance is likely to exceed 100°C, the appliance should be shielded as described in paragraph 3.21 of Section 3 of this Technical Guidance Document.

Standards and other references

ICP 3: 1989 Domestic Installations for Manufactured and Natural Gas (Edition 2). and Amdt. No. 1 : 1990.

ICP 4: Non Domestic Installations for Manufactured and Natural Gas (Edition 2).

I.S. 51: 1983 Clay Flue Linings and Flue Terminals.

I.S. 106: 1970 Clayware Sewer and Drain Pipes.

I.S. 258: Parts 1 and 2: 1984 Domestic Solid Fuel Cookers with Integral Boilers, Part 1: Safety Requirements; Part 2: General Requirements Amdt. No. 1 : 1986.

I.S. 280: Parts 1 and 2 : 1986 Combined Appliances Gas Fire/Back Boiler Part 1, Essential safety requirements. Part 2, Design, construction and performance, and Amdt. No. 1 : 1989.

I.S. 281: Parts 1 and 2 : 1986 Gas Fired Central Heating Boilers and Circulators, Part 1, Essential Safety Requirements. Part 2, Design, Construction and Performance, and Amdt. No. 1 : 1989.

I.S. 282: Parts 1 and 2 : 1987 Gas Fires, Part 1, Essential Safety Requirements, Part 2, Design, Construction and Performance, and Amdt. No. 1 1989.

I.S. 288: 1987 Thermal Performance Requirements for Water Heaters and Space Heaters.

I.S 285: Parts 1 and 2 : 1987 Decorative Gas Log and Other Fuel Effect Appliances for 2nd and 3rd family gases Part 1, Essential safety requirements, Part 2, design, construction and performance, and Amdt. No. 1 : 1989.

I.S. 327: 1990 Domestic Installations using Liquified Petroleum Gases (Edition 2).

I.S. 644 : 1983 (EN 30 : 1979) Domestic Cooking Appliances Burning Gas.

I.S. 645 : 1983 (EN 26 : 1975) Gas Burning Appliances for Instantaneous Production of Hot Water for Domestic Use.

I.S. 803: Parts 1 and 2 : 1987 Gas-Fired Fanned-Circulation Ducted-Air Heaters, and Amdt. No. 1 : 1989.

I.S. 805: Parts 1 and 2 : 1987 Gas Fired Storage Water Heaters, and Amdt. No. 1 : 1989.

BS 41: 1973 (1981) Specification for cast iron spigot and socket flue or smoke pipes and fittings.

BS 476: Fire tests on building materials and structures, Part 4: 1970 (1984). Non-combustibility tests for materials, AMD 2483 and AMD 4390.

BS 567: 1973 (1989): Specification for asbestos-cement flue pipes and fittings, light quality and AMD 5963.

BS 715: 1989: Specification for metal flue pipes, fittings, terminals and accessories for gas-fired appliances with a rated input not exceeding 60 kW, and AMD 6615.

BS 835: 1973 (1989) Specification for asbestos-cement flue pipes and fittings, heavy quality. and AMD 5964.

BS 1289: Flue blocks and masonry terminals for gas appliances, Part 1: 1986 Specification for precast concrete flue blocks and terminals; Part 2: 1989 Specification for clay flue blocks and terminals.

BS 1449: Steel plate, sheet and strip, Part 2: 1983 Specification for stainless and heat resisting steel plate, sheet and strip, AMD 4807.

BS 4543: Factory-made insulated chimneys, Part 1: 1990 Methods of test Part 2: 1990 Specification for chimneys with stainless steel flue linings for use with solid fuel fired appliances; Part 3: 1990 Specification for chimneys with stainless steel flue lining for oil fired appliances.

BS 5258: Safety of domestic gas appliances, Part 1: 1986. Specification for central heating boilers and circulators; Part 4: 1987 Specification for fanned-circulation ducted-air heaters; Part 5: 1989 Specification for Gas fires; Part 7: 1977 Storage water heaters; Part 8: 1980 Combined appliances: gas fire/back boiler; Part 12: 1990 Specification for decorative fuel effect gas appliances (2nd and 3rd family gases) Part 13: 1986 Specification for convector heaters.

BS 5386: Specification for gas burning appliances, Part 1: 1976 Gas burning appliances for instantaneous production of hot water for domestic use, AMD 2990 and AMD 5832; Part 2: 1981 (1986) Mini water heaters (2nd and 3rd family gases); Part 3: 1980 Domestic cooking appliances burning gas, AMD 4162, AMD 4405, AMD 4878 and AMD 5220; Part 4: 1983 Built-in domestic cooking appliances.

BS 5410: Code of practice for oil firing: Part 1: 1977 Installations up to 44 kW output capacity for space heating and hot water supply purposes, AMD 3637.

BS 5546: 1990 Specification for installation of gas hot water supplies for domestic purposes (1st, 2nd and 3rd family gases) and AMD 6656.

BS 5864: 1989: Specification for installation in domestic premises of gas-fired-ducted air heaters of rated input not exceeding 60 kW;

BS 5871: 1980 (1983) Code of practice for installation of gas fires, convectors and fire/back boilers (2nd family gases), AMD 3973 and AMD 4638.

BS 6172: 1990 Specification for installation of domestic gas cooking appliances (1st, 2nd and 3rd family gases).

BS 6173: 1990 Specification for installation of gas-fired catering appliances for use in all types of catering establishments (1st, 2nd and 3rd family gases).

BS 6461: Installation of chimneys and flues for domestic appliances burning solid fuel (including wood and peat), Part 2: 1984 Code of practice for factory-made insulated chimneys for internal applications.

BS 6714: 1986 Specification for installation of decorative log and other fuel effect appliances (1st, 2nd and 3rd family gases).

BS 6798: 1987 Specification for installation of gas-fired hot water boilers of rated input not exceeding 60 kW.

BS 6999: 1989 Specification for vitreous enamelled low-carbon-steel flue pipes, other components and accessories for solid fuel burning appliances with a maximum rated output of 45 kW.

BS 7435 Fibre cement flue pipes, fittings and terminals Part 1: 1991 Specification for light quality fibre cement flue pipes, fittings and terminals.

BS 8303: 1986 Code of practice for installation of domestic heating and cooking appliances burning solid mineral fuels, AMD 5723.