

1.23 The appliance manufacturer's *installation instructions* may describe a suitable spillage test for gas appliances but the procedure in BS 5440-1:2008 can be used. For oil-fired appliances the effects of fans can be checked and, where spillage or flue draught interference is identified, it may be necessary to add additional ventilation to the room or space. A flue draught interference test for oil-fired appliances is described in OFTEC Technical Books 2, 4 and 5.

Provision of flues

1.24 Appliances other than *flueless appliances* should incorporate or be connected to suitable *flues* which discharge to the outside air.

1.25 This Approved Document provides guidance on how to meet the requirements in terms of constructing a *flue* or *chimney*, where each *flue* serves one appliance only. *Flues* designed to serve more than one appliance can meet the requirements by following the guidance in BS 5410-1:1997 for oil- and BS 5440-1:2008 for gas-fired systems. However, each solid fuel appliance should have its own *flue*.

Condensates in flues

1.26 *Chimneys* and *flues* should provide satisfactory control of water condensation. Ways of providing satisfactory control include:

- a. for *chimneys* that do not serve condensing appliances, by insulating *flues* so that *flue* gases do not condense in normal operation
- b. for *chimneys* that do serve condensing appliances:
 - i. by using lining components that are impervious to condensates and suitably resistant to corrosion (BS EN 1443:2003 'W' designation) and by making appropriate provisions for draining, avoiding ledges, crevices, etc
 - ii. making provisions for the disposal of condensate from condensing appliances.

Construction of masonry chimneys

1.27 New masonry *chimneys* should be constructed with *flue liners* and masonry suitable for the intended application. Ways of meeting the requirement would be to use bricks, medium-weight concrete blocks or stone (with wall thicknesses as given in Section 2, 3 or 4 according to the intended fuel) with suitable mortar joints for the masonry and suitably supported and caulked liners. Liners suitable for solid fuel appliances (and generally suitable for other fuels) could be:

- a. liners whose performance is at least equal to that corresponding to the designation T400 N2 D 3 G, as described in BS EN 1443:2003, such as:

- i. clay *flue liners* with rebates or sockets for jointing meeting the requirements for Class A1 N2 or Class A1 N1 as described in BS EN 1457:2009; or
- ii. concrete *flue liners* meeting the requirements for the classification Type A1, Type A2, Type B1 or Type B2 as described in BS EN 1857:2003; or
- iii. other products that meet the criteria in a).

1.28 Liners should be installed in accordance with their manufacturer's instructions. Appropriate components should be selected to form the *flue* without cutting and to keep joints to a minimum. Bends and offsets should be formed only with matching factory-made components. Liners need to be placed with the sockets or rebate ends uppermost to contain moisture and other condensates in the *flue*. Joints should be sealed with fire cement, refractory mortar or installed in accordance with their manufacturer's instructions. Spaces between the lining and the surrounding masonry should not be filled with ordinary mortar. In the absence of liner manufacturer's instructions, the space could be filled with a weak insulating concrete such as mixtures of:

- a. one part ordinary Portland cement to 20 parts suitable lightweight expanded clay aggregate, minimally wetted; or
- b. one part ordinary Portland cement to 6 parts Vermiculite; or
- c. one part ordinary Portland cement to 10 parts Perlite.

Construction of flueblock chimneys

1.29 *Flueblock chimneys* should be constructed of factory-made components suitable for the intended application installed in accordance with the manufacturer's instructions. Ways of meeting the requirement for solid fuel appliances (and generally suitable for other fuels) include using:

- a. flueblocks whose performance is at least equal to that corresponding to the designation T400 N2 D 3 G, as described in BS EN 1443:2003, such as:
 - i. clay flueblocks at least meeting the requirements for Class FB1 N2 as described in BS EN 1806:2006
 - ii. other products that meet the criteria in a).
- b. blocks suitable for the purpose lined in accordance with Paragraph 1.27.

1.30 Joints should be sealed in accordance with the flueblock manufacturer's instructions. Bends and offsets should be formed only with matching factory-made components.