or Durban. Similarly, "moderate exposure" is equivalent to the conditions prevailing in the Gauteng area.

Information regarding the performance of the various materials used as damp-proof courses is given in SABS 0249.

8.1.7 Flashings to external walls

8.1.7.1 General

Flashings should be impervious to water, should not be subject to corrosion in their intended position, and should have sufficient stiffness to resist movement in the flashing which could be detrimental. In addition, the flashing should retain these qualities under the conditions of exposure to which it will be subjected.

Where a flashing has to be fixed into a raked-out joint and cement mortar is to be used for pointing, the mortar should only be slightly damp and should be tamped firmly into place with a blunt-nosed tool.

Plastics or mortars of any mix pressed into place with a trowel are unsatisfactory as regards holding power and waterproofness. As an alternative to mortar, a joint-sealing compound may be used.

8.1.7.2 Materials

This subclause details materials and their common application to different parts of a building.

Flashings are usually of metal and are made of lead, copper, zinc, aluminium or galvanized steel (usually referred to as galvanized iron). It should be noted that galvanized steel flashings might have a limited life, especially in a marine atmosphere. Because of the possibility of galvanic corrosion, care should be taken when using dissimilar metals in close proximity to one another. Table 2 lists the recommended thicknesses for metal flashings, and also refers to an appropriate specification, compliance with which will ensure a satisfactory product. Lead and aluminium might corrode when tucked into cement or lime mortar brickwork, and under this condition of use, should be given a protective coating of bituminous compound.

Other materials used as flashings include fibre-cement, mastic asphalt and bitumen-based sheeting materials. Mastic asphalt that complies with SABS 297, or bituminous felt type 60 of SABS 92, will be suitable.

Table 2 — Materials used for flashings

1	2	3
Material	**Conforming to specification**	**Recommended thickness of material** mm
Lead[1)]	BS EN 12588	1,80 – 2,50
Copper[1)]	BS EN 1172; should be hot-rolled in dead soft temper	0,45 – 0,70 0,80 for non-industrial areas 1,60 for industrial areas
Aluminium	EN 485-1, 2, 3, 4, en 515, en 573-1, 2, 3, 4; should be of at least 99 % purity	0,56 – 0,90
Galvanized steel	SABS 934; for galvanized class C coatings only	0,70
Non-woven fabric reinforced system	–	1,80 – 3,00
[1)] Rarely used in South Africa, except in the restoration of historic buildings.		

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8.1.7.3 Types of flashing to joints

Where relative movement could occur between adjacent surfaces situated in different planes, the joint between the two surfaces is usually rendered waterproof with a cover-and-apron flashing, as illustrated in figures 33, 34 and 36.

As the coefficients of thermal expansion in most flashings are moderate to high, expansion joints should be carefully considered and fabricated.

Flashings are mainly used in roofing. A direct waterproofing joint between the roof cover and abutting features, such as chimney stacks, vent pipes, parapets, etc., cannot be made without a flashing (see figure 38).

8.2 Cast-in-situ concrete walls

8.2.1 Concrete walls made of normal density concrete

Reference to 8.8 indicates that a concrete wall of thickness 150 mm, externally plastered or otherwise suitably finished, will have adequate rain resistance in any part in South Africa. Walls of a lesser thickness might also be satisfactory, provided that the wall is uniformly dense and free from cracks.

For guidance on the production of dense, waterproof concrete, reference should be made to 5.7, although substantially lower cement contents and higher water-cement ratios can be used, because the conditions of service for walls above the ground are not as severe as those for walls below ground level. Structural design should be carried out in accordance with SABS 0100-1.

8.2.2 Cast-in-situ concrete external walls, made of lightweight aggregate

In the case of lightweight aggregates, the danger of shrinkage during hardening is considerably higher and more variable and moisture movement is much more marked, and it is therefore more difficult to render construction joints watertight. Construction with lightweight aggregates therefore presents the same problems as in the case of normal aggregates but in rather more acute form, and similar precautions are required.