

3.12.5 Application

This Part applies to—

- (a) a Class 1 building; and
- (b) a Class 10a building; and
- (c) a Class 10b [swimming pool](#).

3.12.5.3 Heating and cooling ductwork

- (a) Heating and cooling ductwork and fittings must—
 - (i) achieve the material [R-Value](#) in [Table 3.12.5.2](#); and
 - (ii) be sealed against air loss—
 - (A) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254 for a Class C seal; or
 - (B) for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.
- (b) Duct insulation must—
 - (i) abut adjoining duct insulation to form a continuous barrier; and
 - (ii) be installed so that it maintains its position and thickness, other than at flanges and supports; and
 - (iii) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space—
 - (A) be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damaged and
 - (B) have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.
- (c) The requirements of [\(a\)](#) do not apply to heating and cooling ductwork and fittings located within the insulated building [envelope](#) including a service riser within the [conditioned space](#), internal floors between storeys and the like.

Explanatory information:

Ductwork within a fully insulated building may still benefit from insulation particularly when the system is only operating for short periods.

In some [climate zones](#) condensation may create problems with uninsulated ductwork and insulation should still be considered.

Table 3.12.5.2 HEATING AND COOLING DUCTWORK AND FITTINGS—MINIMUM MATERIAL R-VALUE

Ductwork element	Minimum material R-Value for ductwork and fittings in each climate zone				
	Heating-only system or cooling-only system including an evaporative cooling system		Combined heating and refrigerated cooling system		
	1, 2, 3, 4, 5, 6 and 7	8	1, 3, 4, 6 and 7	2 and 5	8
Ductwork	1.0	1.5	1.5 (see note)	1.0	1.5
Fittings	0.4				

Note:

The minimum material [R-Value required](#) for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in [climate zones](#) 1, 3, 4, 6, and 7 if the ducts are—

(a) under a suspended floor with an enclosed perimeter; or

(b) in a roof space that has insulation of not less than R0.5 directly beneath the roofing.

Explanatory information:

- For information on an enclosed perimeter, refer to the explanatory information following [Table 3.12.1.4](#).
- Insulation for refrigerated cooling ductwork should have a vapour barrier to prevent possible damage by condensation.
- The insulation levels in the following table are typical examples of materials that can be used to insulate ductwork and fittings and the [R-Values](#) they contribute. Other methods are available for meeting the minimum material [R-Value required](#) by [Table 3.12.5.2](#).

Insulation	R-Value
Fittings	
11 mm polyurethane	0.4
Flexible ductwork	
45 mm glasswool (11 kg/m ³)	1.0
70 mm polyester (6.4 kg/m ³)	1.0
63 mm glasswool (11 kg/m ³)	1.5
90 mm polyester (8.9 kg/m ³)	1.5
85 mm glasswool (11 kg/m ³)	2.0
Sheetmetal ductwork — external insulation	
38 mm glasswool (22 kg/m ³)	1.0
50 mm polyester (20 kg/m ³)	1.1
50 mm glasswool (22 kg/m ³)	1.5
75 mm polyester (20 kg/m ³)	1.7
Sheetmetal ductwork — internal insulation	
38 mm glasswool (32 kg/m ³)	1.0
50 mm polyester (32 kg/m ³)	1.3
50 mm glasswool (32 kg/m ³)	1.5

- Any flexible ductwork used for the transfer of products, initiating from a heat source that contains a flame, must also have the fire hazard properties [required](#) by [3.7.1.9](#).