

BCA 2010 Specification 3.12.5 Ductwork Insulation and Sealing Applies to Class 1 & 10a buildings

3.12.5 Application

This Part applies to—

- (a) a Class 1 building; and
- (b) a Class 10a building.

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 damp; 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 <i>R-Value</i> for ductwork and fittings in each <i>climate zone</i>				
	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 <i>R-Value required</i> for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in <i>climate zones</i> 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.				

ADMA note: "material R-Value" means the insulation blanket R-Value - a R1.0 duct requires R1.0 insulation blanket. This has been changed from the 2009 BCA which required a "Total R-Value"

Explanatory information:

1. For information on an enclosed perimeter, refer to the explanatory information following [Table 3.12.1.4](#).
2. Insulation for refrigerated cooling ductwork should have a vapour barrier to prevent possible damage by condensation.
3. 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 *Total R-Values required* by [Table 3.12.5.2](#).

Insulation	<u><i>R-Value</i></u>
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

4. 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](#).