BCA 2009 Specification J5.2
Ductwork Insulation and Sealing
Applies to Class 2 to 9 buildings

1. Scope

This Specification contains the requirements for the sealing and the insulating of supply and return ductwork used in a system that heats or cools a building.

2. Ductwork sealing

(a) Heating or cooling ductwork and fittings must be sealed against air loss—

(i) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with the duct sealing requirements of AS 4254 for the static pressure in the system; or

(ii) for flexible ductwork at an operating static pressure of less than 500 Pa, with a draw band in conjunction with a sealant or adhesive tape.

(b) The requirements of (a) do not apply to ductwork and fittings located within the only or last room that is served by the system.

3. Ductwork insulation

(a) Ductwork and fittings for heating or cooling must be thermally insulated with insulation complying with AS/NZS 4859.1 to—

(i) achieve the *Total R-Value* specified in Tables 3a and 3b; or

(ii) for flexible ductwork of no more than 3 m in length from an outlet or the like—

(A) comply with (i); or

(B) achieve a minimum *Total R-Value* of 1.0.

(b) Insulation on ductwork conveying cold air must be protected by—

(i) a vapour barrier on the outside of the insulation; and

(ii) where the vapour barrier is a membrane, overlapping adjoining sheets of the membrane by 50 mm and bonding or taping the sheets together.

(c) Ductwork insulation must—

(i) be protected against the effects of weather and sunlight; and

(ii) abut adjoining insulation to form a continuous barrier; and

(iii) be installed so that it maintains its position and thickness, other than at flanges and supports.

(d) The requirements of (a) do not apply to—

(i) heating and cooling ductwork and fittings located within the only or last room that is served by the system; and

(ii) air registers, diffusers, outlets, grilles and flexible fan connections.

Table 3a DUCTWORK AND FITTINGS—MINIMUM TOTAL R-VALUE (for systems of no more than 65 kW_r and 65 $kW_{heating}$ capacity)

Ductwork element	**Minimum *Total R-Value* for ductwork and fittings in each *climate zone***						
	Evaporative cooling system	**Heating-only system or refrigerated cooling-only system**			**Combined heating and refrigerated cooling system**		
	All *climate zones*	**1, 3, 4, 6 and 7**	**2 and 5**	**8**	**1, 3, 4, 6 and 7**	**2 and 5**	**8**
Ductwork	0.6	1.0	1.0	1.5	1.5 (see note)	1.0	1.5
Fittings	0.4						

Note:
The minimum *Total R-Value* *required* may be reduced by R0.5 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.

Table 3b DUCTWORK AND FITTINGS - MINIMUM TOTAL R-VALUE (For systems greater than 65 kW_r and 65 $kW_{heating}$ capacity)

Location of ductwork and fittings	**Minimum *Total R-Value* for ductwork and fittings in each *climate zone***				
	Evaporative cooling system	**Heating system or refrigerated cooling system**			
	All *climate zones*	**1, 3 and 4**	**2 and 5**	**6 and 7**	**8**
Within a *conditioned space*	Nil	1.0	1.0	1.3	1.5
All other locations	0.9	1.8 (see note)	1.5	1.8	2.0

Note:

The minimum *Total R-Value* *required* may be reduced by R0.5 for heating system or refrigerated cooling system ductwork and fittings in all other locations in *climate zones* 1, 3 and 4 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: "Total R-Value" means the insulation blanket R-Value with an allowance of R0.15 for air films - a R1.0 duct requires R0.85 insulation blanket, R1.5 requires R1.35 blanket etc.