



Thermal resistance of CUPOLEX dome slab

Calculation of total thermal resistance (NZS4214:1977)

$$R_T = R_{Si} + R_1 + R_L + R_G \quad (5.2.1)$$

with: $R_{Si} = 0.09$ (5.3.1)

$$R_1 = 0.04/1.6 = 0.025 \quad (5.4.1)$$

$$R_L = (f/R_B + (1-f)/R_R)^{-1} \quad (5.6.1)$$

and $f = 0.0139 \times 0.56^2 = 0.005$

$$R_B = 0.26/1.6 = 0.163 \quad (5.4.1)$$

$$R_R = 1.20 \text{ (reflective surface)} \quad (5.5.1.2)$$

$$R_G = 1.1 \quad (5.7.1)$$

$$R_T = 2.38 \text{ [m}^2\text{K/W]}$$

Thermal resistance of CUPOLEX dome slab with floor heating

$$R_T = R_{Si} + R_L + R_G \quad (5.2.1)$$

with: $R_{Si} = 0.09$ (5.3.1)

$$R_L = (f/R_B + (1-f)/R_R)^{-1} \quad (5.6.1)$$

and $f = 0.0139 \times 0.56^2 = 0.005$

$$R_B = 0.26/1.6 = 0.163 \quad (5.4.1)$$

$$R_R = 1.20 \text{ (reflective surface)} \quad (5.5.1.2)$$

$$R_G = 1.1 \quad (5.7.1)$$

$$R_T = 2.35 \text{ [m}^2\text{K/W]}$$

Thermal resistance of 100mm slab on grade

$$R_T = R_{Si} + R_1 + R_G \quad (5.2.1)$$

with: $R_{Si} = 0.09$ (5.3.1)

$$R_1 = 0.1/1.6 = 0.063 \quad (5.4.1)$$

$$R_G = 1.1 \quad (5.7.1)$$

$$R_T = 1.25 \text{ [m}^2\text{K/W]}$$

Summary:

300 thick CUPOLEX dome slab

100mm slab on grade

$$R_T = 2.35 \text{ [m}^2\text{K/W]}$$

$$R_T = 1.25 \text{ [m}^2\text{K/W]} \quad \text{OK}$$