

## Robust Walling Thermal Calculation Chart

Method Comparison Table							
Wall Thickness	K-Value Conductivity W/m.k	R-Value Resistance Km <sup>2</sup> /W	U-Value Transmittance W/m <sup>2</sup> /K	Density Kg/m <sub>3</sub>	Weight per m <sup>2</sup> walling	Cost per m <sup>2</sup> walling	
Brickwork 220x110x75	0.220	0.840	0.262	3.82	2100	462	R234.70
Brickwork 220x110x75	0.110	0.840	0.131	7.64	2100	231	R119.23
Brickwork 220x110x75 Plastered	0.252	1.198	0.302	3.31	2000	504	R317.62
Brickwork 220x110x75 Plastered	0.142	1.204	0.171	5.85	2000	284	R202.15
Robust STD Wall SANS	0.115	0.386	0.298	3.35	1796	207	R274.67
Robust STD for SANS XA	0.164	0.468	0.350	2.854	1796	298	R290.97
Robust + Perlite for SANS XA	0.115	0.280	0.411	2.432	1684	194	R300.43
Robust + Perlite SCCPA SANS XA	0.145	0.325	0.447	2.240	1654	240	R350.04

Robust Standard Wall Thermal Values							
Robust Standard wall Thermal Calculations	Standard Wall Thickness m	K-Value Conductivity W/m.K	R-Value Resistance Km <sup>2</sup> /W	U-Value Transmittance W/m <sup>2</sup> /K	Density Kg/m <sup>3</sup>	Weight/m <sup>2</sup> Walling	Cost per m <sup>2</sup>
Mortar	0.083	0.940	0.088	11.33	1900	157.7	R136.97
Plaster	0.032	0.800	0.040	25.00	1300	41.6	82.92
Rsi			0.130				
Rse			0.040				
Core & Reinforcing					52	6	54.78
	<b>0.115</b>	<b>0.386</b>	<b>0.298</b>	<b>3.35</b>	<b>1796.000</b>	<b>205.300</b>	<b>R274.67</b>

Robust Wall meeting SANS XA Thermal Values							
Robust Standard wall Thermal Calculations	Standard Wall Thickness m	K-Value Conductivity W/m.K	R-Value Resistance Km <sup>2</sup> /W	U-Value Transmittance W/m <sup>2</sup> /K	Density Kg/m <sup>3</sup>	Weight/m <sup>2</sup> Walling	Cost per m <sup>2</sup>
Mortar	0.132	0.940	0.140	7.12	1900	250.8	R153.27
Plaster	0.032	0.800	0.040	25.00	1300	41.6	82.92
Rsi			0.130				
Rse			0.040				
Core & Reinforcing					37	6	54.78
	<b>0.164</b>	<b>0.468</b>	<b>0.350</b>	<b>2.85</b>	<b>1796.000</b>	<b>298.400</b>	<b>R290.97</b>

Robust Wall with added "Perlite" Thermal Values							
Robust Insulated wall Thermal Calculations <i>Perlite added</i>	Standard Wall Thickness m	K-Value Conductivity W/m.K	R-Value Resistance Km <sup>2</sup> /W	U-Value Transmittance W/m <sup>2</sup> /K	Density Kg/m <sup>3</sup>	Weight/m <sup>2</sup> Walling	Cost per m <sup>2</sup>
Mortar	0.085	0.940	0.090	11.06	1900	161.5	R136.97
Plaster	0.014	0.800	0.018	57.14	1300	18.2	41.46
Rsi			0.130				
Rse			0.040				
Core & Reinforcing					52	6	54.78
Perlite Plaster	0.016	0.120	0.133	7.50	500	8	67.22
	<b>0.115</b>	<b>0.280</b>	<b>0.411</b>	<b>2.43</b>	<b>1684</b>	<b>193.7</b>	<b>R300.43</b>

Robust Wall in High Condensation Areas (SCCPA) Thermal Values							
Robust Insulated wall Thermal Calculations <i>Perlite added</i>	Standard Wall Thickness m	K-Value Conductivity W/m.K	R-Value Resistance Km <sup>2</sup> /W	U-Value Transmittance W/m <sup>2</sup> /K	Density Kg/m <sup>3</sup>	Weight/m <sup>2</sup> Walling	Cost per m <sup>2</sup>
Mortar	0.097	0.940	0.103	9.69	1900	184.3	R145.12
Plaster	0.032	0.800	0.040	25.00	1300	41.6	82.92
Rsi			0.130				
Rse			0.040				
Core & Reinforcing					41	6	54.78
Perlite Plaster	0.016	0.120	0.133	7.50	500	8	67.22
	<b>0.145</b>	<b>0.325</b>	<b>0.447</b>	<b>2.24</b>	<b>1654</b>	<b>239.9</b>	<b>R350.04</b>

Insulation's effectiveness in restricting the flow of heat is measured by its R Value. The higher the material's R value, the greater the material's heat insulation effectiveness and slower the heat flow through it.

### SANS 10400-XA Energy Efficiency in New Buildings

The energy efficiency legislation for new buildings SANS 10400-XA has been published by the regulator (NRCS). All new buildings will have to comply with the performance parameters, which means that insulation will have to be installed to achieve the stipulated R-values.

#### Part K: Walls

##### External Walls SANS 10400-XA

Light weight (Non brick/Non concrete) walls must achieve a minimum R-value:

- of 2.2 for climatic zones 1&6
- of 1.9 for climatic zones 2,3,4&5

Masonry walls (Brick/Concrete) must achieve a minimum R-value of 0.35 for climatic zones 1 to 6