RAIC Centre for Architecture at Athabasca University

RSI Thermal Resistance Values

Adapted from:
http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/energy-star/14176

Like the tables you will create, these values are arranged from inside to outside.

Thermal resistance (RSI)			
Categories	**Per mm**	**As listed (m2•°C/W)**	
Materials	**(m2•°C/W/mm)**		**Notes**
Interior Air Films			
Interior Air Film Ceiling		0.11	Heat flow up
Interior Air Film Floor		0.16	Heat flow down
Interior Air Film Wall		0.12	Heat flow horizontal
Interior Finishes			
Gypsum board	0.0063		
Vapour Barrier			
Vapour Barrier		0	Vapour Barriers are considered to have no thickness or thermal resistance
Insulation Materials			
Blanket and Batt Insulation			
Rock or glass fibre R-12	-	2.11	89/92 mm
Rock or glass fibre R-14	-	2.46	89/92 mm
Rock or glass fibre R-19	-	3.34	R-20 batt compressed 140 mm
Rock or glass fibre R-20	-	3.52	152 mm
Rock or glass fibre R-22	-	3.87	140/152 mm
Rock or glass fibre R-22.5	-	3.96	152 mm
Rock or glass fibre R-24	-	4.23	140/152 mm
Rock or glass fibre R-28	-	4.93	178.216 mm
Rock or glass fibre R-31	-	5.46	241 mm
Rock or glass fibre R-35	-	6.16	267 mm
Rock or glass fibre R-40	-	7.04	279/300 mm
Board and Slab Insulation			
Permeably faced PIR	0.03818	-	PIR - Polyisocyanurate
Impermeably faced PIR	0.03937	-	
Permeably faced PUR	0.03818	-	PUR - Polyurethane
Impermeably faced PUR	0.03937	-	
EPS Type 1	0.026	-	EPS - Expanded Polystyrene Insulation Board
EPS Type 2	0.028	-	
EPS Type 3	0.03	-	
XPS Type 2	0.035	-	XPS - Extruded Polystyrene Insulation
XPS Type 3	0.035	-	
XPS Type 4	0.035	-	XPS - Extruded Polystyrene Insulation
Rock fibre semi-rigid board	0.0277	-	
Glass fibre semi-rigid board	0.0298	-	
Spray Applied			
Sprayed polyurethane foam, medium density closed cell	0.036	-	
Sprayed polyurethane foam, light density open cell	0.026	-	
Sprayed Cellulosic fibre (settled thickness)	0.024	-	Settled thickness
Spray Applied (Cont.)			
Spray-applied glass-fibre insulation, 16 kg/m³	0.025	-	
Spray-applied glass-fibre insulation, 28.8 kg/m³	0.029	-	
Loose Fill Insulation			
Cellulose	0.025	-	
Glass fibre loose fill insulation for attics	0.01875	-	112 to 565 mm
Glass fibre loose fill insulation for walls	0.02865	-	
Sheet Materials			
Insulating fibreboard Type 2	0.016	-	
Plywood (generic softwood)	0.0087	-	
Plywood, Douglas–fir	0.0111	-	
OSB	0.0098	-	OSB - Oriented Strand Board
Sheathing Membranes			
Sheathing Membrane Breather Type		0	Most Sheathing Membranes are considered to have no thickness or thermal resistance
Structural Materials			
Concrete	0.0004	-	Sand and gravel or stone aggregate (2400 kg/m³)
Vented Roof Air Space			
Cathedral, flat and attic	-	0.03	
Air Cavities			
Ceiling Air Cavity 13-20 mm	-	0.15	Heat flow up
Ceiling Air Cavity 21-90 mm	-	0.16	
Floor Air Cavity 13-19 mm	-	0.16	Heat flow down
Floor Air Cavity 20-39 mm	-	0.18	
Floor Air Cavity 40-89 mm	-	0.2	
Floor Air Cavity 90 mm	-	0.22	
Wall Air Cavity 13-19 mm	-	0.16	Heat flow horizontal
Wall Air Cavity 20-90 mm	-	0.18	
Cladding Materials			
Brick			
Clay Brick	0.0007	-	Fired clay (2400 kg/m2)
Siding			
Fibre-cement	0.003	-	
Hardboard	-	0.12	11 mm
Plywood	-	0.1	9.5 mm lapped
Hollow-backed Vinyl	-	0.11	
Insulating Board-backed Vinyl	-	0.32	9.5 mm nominal
Wood	-	0.14	13 mm
Stone			
Quartzitic	0.0003	-	2240 kg/m³
Sandstone	0.0003	-	2240 kg/m³
Calcitic	0.0004	-	2240 kg/m³
Dolomitic	0.0004		2240 kg/m³
Limestone	0.0004		2240 kg/m³
Marble	0.0004		2240 kg/m³
Granite	0.0004		2240 kg/m³
Coatings			
Stucco	0.0009	-	
Exterior Air Film			
Exterior Air Film	-	0.03	Roofs and walls wind 6.7 m/s (winter)