

Embodied Energy of Common Materials (Australia)

MATERIAL	PER EMBODIED ENERGY MJ/KG
Kiln dried sawn softwood	3.4
Kiln dried sawn hardwood	2.0
Air dried sawn hardwood	0.5
Hardboard	24.2
Particleboard	8.0
MDF	11.3
Plywood	10.4
Glue-laminated timber	11.0
Laminated veneer lumber	11.0
Plastics - general	90
PVC	80.0
Synthetic rubber	110.0
Acrylic paint	61.5
Stabilised earth	0.7
Imported dimension granite	13.9
Local dimension granite	5.9
Gypsum plaster	2.9
Plasterboard	4.4
Fibre cement	4.8*
Cement	5.6
Insitu Concrete	1.9
Precast steam-cured concrete	2.0
Precast tilt-up concrete	1.9
Clay bricks	2.5
Concrete blocks	1.5
AAC	3.6
Glass	12.7
Aluminium	170
Copper	100
Galvanised steel	38

Source: Lawson 1996; * fibre cement figure updated from earlier version and endorsed by Dr. Lawson

1 MJ/KG = 7.9kwh/lb

1kwh = 1.32 lbs CO2 released (based on US electrical generation fuel mix)

Embodied Energy of Assemblies (Australia)

ASSEMBLY	PER EMBODIED ENERGY MJ/M ²
WALLS	
Timber frame, timber weatherboard, plasterboard lining	188
Timber frame, clay brick veneer, plasterboard lining	561
Timber frame, aluminium weatherboard, plasterboard lining	403
Steel frame, clay brick veneer, plasterboard lining	604
Double clay brick, plasterboard lined	906
Cement stabilised rammed earth	376
FLOORS	
Elevated timber floor	293
110 mm concrete slab on ground	645
200 mm precast concrete T beam/infill	644
ROOFS	
Timber frame, concrete tile, plasterboard ceiling	251
Timber frame, terracotta tile, plasterboard ceiling	271
Timber frame, steel sheet, plasterboard ceiling	330

Source: Lawson 1996

$$1 \text{ MJ/M}^2 = 0.32 \text{ kwh/sqft}$$

1kwh = 1.32 lbs CO₂ released (based on US electrical generation fuel mix)