Ligna Stone / Timbercrete Technical Summary

Ligna Stone / Timbercrete masonry behaves in a similar way to conventional masonry, structurally. The current BCA compliance pathway for Timbercrete products is via an Alternative Solution supported by a combination of engineering appraisals, test certificates and project engineer designed solutions for individual projects.

Relevant BCA Standard	AS3700
Density (ambient density post curing period)	Blocks: 900-1200 kg/m3 Pavers:1300-1500 kg/m3
Dimensional Category	Cobblestone Blocks: DW0 Sandstone Blocks: DW1
Compressive Strength	Double Brick / Single Leaf: <5MPa Brick Veneer: <3MPa
Lateral Modulus of Rupture	f_{ut} 0.8 MPa
Flexural Strength	f_{mt} = 0.12 MPa
Vertical Sheer Strength	f_{ms} = 0.15 MPa
Initial Rate of Absorption	0.6 kg/m2 / min
Coefficient of Expansion	Units do not expand over time like clay
Coefficient of Contraction	1.905×10^{-3} mm/m °C (in house test)
Freeze-Thaw Durability	0.09% at 25 cycles
Thermal Resistivity (m.K/W)	900 kg/m3 – 3.60 to 4.274 1000 kg/m3 – 3.185 to 3.39 1100 kg/m3 – 2.415 to 2.55
Thermal Conductivity (W/m.K)	900 kg/m3 – 0.234 to 0.2774 1000 kg/m3 – 0.2954 to 0.314 1100 kg/m3 – 0.3919 to 0.414
Thermal Mass, VHC (MJ/m3.K)	900 kg/m3 – 663 1000 kg/m3 – 850 1100 kg/m3 – 835
Toxicological and Eco Toxicity	Non-Toxic
Sound Transmission	41 (-1;-3)
Sound Absorption	Weighted Sound Absorption Coefficient: 0.20 Noise Reduction Coefficient: 0.15
Fire Resistance	FRL 240/240/240 at 190mm FRL -/60/60 at 100mm for non-load bearing
Potential to Efflorescence	Nil to very limited

DPC
To AS 2904
All Timbercrete masonry shall be constructed off a DPC on concrete or slab footing. For single skin construction it is preferred that a slab edge rebate is to be provided for the external walls. Flashing up stand on the inside face and downturned protrusion at external face is the minimum practice. Assess the likelihood of water ingress due to combination of rain or standing water together with high wind pressure when detailing the wall junction at the base. In cases where the flashing sits over a separate termite barrier, the termite barrier must be visible in order to effectively inspect for their presence.

Control Joints

It is recommended that control joints for Timbercrete masonry following the requirements of AS3700 Clause 4.8. Control joints should be at a maximum spacing of 6m and at points of potential cracking, e.g. beside openings. Articulation of masonry walls must complement the footing design and specification.

Nominal Dimensions

Style	Length (mm) (Actual)	Height (mm) (Actual)	Width (mm)	Mortar Joint (m2)
Smooth	360 (348)	175 (163)	100 / 190	12
	400 (388)	175 (163)	100 / 190	12
	600 (588)	175 (163)	100 / 190 / 290	12
Cobblestone (Indicative)	400 (385)	175 (160)	100-110 / 190-200	15
Mud Brick (Indicative)	402 (385)	142 (125)	250-260	17

Predicted Thermal Resistance for Walling Systems

Wall System (Includes Air Films, Plasterboard and Cavity Space)	Timbercrete R Value (m2.K/W @ 1138kg/m3)	Timbercrete R Value (m2.K/W @ 1050kg/m3)
100mm Block - Veneer Wall	0.64	0.73
110mm Brick - Veneer Wall	0.67	0.76
100mm Double Brick with Cavity	0.90	1.07
110mm Double Brick with Cavity	0.95	1.13
190mm Block Wall - Single Skin (Excludes plasterboard and cavity)	0.64	0.80
250mm Mud Brick Wall – Single Skin (Excludes plasterboard and cavity)	0.80	1.01
290mm Super Insulator Wall – Single Skin with 110mm EPS insert* (Excludes plasterboard and cavity)	3.49	3.64

- Uses Medium grade EPS Foamex Styroboard with W/m K @ 25° producing R2.872. Higher values can be achieved with High and Very High grade EPS.

Building With Timbercrete Manual

Refer to the Building With Timbercrete Manual for further details before commencing any construction using Ligna Stone or Timbercrete products.

Test Reports and Certifications

Refer to the Timbercrete website at www.timbercrete.com.au for access to test reports and certifications.