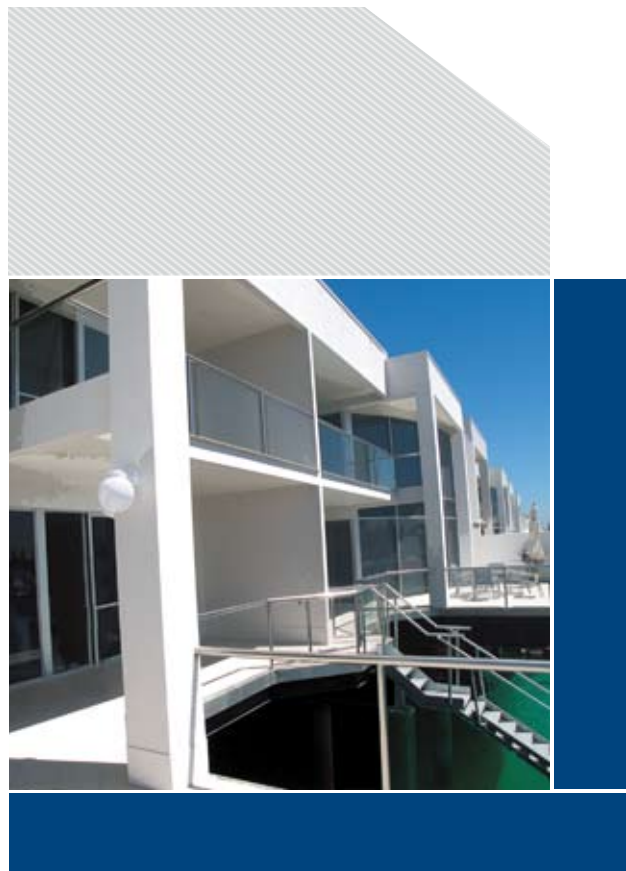


Rapidwall®

The world's most environmentally friendly, versatile and **cost effective prefabricated walling system**



- ◆ Light weight and accurate
- ◆ High quality finish
- ◆ Economical
- ◆ Load-bearing
- ◆ Quick to erect
- ◆ Environmentally positive
- ◆ Fire resistant
- ◆ Earthquake resistant
- ◆ Water and rot resistant
- ◆ Termite resistant
- ◆ Good sound attenuation
- ◆ Cyclone resistant
- ◆ Space saving
- ◆ 100% recyclable



Pre-fabricated (12m X 3m X 124mm)

Light weight (44kg/m²)

Fast

manufacturing rate of 108 m² /hr for a three table plant

installation rate (two man crew) up to 45 m² /hr

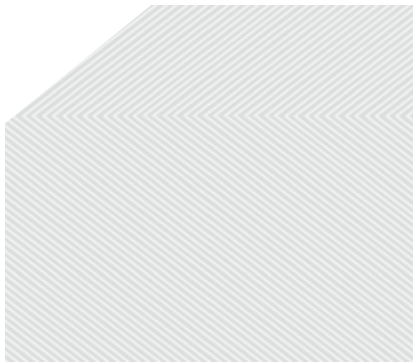
Fully engineered structural walling

Environmentally sustainable

100% recyclable

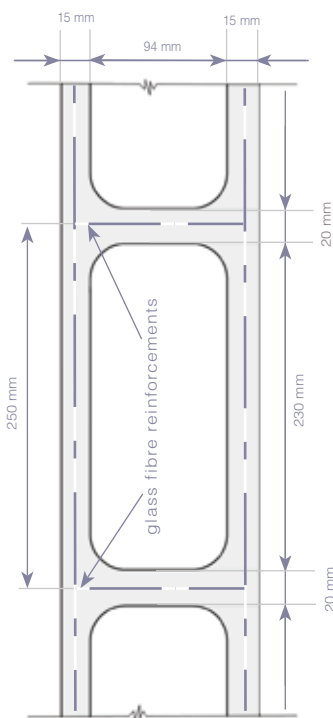
low embodied energy

manufactured from natural and/or waste raw materials



✓ CROSS SECTION DIMENSIONS

superior building material



Rapidwall® is a revolutionary, low cost, prefabricated, load bearing walling product suitable for use in high-rise, residential, commercial and industrial building construction.

Rapidwall® is manufactured in an automated moulding process, using glass-fibre reinforced, water resistant gypsum plaster. After removal from the casting table the flat, single sized, panels are oven cured. The technically advanced manufacturing process provides a durable walling product with

structural properties that make Rapidwall® panels loadbearing and well suited for use in earthquake-prone areas.

All panels are 12 metres long and 124 millimetres thick and are produced in a height of 3 metres. Construction using the precise Rapidwall® panels is very fast, low in cost and eliminates the need for brick, blocks, wall framing and wall-board. Rapidwall® can also be used as suspended floor formwork.





light weight and accurate

economical

load-bearing

A 12 m x 3 m x 120 mm reinforced concrete wall panel weighs over 10 tonnes. A similarly sized Rapidwall® panel weighs only 1.5 tonnes.

At only 44 kg per square metre, a single B-double truck can transport over 570 square metres of Rapidwall® compared to 125 square metres of 120 mm thick precast concrete hollow blockwork. Precision manufactured Rapidwall® panels provide certainty in calculations and in construction tolerances.

Rapidwall® has an installed cost considerably lower than that of an equivalent standard precast concrete wall. Rapidwall® costs less than equivalent strength masonry walling over which it also enjoys an up to 10% space saving.

Because Rapidwall® is quicker and easier to erect, projects are finished faster and development funds are tied up for shorter periods. Rapidwall® can eliminate the need for bricks, blocks, timber wall frames and plasterboard linings.

The unique cellular structure of the Rapidwall® panels enables it to be used as left-in-place formwork and site-filled with concrete to provide sufficient axial strength and lateral rigidity to support buildings up to 15 storeys. When used structurally Rapidwall® eliminates the need for beam and column framework.

When filled with insulation only, Rapidwall® can be used as load bearing walling for timber floored residential construction up to three storeys.



INDUSTRIAL CONSTRUCTION ▲ >

▾ POURING CONCRETE INTO RAPIDWALL

▾ CUT RAPIDWALL PANELS DELIVERED TO SITE
▾ IN STILLAGES

▾ CUT RAPIDWALL PANELS DELIVERED TO
▾ SITE IN STILLAGES

▾ WALLS PLACED AND PROPPED BEFORE
▾ PLACEMENT OF FLOOR FORMWORK

superior finish

The finish of Rapidwall® is smoother and flatter than equivalent precast concrete, in-situ concrete or rendered masonry walls. Rapidwall® provides the ideal “green” structural walling material for contemporary architectural designs. Rapidwall® panels can be finished in a range of decorative texture finishes and can include bands, quoins and rendered finishes.

Rapidwall® is a strong, crack free, clean and sharp structural grade wall panel requiring less jointing and less finishing.



earthquake resistant

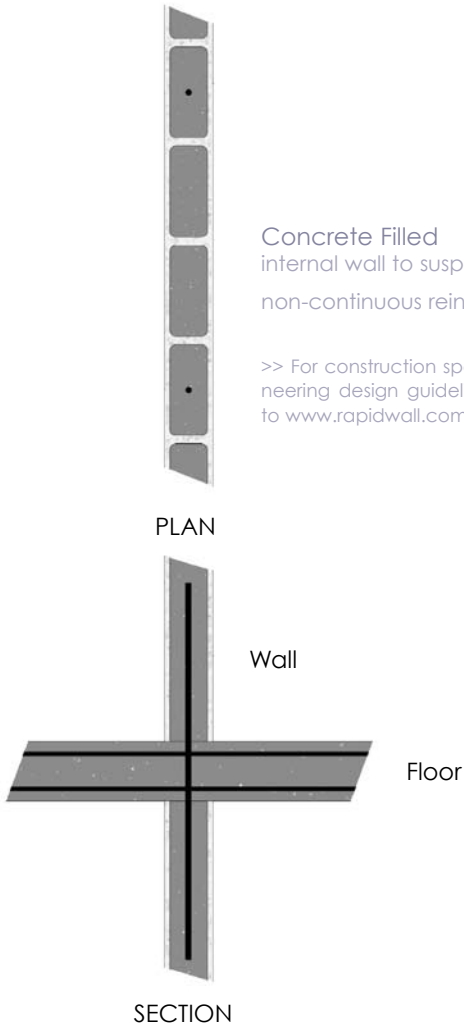
water and rot resistant

When used as load-bearing shear walls Rapidwall® exhibits superior ductile qualities that make it safer and effectively stronger than un-reinforced masonry. Its mechanical properties make Rapidwall® a superior earthquake resistant structural walling product for both vertical and lateral loads.

In an unsealed and uncoated state and after full immersion in water for 24 hours, the moisture uptake of Rapidwall® is less than 5% [by weight].

Rapidwall® is approved for use in wet areas requiring only the application of the normal mandatory wet-area membrane.





Concrete Filled
internal wall to suspended floor
non-continuous reinforcement

>> For construction specifications, cottage designs, engineering design guidelines and industrial construction go to www.rapidwall.com.au then choose Rapidwall®.

APARTMENT COMPLEX, SYDNEY. ▾



fire resistant

speedy installation

termite resistant

Rapidwall® has outstanding fire-resistant properties making it an ideal building material for use in dwellings in bushfire prone areas as well as in apartment construction where fire-rated party walls are required.

Rapidwall® is rated at one, two and four hours when empty, insulated and concrete filled respectively.

Rapidwall® panels are machine made in one hour. They are generally manufactured in one size then cut to dimension for height and length complete with door and window cut-outs.

In a single day a small crane and two trained installers can erect all the wall sections for a medium sized 350\square metre house. The large size of the Rapidwall® panels also means fewer fully sealed construction and contraction joints.

Rapidwall® panels are made of gypsum plaster and fibreglass. They are immune to attack from vermin and termites. Rapidwall® construction is devoid of any timber products eliminating any risk of termite infestation for which there are no safe prevention methods.

HOTEL CONSTRUCTION



Thermal Insulation

The thermal transmission properties have been determined for a number of Rapidwall® construction options. The thermal resistance (R-rating) from laboratory tests on 120mm thick panels are provided in Table 1.

Table 1 Thermal resistance for various forms of Rapidwall® construction

Construction	Additional coat or lining	Total thickness (mm)	R (m ² K/W)
Single leaf Rapidwall® unfilled	NA	120	0.36
Single leaf Rapidwall® filled with 20MPa normal concrete	NA	120	0.25
Single leaf Rapidwall® filled with light weight concrete	NA	120	0.6
Single leaf Rapidwall® filled with 35kg/m ³ and R2.5 Rockwool batts	With standard texture finishing coats (ASTEC) on both external faces	120	1.63



Environmentally Positive

Rapidwall® can be manufactured using plaster made from natural or industrial waste gypsum. Gypsum is readily available and is low in cost. In Australia, natural gypsum is processed in our own Rapidflow® Calcination Plant located in Kilmore Victoria.

Rapidwall® has one of the lowest levels of embodied energy of all manufactured walling products. ("Embodied energy" is the total energy consumed

by the product from the point of extraction of the raw material through manufacture, processing and delivery to its final installation and finishing on a building project.)

Rapidwall® panels are 100% recyclable. They can be re-processed through our Rapidflow Calcination Plant and recast into new Rapidwall® panels.

good noise resistance

accommodates building services

Whether insulated or concrete filled, Rapidwall® has excellent sound attenuating characteristics. Rapidwall® can be used as structural party walls providing the basis for an effective 55 STC sound barrier when lined with

plasterboard on resilient mounts. A rating of RW 55 can be achieved using plasterboard lining on isolated studs on one side of the loadbearing Rapidwall®.

The cellular panels can be used to accommodate building services such as electrical conduits. They can be left empty or filled with insulation for increased thermal performance or they can be filled with structural grade concrete for increased axial strength.



Fire Resistance

The fire resistance levels (FRL) of Rapidwall® are listed in Table 2. Copies of the test certificates are available by request from Rapid Building Systems.

Table 2 Fire Resistance Levels

	Description	FRL
non-load-bearing walls	Single leaf unfilled Rapidwall® panel	180/120/60*
	Single leaf panel filled with Rockwool batts	180/90/90*
load-bearing walls	Single leaf panel filled with 12mm scoria aggregate	30/30/30*
	Single leaf panel filled with no fines scoria	120/120/120*
	Single leaf panel filled with 32 MPa concrete	240/240/240*
	Double leaf panel filled with cellulose fibre inside the cores	180/180/180*



▲ A SINGLE THREE-TABLE RAPIDWALL PLANT CAN
▲ PRODUCE UP TO 650,000 SQUARE METRES / YR

▲ TRANSPORTATION OF UP TO 570 SQUARE
▲ METRES/TRUCK

▲ INSTALLATION OF FLOOR FORM-WORK,
▲ REINFORCEMENT AND SERVICES BETWEEN
▲ RAPIDWALL PANELS

▲ MULTI-STOREY CONSTRUCTION UP TO 15 STOREYS

Note: 1. The three figures in the right hand column refer to fire resistance periods for satisfying structural adequacy, integrity and insulation, respectively. **Note: 2.** FRL ratings with an asterisk "*" are test results from previous 100 mm thick Rapidwall® panels. These results are deemed to be applicable to 124 mm thick Rapidwall®.

Sound Transmission

STC values for various forms of Rapidwall® construction.

Main element of wall	Additional lining	Attachment method	Total thickness (mm)	STC
Single leaf Rapidwall® unfilled	-	-	124	28
Single leaf Rapidwall® filled with 60kg/m³ cellulose fibre insulation	-	-	124	31
Single leaf Rapidwall® filled with 90kg/m³ cellulose fibre insulation	-	-	124	33
Single leaf concrete filled Rapidwall®	-	-	124	45
Single leaf Rapidwall® filled with 90kg/m³ cellulose fibre insulation	13mm Gyprock®	Direct-fixed with screws and thin glue daubs	137	36
Single leaf Rapidwall® filled with 90kg/m³ cellulose fibre insulation	13mm Gyprock® and Tontine TSB3® polyester insulation	Standard 28mm Rondo 129 furring channels	165	45
Single leaf concrete filled Rapidwall®	13mm Gyprock® and Tontine TSB3® polyester insulation	Heavy gauge (1.2mm) Rondo 38mm top hat sections	175	54
Single leaf concrete filled Rapidwall®	13mm Gyprock® and Tontine TSB3® polyester insulation	Standard 28mm Rondo 129 furring channels and CSR Gyprock® resilient mounts	178	55
Single leaf concrete filled Rapidwall®	13mm Gyprock® and Tontine TSB3® polyester insulation	Separate row of 51mm steel studs spaced 10mm from Rapidwall®	198	55

cyclone resistant

Rapidwall®, when concrete or sand-filled is resistant to penetration by flying objects common in cyclones. Additionally, a simple tie-down system passing through the Rapidwall® cells and into the foundation secures the roof against severe uplift forces experienced in cyclones.

space saving

At only 124mm thick, when compared to brick-veneer construction, Rapidwall® provides up to 10% more usable internal floor space of a building of comparable external dimensions.

Sound Transmission

Sound Transmission Coefficients [STC] have been determined for a number of Rapidwall® construction options. The coefficients from tests on 120mm thick panels are provided in the Table above.

Other types of constructions have been investigated and the acoustic opinions are available on request from Rapid Building Systems Pty Ltd.

specific applications

Load-bearing walls in multi-storey apartments

Firewalls

Roof panels

Lost formwork and ceilings for suspended slabs

Fencing

Domestic housing construction, single and double storey

Townhouses

Shops
Offices

Resorts

Hospitals

Factory buildings

Cinemas and sound studios

Mechanical Properties

The table below provides the various mechanical properties of Rapidwall® panels when used empty and when concrete filled.

Description	Property	Value	Note
Non-load bearing walls	Uni-axial compressive strength f_{R_u}	100 kN/m	Strength obtained from longitudinal compression/tension tests with ribs vertical
	Uni-axial tensile strength f_{R_u}	28.8 kN/m	
	Out-of-plane flexural rigidity EI , rib perpendicular to span	3.5×10^{11} Nmm ² /m	
	Out-of-plane flexural rigidity EI , rib parallel to span	1.7×10^{11} Nmm ² /m	
	Unit weight	40 kg/m ²	
	Thermal expansion coefficient	12×10^{-6} mm/mm/°C	
	Water absorption	<5%	Water absorption by weight % after 24 hours of immersion
	mohr hardness	1.6	
Rapidwall® panels filled with 25 MPa concrete in all the cores	Uni-axial compressive strength f_{R_u}	890 kN/m	Obtained from longitudinal compression tests with ribs in the longitudinal direction



RAPIDWALL®
Building a Better World

International Operations

When Rapid Building Systems began in the early 1990s it started with this vision in mind:

To give disadvantaged people and especially those living in third world conditions the opportunity to live in high quality, affordable housing.

The company has three major areas of operations; Rapidwall® a load-bearing, plaster and glass-fibre walling system; Rapidflow - a manufacturer of high strength beta plaster for the mining, casting, ceramics and the building industry and Rapid Engineering - a manufacturer of plant and equipment, especially Rapidwall and the Rapidflow Calciner.

To realise its vision, the company is to set up The Rapid Foundation that will be funded from profits generated from its operations. The Foundation will then provide housing or housing solutions for disadvantaged people.

INDIA

In India, Rapid Building Systems is completing the development and construction of Rapidflow calcination and Rapidwall plants. These projects will go some small way to alleviating the critical housing shortage in this country.



Pictured is a demonstration home in Mumbai during the construction phase which only took two weeks with Rapidwall. On the right is a completed building.

CHINA

In China, where clay brick production has been outlawed, Rapidwall has been selected as one of the preferred building materials. A plant in Jianan was constructed in 2002 and the building pictured below underwent significant earthquake testing prior to approval.



Earthquake tested apartment and internal view. Tianjin, China

Because of its proven and tested ability to withstand a range of natural disasters and also because of its rapid construction benefits, there is significant interest in Rapidwall in many other parts of the world.

Rapidwall® products

In addition to selling Rapidwall® panels we license the Rapidwall® technology and manufacture, sell and distribute Rapidwall® manufacturing plant.

The parent company, Rapid Building Systems Pty Ltd [RBS], developed and owns the intellectual property associated with the patented Rapidwall® manufacturing process. RBS licenses the manufacture of Rapidwall® worldwide. RBS also manufactures, exports and installs the equipment necessary for producing Rapidwall®.

This equipment includes:

- Fully automated casting beds
- Fully automated travelling mixer/dispensers
- Rapidcure drying ovens
- Handling equipment
- Rapidwall® numerically controlled cutting beds
- Rapidflow calcination plant

RFC Plaster Pty Ltd, a subsidiary of Rapid Building Systems (RBS), owns the latest and most advanced technology for producing high quality plaster using a fluidised bed calcination process.

The first calcination plant using this technology was manufactured by RBS adjacent to the Groups Rapidwall® manufacturing plant in Kilmore, Victoria.

Rapidflow Calcination Plants can be sold as a package with the sale

✓ RAPIDWALL PRODUCT PLANT, KILMORE, VICTORIA.

✓ RAPIDFLOW CALCINATION PLANT, KILMORE VICTORIA.



▲ SYDNEY PARK VILLIAGE, NSW

of the Rapidwall® manufacturing plants or they can be purchased individually in sizes able to manufacture from 10 tonne per hour up to 40 tonne per hour. Compared to normal wall-board plasters the Rapidflow plaster produced from the Rapidflow Calcination Plant is superior in quality and in Australia is used exclusively in the manufacture of Rapidwall® structural wall panels.

Rapidflow plaster is also available for purchase by construction contractors retailers and manufacturers.

The full range of Rapidflow plaster and associated products includes:

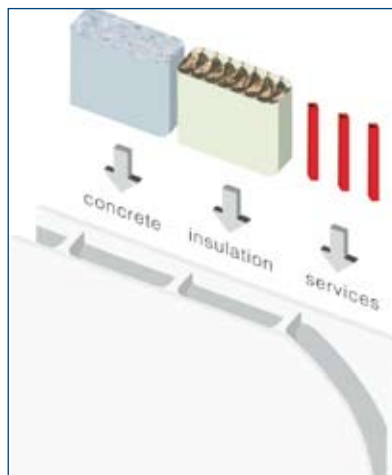
- Rapidflow® Casting Plaster
- Rapidflow® White Cornice Adhesive
- Rapidflow® White Base Coat Plaster
- Rapidflow® Mining Plaster
- Rapidflow® Render Plasters
- Rapidflow® Floor Screed Plasters



✓ RAPIDFLOW CALCINATION PLANT, KILMORE VICTORIA.



SYDNEY PARK VILLIAGE, NSW



The voids in Rapidwall panels can be used to add concrete for load bearing capacity, insulation for better sound and heat attenuation or other services.



Contacts Head Office & Manufacturing

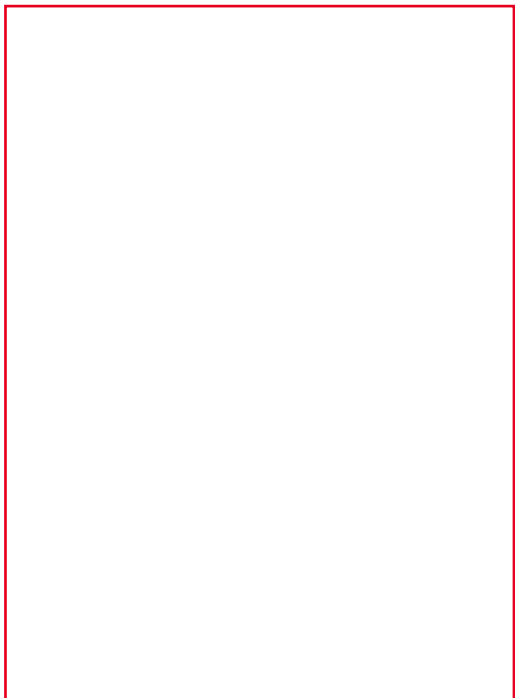
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Authorised Agent



For more product and technical information for industry and consumers please visit our website at www.rapidwall.com.au



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