

**APPRAISAL  
CERTIFICATE  
No. 290 (1995)**

**SERATONE AND  
RIOTONE (WALL  
AND CEILING  
LININGS)**

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## Product

*This Certificate relates to Seratone and Riotone (Wall and Ceiling Linings) which are based on pre-finished panels of oil-tempered hardboard. The panels are manufactured and marketed by Fletcher Wood Panels Limited.*

*The product has been appraised for use in the construction of non-bracing wall and ceiling lining systems in new or existing buildings, for the following: wet areas such as bathrooms where moisture-resistant materials are required; areas where hygiene is of particular importance and easy-to-clean surfaces are required; and other areas where low maintenance pre-finished non-bracing wall and ceiling lining systems are specified.*



## Building Regulations

### New Zealand Building Code (NZBC)

In the opinion of BTL, if Seratone and Riotone (Wall and Ceiling Linings) are used in accordance with the statements and conditions of this Certificate, the relevant provisions of the following NZBC Clauses will be met:

**B1 STRUCTURE; B2 DURABILITY; E3 INTERNAL MOISTURE; F2 HAZARDOUS BUILDING MATERIALS; and G3 FOOD PREPARATION AND THE PREVENTION OF CONTAMINATION.**

Specific NZBC compliance details are contained within this Certificate.

## Product Information

### Description

Seratone and Riotone (Wall and Ceiling Linings) are pre-finished panels manufactured from oil-tempered hardboard with factory sealed edges.

The panels are provided with the following high gloss impervious finishes: Seratone - a smooth oven-cured polyurethane paint finish; and Riotone - a smooth laminated DAP resin overlay. Seratone panels are also provided in a range of smooth coloured finishes, and in an embossed spray finish ('Quatro') intended to simulate the look of a tiled surface. Riotone panels are supplied in a range of smooth patterned finishes. Details of available finishes and colours are available from the manufacturer.

The panels are 4.75 mm thick, 2400 x 900 or 2400 x 1200 mm in size, and have rounded edges which are covered with tape for temporary protection. The panels are manufactured to the following tolerances: length and width, +/- 2.0 mm; thickness, +/- 0.5 mm; squareness (difference between measured diagonals) - no greater than 3.0 mm; and board edge straightness - 0.4 mm maximum deviation from a straight line.

On the back of the panels is a label giving the product type, pattern and colour, production date and batch number, and basic installation instructions.

## Packing

Seratone and Riotone are supplied for shipping strapped on pallets overwrapped with a waterproof covering.

## Handling and Storage

Long-term storage of Seratone and Riotone panels must be under cover away from direct sunlight to avoid fading, on evenly spaced bearers to keep them flat and dry. When stored outside, panels must be covered with breather-type waterproof material in a manner that allows air to circulate around the stack.

Panels must be lifted and not dragged off the stack.

## Design Information

### General

Seratone and Riotone wall and ceiling linings are impervious to moisture and are resistant to water, steam, typical hygienic cleaning chemicals and materials, and abrasion.

The panels are primarily intended for use as wall or ceiling linings in wet areas such as bathrooms and kitchens. The panels are also intended for use in food processing areas, where the Building Code and health regulations require the use of water and chemical-resistant lining materials which are impervious, easily cleaned and maintained, and are capable of withstanding demanding hygienic cleansing operations.

*In wet and food processing areas, it is essential that the back of the panels are completely sealed and silicone sealant must be used with jointers to ensure joints are impervious to moisture.*

The systems may also be used in other areas to provide decorative pre-finished linings with a low maintenance requirement.

The linings must not be used in areas listed in Acceptable Solution G3/AS1 Paragraph 2.2, such as electroplating and lead processing areas, or mortuaries.

## Usage

The panels can be fixed directly over: new wall and ceiling timber framing; existing wall and ceiling timber framing after removal of existing linings; existing timber frame wall and ceiling linings; or battens which have been fixed to strapping covering new or existing concrete and masonry walls.

To complete the lining system, a combination of proprietary plastic one-piece and two-piece mouldings (such as detailed in Acceptable Solution E3/AS1 Figure 6) and adhesives may be used to hold the panels in place. Alternatively, a combination of jointers, adhesives, and conventional painted timber-based cornice and skirting mouldings appropriate for the exposure may be used.

When used with silicone sealant, the plastic or timber mouldings are also intended to form moisture impervious joints.

Detailing at shower trays must be either in accordance with the requirements of Fletcher Wood Panels Limited, Acceptable Solution E3/AS1 Figure 7, or an alternative method meeting the requirements of NZBC E3. Joints between baths, basins, tubs, and the linings must be in accordance with the requirements of Fletcher Wood Panels Limited, Acceptable Solution E3/AS1 Figure 8, or to another method meeting the requirements of NZBC E3.

Nails must not be used to fix the panels in place.

Wall fixtures must only be fixed directly to the underlying supports.

In all applications, continuous support must be provided at all sheet edges, including around 'cut-outs' for plumbing fixtures and other services.

### Timber framing and supports

When fixed directly over new or existing wall framing, supports must be at 600 mm maximum centres. Nogs or dwangs must be at 600 mm maximum centres. In all buildings, timber framing for walls and ceilings must have a moisture content of less than 18%.

Ceiling battens must be at 400 mm maximum centres. Battens must be a minimum of ex 50 x 50 mm machine gauged, H1 treated timber, and kiln dried to a moisture content of less than 18%.

Existing timber wall and ceiling framing must be sound, and free of borer (or similar insect infestations), and decay. Damaged

framing must be replaced.

Care must be taken with the layout of all framing and supports, in order to ensure that framing timber will be at appropriate positions for the fixing of plastic or timber-based mouldings.

Around shower trays, baths, and spas, timber battens or packing must be H3 preservative treated.

### **Concrete and masonry substrates**

Existing concrete and masonry substrates must be sound, sealed, and capable of holding the fixings for strapping. New concrete and masonry substrates must also be sealed.

Strapping must be spaced at 600 mm vertical centres, and battens at 600 mm horizontal centres. Strapping must be H3 treated, sized as for ceiling battens, and fixed with 75 mm concrete/ masonry nails at 300 mm maximum centres.

## **Other Materials**

### **Mouldings**

In wet areas, the long-term integrity and serviceability of wall lining systems based on Seratone and Riotone depend on the quality of the jointing systems specified and installed. Plastic or timber-based mouldings selected for use by the designer or installer must form impervious joints, e.g., as described in Acceptable Solution E3/AS1 Paragraph 3.2.4(a).

Two-piece mouldings are recommended for easier panel installation, and for the accurate sizing of panels.

Plastic mouldings may be used as jointers for butt joints between panels. Plastic mouldings may also be used as scotia and skirting, internal and external corners, capping of panel edges, and as flashings around bath and shower trays. Alternatively, painted conventional durable timber mouldings may be used for all these purposes.

### **Wallboard adhesives**

Sheets must be fixed with wallboard adhesives recommended by Fletcher Wood Panels Limited.

## **B1 Structure**

When used and installed as directed by this Certificate, wall and ceiling lining systems based on Seratone and Riotone will meet the provisions

of NZBC B1.3.1, B1.3.2, B1.3.3, and B1.3.4.

The linings are capable of being supported by the framing or supports specified in this Certificate, as required by NZS 3604 Section 9.1.1(a), and have acceptable strength as required by Section 9.1.1(e) of this Standard.

### **Mass**

Seratone and Riotone panels weigh approximately 4.7 kg/m<sup>2</sup>.

### **Bracing**

Seratone and Riotone wall and ceiling linings have not been appraised for bracing applications.

### **Impact**

Seratone and Riotone panels will withstand typical soft body impacts normally expected in areas where the product will be used, as required by NZS 3604 Section 9.1.1(b). The panels will be damaged by hard body impacts such as hammer blows.

The possibility of impacts damaging panels must be considered at the design stage, especially in public, institutional, or educational buildings which are prone to robust behaviour or vandalism. The manufacturer must be consulted for advice on a suitable means of providing protection in these buildings.

In hygiene areas, the surface finishes must also be protected from likely impact, and not be subject to chipping in order to comply with Acceptable Solution G3/AS1 Paragraph 2.1.4.

## **B2 Durability**

### **NZBC**

With normal maintenance, wall and ceiling lining systems based on Seratone and Riotone panels will meet the performance requirements of NZBC B2.3(c), 15 years, in wet areas, and NZBC B2.3(d), 5 years, in other areas, as given in Table 1 of Acceptable Solution B2/AS1.

### **Maintenance**

Cleaning must be carried out using a soft cloth lubricated with non-abrasive mild detergent or soap solutions. Solvents or abrasive materials must not be used.

Mouldings or flashings used around baths, shower trays, wash basins, or sinks must be maintained in a serviceable condition in order to ensure joints are impervious to moisture.

It may be possible to touch-up minor surface damage to Seratone panels with a suitable polyurethane coating.

Damage to the surface of Riotone panels may only be repaired with difficulty.

Adhesive tapes must not be applied to the surfaces of Seratone or Riotone panels.

### **Serviceability**

If properly maintained, Seratone-based and Riotone-based wall and ceiling lining systems will remain serviceable for at least 15 years when used in any building area covered by this Certificate.

This statement assumes that panel edges and reverse faces have been protected as directed by Fletcher Wood Panels Limited, and that mouldings and flanges to wall mounted plumbing or sanitary fixtures are detailed to minimise the passage of moisture behind the panels, especially in critical areas such as around baths, shower trays, wash basins, and sinks. This statement also assumes that nails have not been used to fix the panels in place in wet areas.

### **C1 Outbreak of Fire**

Seratone and Riotone panels are combustible and must be separated from chimneys, flues, or fuel-burning appliances in accordance with the requirements of Acceptable Solution C1/AS1 for the protection of combustible materials.

### **C3 Spread of Fire**

The AS 1530, Part 3 Indices for Seratone and Riotone panels are: Spread of Flame Index (SFI) - 8, and Smoke Developed Index (SDI) - 5.

Seratone and Riotone panels must only be used where the SFI and SDI meets the surface finish requirements for walls and ceilings (unsprinklered buildings) and ceilings (sprinklered buildings only) of Acceptable Solution C3/AS1 Table 4. There are no restrictions on use within buildings for Purpose Groups SH (detached dwellings) and SR (multi-unit residential).

### **E3 Internal Moisture**

When Seratone-based and Riotone-based wall and ceiling lining systems are used and installed as directed by this Certificate, the provisions of NZBC E3.3.4, E3.3.5, and E3.3.6 will be met.

The linings are impervious to moisture, and can be easily cleaned. The surfaces also meet the requirements NZS 3604 Section 9.1.2. and have a performance comparable to the finished linings described in Acceptable Solution E3/AS1 Paragraph 3.1.3 (c), (d), and (e). Seratone and Riotone can be used to form modular or multiple lining systems meeting the requirements of Acceptable Solution E3/AS1 Paragraph 3.1.3(f).

## **F2 Hazardous Building Materials**

BTL considers that at no stage during installation or serviceable life does Seratone and Riotone panels constitute a hazard to people. The panel manufacturer specifies normal dust handling precautions must be taken when working with the panels. Provided this is done, the provisions of NZBC F2.3.1 will therefore be met.

## **G3 Food Preparation and Prevention of Contamination**

The provisions of NZBC G3.3.2(a) and (b) will be met when Seratone and Riotone wall and ceiling lining systems are installed and used as directed by this Certificate.

Seratone and Riotone meet the requirements of Acceptable Solution G3/AS1 Paragraph 1.6 for wall linings in domestic facilities, and Paragraph 2.1.5 for wall linings in commercial and industrial facilities. (Seratone and Riotone comply with MAF Manual 15, Regulatory Authority).

## **H1 Energy Efficiency**

When carrying out thermal design calculations on the building envelope, the R-value of Seratone and Riotone may be taken  $0.03 \text{ m}^2 \text{ }^\circ\text{C/W}$  (excluding surface resistances).

## **Installation Information**

### **General**

Installation must be in accordance with the instructions given in the manufacturer's Product Data Sheet entitled "Seratone & Riotone Wall and Ceiling Linings" dated July 1995.

Quality of workmanship is the responsibility of the installer.

Attention is drawn to the following points.

### **Preparation**

Existing linings may be removed or, if sound, retained. If the linings are removed, damaged framing must be replaced and vertical supports provided at 600 mm centres where they do not exist, and dwangs at 600 mm centres.

Sealed concrete and masonry surfaces must be covered by a grid of supporting strapping and battens.

All supporting substrates (new framing and battens, or existing framing and linings) must form a basis for providing a true and level surface for the lining system. The procedures

for fixing the linings are the same for both new and retro-fitting applications

In wet and food processing areas, after removal of the tape, all edges (including new edges created by cutting panels to size or to form holes) and reverse face must be completely sealed as instructed by the panel manufacturer.

### **Fixing of panels**

Panels must be fixed in place in wet and food processing areas with joints formed by suitable plastic or timber mouldings sealed with silicone sealant. Recommended adhesives and silicone sealants are given by the panel manufacturer.

In dry areas, panels may also be fixed in place with adhesive and plastic or timber mouldings, or with a combination of mouldings at the edges of the panels, and "Christmas Tree" fasteners recommended by Fletchers Wood Panels Limited up the centre of the panels at 600 mm maximum centres.

Installation must start at one corner by fixing in place a plastic corner moulding with 19 x 1.6 mm hot-dipped galvanised flat-head nails, which must be driven into framing or battens at 250 mm centres along the nailing strip. If two-piece mouldings are used, then scotia and skirting moulding or capping bases, along with the jointer bases must also be fixed in place. All fixings for jointers etc must be into solid timber supports.

When fixing panels directly over timber supports with adhesive, (framing or battens), the wallboard adhesive must be applied in 6 mm wide by 100 mm long strips to studs, plates, nogs, blocking or battens at 400mm centres. When fixing over existing linings, similar strips of adhesive must be applied in lines at 400 mm maximum centres across or up the panels, and also around the perimeter.

If used, one-piece jointers, cornice, cappings and skirting mouldings must be positioned on the appropriate edge before the panel is pushed into place. The jointer and other mouldings must then be nailed in place along the exposed nailing strip.

This process must be repeated until the whole area is covered, with careful cutting of panels to size. Holes must also be carefully cut and located at the appropriate positions for pipes and other services penetrating the wall or ceiling. When installation is complete, where used, cover caps to two-piece mouldings must then be pushed into place.

Depending on the ambient conditions and

setting or drying time of the adhesive, temporary supports for ceiling panels may need to be provided.

When positioning panels, a gap between the bottom of the shower tray must be formed (see the manufacturer's details or Acceptable Solution E3/AS1 Figure 7).

## **Basis of Appraisal**

In the opinion of BTL, the following investigations show Seratone and Riotone wall and ceiling lining systems are fit for purpose, and that they can be used to meet the relevant provisions of the New Zealand Building Code.

This statement is conditional on the conditions and statements within this Certificate.

### **Tests**

The following testing has been carried out by or on behalf of Fletcher Wood Panels Limited: modulus of rupture, modulus of elasticity, shear strength (in-plane of panels), internal bond, water absorption and thickness swell, and impact resistance in accordance with ASTM D1037; water vapour permeability according to ASTM E96; 75° Glossard gloss; cross hatch adhesion; abrasion resistance; heat resistance; Gardner scrub resistance; water resistance; steam resistance and stain and chemical resistance.

AS 1530 Part 3 Indices have also been determined by a TELARC registered laboratory.

### **Other Investigations**

The use of painted or pre-finished thin hardboard panels as wall and ceiling linings over many years both in New Zealand and overseas has been noted.

The findings of a survey carried out by independent consultants (Able Building Consultants) on Seratone and Riotone, and similar wet area wall and ceiling lining panels up to 15 years old has been noted. These findings confirm anecdotal observations and comments that with care at installation and correct maintenance the field performance of thin hardboard-based wall linings (painted or pre-finished) is satisfactory in all relevant aspects, including structural, durability, and non-hazardous nature.

Site inspections of Seratone and similar "wet area" lining systems have been carried out by BTL.

The manufacture of the hardboard panels

by Fletcher Wood Panels Limited, has been examined. Fletcher Wood Panels Limited, who is an ISO 9002 registered supplier, are responsible for the quality assurance of the finishing of both Seratone and Riotone panels.

Details have been obtained of the materials used, and the quality control and assurance procedures.

The manufacturer's information entitled "Seratone & Riotone Wall and Ceiling Linings", dated July 1995, has been examined.

## Sources of Information

- ASTM D1037:91 Test methods of evaluating of the properties of wood-base fibre and particle panel materials.
- AS 1530: Part 3 - 1989 Simultaneous determination of ignitability, flame propagation, heat release, and smoke release.
- ISO 4586-2 Decorative high-pressure laminates (HPL) - Sheets based on thermosetting resins - Part 2: Determination of properties.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- NZS 3604:1990 Code of practice for light timber frame buildings not requiring specific design.
- The Building Regulations 1992.



**In the opinion of BTL, Seratone and Riotone (Wall and Ceiling Linings) are suitable for the appraised use.**

### Conditions of Certification

This Certificate is valid until further notice, subject to the following conditions:

1. The product is manufactured by, and complies with, the manufacturing specifications of Fletcher Wood Panels Limited, which apply at the time of issue or at the revalidation of the Certificate.
2. The product is installed in accordance with the instruction of Fletcher Wood Panels Limited given in their information entitled "Seratone & Riotone Wall and Ceiling Linings", dated July 1995, and any limitations contained in this Certificate.
3. Fletcher Wood Panels Limited continue to have the product reviewed by BTL.
4. The overall quality of the product is maintained by the manufacturer.
5. The Certificate does not cover uses of the product outside the scope of this appraisal, nor does it infer fitness for purpose of products similar in function, appearance, or standard of workmanship that are not specifically included in the scope of this Certificate.
6. The product is appraised against performance provisions contained in the NZBC at the time of the appraisal. BTL is not responsible for the product failing to meet any subsequent or revised provisions introduced after the date of Certification.

A handwritten signature in black ink, appearing to read 'R J Wells'.

R J Wells for BTL

A handwritten signature in black ink, appearing to read 'D G Waple'.

D G Waple for BTL

September 1995

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