

# TECHNICAL BULLETIN

APRIL 2005

RESEARCH & PRODUCT DEVELOPMENT FROM JAMES HARDIE

## Suitable wet area substrates

### SUBSTRATE SELECTION

Repairs to wet areas such as bathrooms are a nightmare for both homeowner and builder alike. They can be extremely costly, lengthy and disruptive. For this reason it is important to ensure not only that reputable, qualified and skilful tradespersons do the job, but also that suitable and durable building products are used.

When it comes to building product performance, James Hardie leads the industry with durable fibre cement wall linings, structural flooring sheets and ceramic tile underlays.

Our fibre cement building products are resistant to moisture, rotting, cracking, fire and termites – we guarantee it\*. So when you think wet area durability – think James Hardie building products.



### INTERNATIONAL RESIDENTIAL CODE: BAN ON WET AREA PLASTERBOARD

The USA Building Codes have for many years recognized the use of wet area plasterboard, commonly known as “greenboard”, in wet areas. This product is a paper-faced, water resistant core, gypsum board which has been used as a tile substrate in bathroom and shower areas.

Effective January 1, 2006, the US based International Residential Code (IRC) will no longer recognize the use of ‘greenboard’ as a tile substrate in wet areas. The code will only allow cement, fibre cement and non-paper-faced moisture resistant products.

In justification for the change the International Code Council said:

‘When this material [greenboard] gets wet through cracks in grout joints, deteriorated caulking between the tile and tub assembly, or improper flashing between the tub and tile interface, water is absorbed into the material and can cause the paper facing to delaminate. The delamination can cause damage to the tile surface.’

Reference: 2004 ICC Final Action Agenda RB212-03/04, R702.4.4.

This shift from the US regulators demonstrates the importance of using durable building materials.

\* See the relevant James Hardie product warranty.

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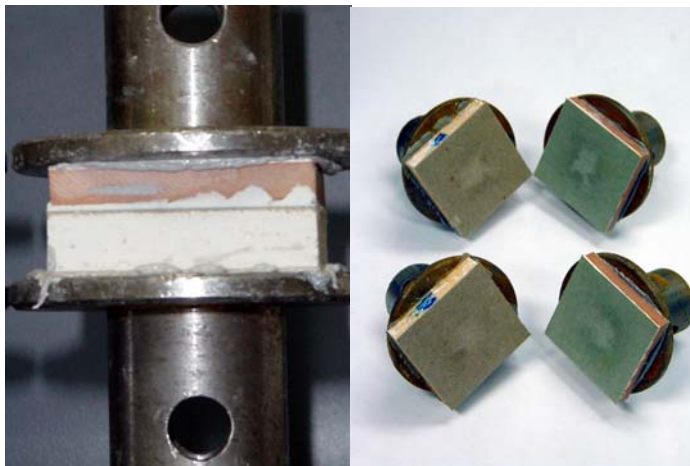
James Hardie®

**WET AREA PERFORMANCE**

For years leading Australian builders have elected to use James Hardie's Villaboard® Lining instead of the plasterboard alternatives for wet area walls. The reason - peace of mind.

What really sets this product apart from its competitors is that Villaboard Lining is a high quality, durable fibre cement board which is resistant to moisture and rotting. Furthermore, the product will continue to perform even in the event that the material gets wet (as a result of building movement, material deterioration, cracking, poor installation, etc).

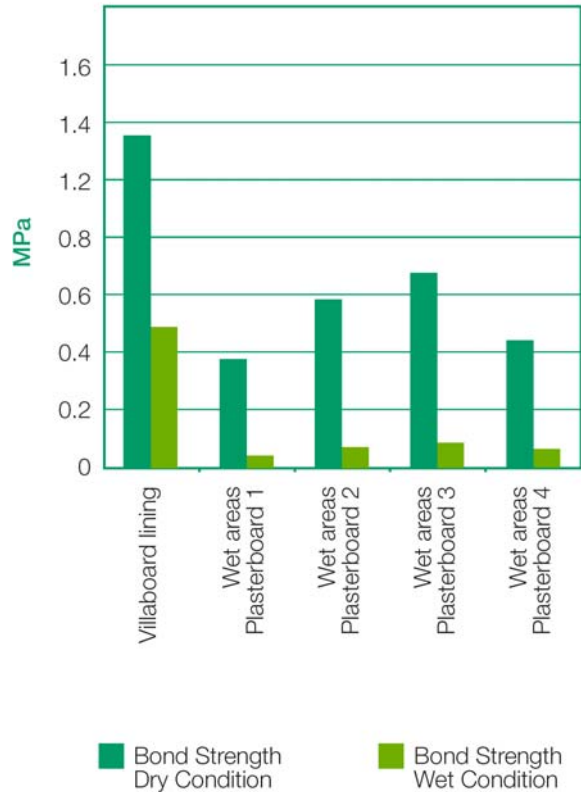
This has been demonstrated by a series of tests which compare the bond strength between various substrates and tiles in both dry and wet conditions. The tests were conducted at James Hardie's NATA registered laboratory using a tensile bond strength test which induced a separation load between the substrate and tile until failure.



Tile & substrate in rig

Broken samples

The results shown on the graph below demonstrates the superior performance of Villaboard Lining when compared to the wet area plasterboard alternatives in both the dry and wet condition. When reviewing the results there is a notable drop in bond strength when all of the products are tested in the wet condition.



To put these results in perspective, the tensile bond strength requirement for ceramic tile adhesives is 0.15MPa (tested in the dry condition). This requirement is specified by AS2358 – ‘Adhesives – For fixing ceramic tiles’.

**CHANGES TO WATERPROOFING REQUIREMENTS FOR WET AREA FLOORS**

The 2005 version of the Building Code of Australia (BCA), as well as AS3740 – ‘Waterproofing of wet areas within residential buildings’ specifies the minimum waterproofing requirements for wet area construction. Both of these regulatory documents now require that all of the wet area floor must be fully waterproofed when using timber floors including particleboard and plywood.

However, when using durable structural flooring products like concrete or compressed fibre cement, full floor waterproofing is not required outside the enclosed shower area. This yet again demonstrates the benefit of using durable building products like James Hardie's HardiPanel® Compressed Sheets.

**FURTHER INFORMATION**

For comprehensive information on the wide variety of moisture resistant building products available from James Hardie visit [www.jameshardie.com.au](http://www.jameshardie.com.au) or Ask James Hardie™ on 13 11 03.

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