

5<sup>th</sup> July, 2018**TECHNICAL REPORT No: LR 5639**

## **Bostik Products for Clearform Panel Construction System (Update)**

### **A. Background**

Bostik had previously conducted testing for Clearform of suitable systems for adhesion to their wall construction system. This consists of a PVC modular wall panel construction system which is filled with concrete once it is placed into position.

The processes that are of interest to Clearform are tiling, plasterboard linings, and sealants. This update involves looking at alternative systems for those that included Bostik Ultra NP Primer in the previous testing.

### **B. Bostik laboratory testing**

The products tested with the supplied substrate samples were:

- Bostik Zbond 616,
- Xtreme Flex.

The surface preparations considered were as follows:

- No treatment,
- Bostik N40 Primer.

### **1. Bostik Test Results**

#### **Sealant & Adhesive – Dry bond test**

| Product     | Pretreatment       | Result                      |
|-------------|--------------------|-----------------------------|
| Xtreme Flex | Surface wipe (dry) | 6 – strong cohesive failure |
| Xtreme Flex | N40 Primer         | 6 – strong cohesive failure |
| ZBond 616   | Surface wipe (dry) | 6 – strong cohesive failure |

The results are tested on standard laboratory conditions and may not replicate the actual site conditions and other unforeseen variables that can arise during and after the application. It is important that the customer must perform additional test to ensure suitability of the product. This report must not be reproduced or provided to external parties without written approval from Bostik Technical Department.

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## Plasterboard Fixing

Fixing of plasterboard with Ultragrip Stud Adhesive proved to be effective with the mode of failure during testing being within the plasterboard. The tensile forces applied at the point of failure during testing ranged from 110 to 250 kPa, with both primers.

Note: Bostik Ultragrip Stud Adhesive is not designed to be the sole method of fixing plasterboard. It is usually used in conjunction with screws or nails being the main fixing method.

If mechanical fixing methods are not possible then the use of No More Nails would be more appropriate for this application.

## Tiling

### Dry Bond Test at 28 days.

| Preparation       | Evofix                             |
|-------------------|------------------------------------|
| Specialist Primer | 0.09 MPa<br>50% CF-P<br>50% AF-P/A |
| Rustlac           | 0.15 MPa<br>90% AF-P/A<br>10% CF-A |

**Note:** Flexing of the substrate during testing contributed to the lower bond strength measurements during testing.

## Waterproofing

Although the wall system is said to be waterproof this testing was included due to the possibility of a membrane being required on the floor and turned up onto the wall in some situations.

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Wet bond test (7 days dry + 21 days immersed.)

| Preparation       | Primeseal Immersed Rapid             |
|-------------------|--------------------------------------|
| Specialist Primer | >0.47 MPa<br>No failure              |
| Rustlac           | 0.20 MPa<br>85% AF-S/P<br>15% AF-P/M |
| N40 Primer        | >0.45 MPa<br>No failure              |

**Key:** AF-S/P      Adhesive failure between the substrate and primer  
 AF-P/M      Adhesive failure between primer and membrane

**Note:** Primeseal Immersed Rapid separated from the Rustlac Primer where the tensile plates were not in contact with the membrane.

Adhesion of ZBond 616

Picture 1:



Adhesion of Xtreme Flex

Picture 2:



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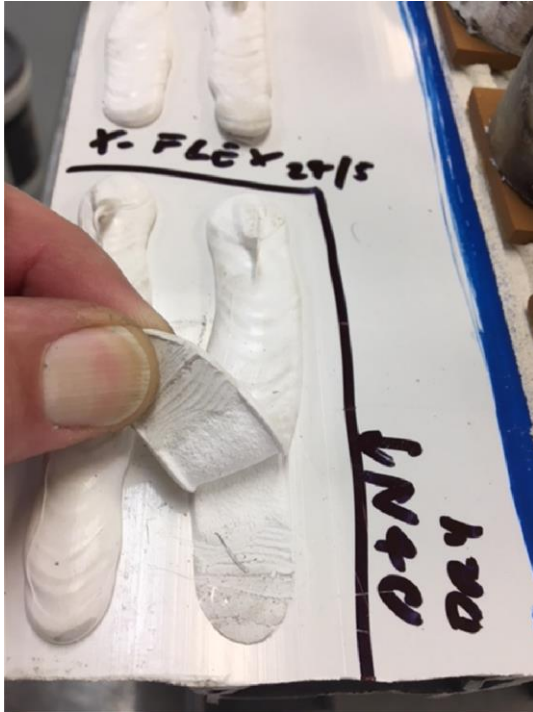
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Adhesion of Xtreme Flex with N40 Primer  
Picture 3:



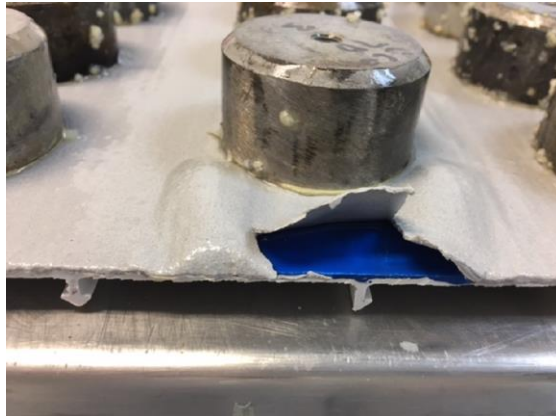
Bonding of Plasterboard  
Picture 4:



Wet bond testing of membrane.  
Picture 5:



Membrane lifting from Rustlac.  
Picture 6:



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Wet bond testing of membrane systems.

Picture 8:



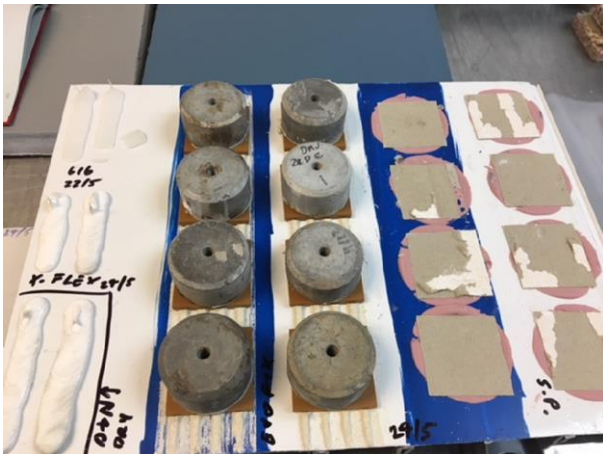
Wet bond testing of membrane systems.

Picture 9:



Dry bond of tile system.

Picture 10:



Dry bond of tile system.

Picture 11:



Dry bond of tile system.

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Picture 12:



### C. Summary

Based on the results of this and previous testing the following products or system are suitable for use on the Permaform wall system:

#### **Sealants/Adhesives**

- Bostik No More Nails was found to bond extremely well and would be suitable for the bonding of compatible porous materials.
- Bostik Zbond 6S, Bostik V70 and Bostik 5CLM silicones were all found to bond well to the panels tested.
- Bostik Seal n Flex FC and Bostik Matrix FC form a strong bond with the use of Bostik N40 Primer.
- Bostik Xtreme Flex formed a strong bond to the substrate without the use of a primer. It would be expected that the other products in the Xtreme range will also form a strong bond.

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#### **Plasterboard fixing**

While Ultragrip did adhere to the substrate the use of Bostik Specialist Primer, or Bostik Rustlac, would be advisable. This system is to be used in combined with mechanical fixings.

The use of Bostik No More Nails would be a better alternative if mechanical fixings are not possible.

#### **Tiling**

Priming of the substrate with Bostik Specialist Primer or Rustlac and the use of Asaflex tile adhesive would be the best option. Any flexing of the substrate would be the main concern with this application, but should be minimal once the wall has been filled with concrete.

#### **Waterproofing**

Bostik's water based and cementitious membranes can be applied to the Clearform panels using either Bostik Specialist Primer, or Bostik N40 Primer to achieve a good bond to the substrate.

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For and on behalf of

**Bostik Australia Pty Ltd**



**Mark Boughton**

TECHNICAL SERVICE CHEMIST



**Emmark Eroles**

TECHNOLOGY MANAGER

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