



Improving the Built Environment

Confidential BCE Doc 97/177 (M)
Report on Tech-Dry Water

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Report on Tech-Dry Water Repellent Block Wall System to ASTM E514-90 'Standard Test Method for Water Penetration and Leakage Through Masonry'
September 1997
By
B.L. Schafer and B. Budgen

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By Barry Schafer
&
Bev Budgen
September 1997

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COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
BUILDING, CONSTRUCTION AND ENGINEERING
REPORT FOR
Tech-Dry Water Repellent Block Wall System to ASTM E514-90 'Standard Test Method for Water Penetration and Leakage Through Masonry'

Product name Tech-Dry Water Repellent Block Wall System
Application Tasco Brick Block & Pavers
26 Bass Highway
Round Hill
Burnie, Tasmania

B L Schafer, B Budgen
Officers Conducting Test
Date 30.9.97

Report on Tech-Dry Water Repellent Block Wall System to ASTM E514-90 'Standard Test Method for Water Penetration and Leakage Through Masonry'

**By Barry L Schafer & Bev Budgen Officers of CSIRO BCE
9th September 1997**

On Thursday 28 August, a wall built from nominal 200mm wide by 200mm high and 400mm long blocks was tested to 'ASTM E514-90' Standard Test Method for Water penetration and Leakage through Masonry' at CSIRO BCE, Highett site. The blocks were supplied by Tasco Bricks Block and Pavers of 26 Bass Highway, Burnie, Tasmania.

The wall was 2.5 blocks wide and 8 courses high (see Figure1). The mortar was made to the following specification as set out in Tasco specification sheet, 'Specification Tech Dry Mortar' (January 1997).

The Tech Dry mortar is mixed at the rate of two (2) litre of additive to 20 litres of water. Cement ratio must be 1 to 3 using a 'fatty brickies sand'. Neither plasticisers nor lime should be added to the mix.

The wall had been constructed on the 9th of July 1997.

The test method applies water at a rate of 138 l/m and there is a positive pressure between the wet side and observation side of 500Pa. The ASTM method requires the test to last for a period of 4 hours. Figure 2 shows the test chamber attached to the wall and Figure 3 shows the inside of the chamber with the test in progress.

Note: 500 Pa equates to a base wind speed of about 33m/s or 120 km/h

for walls of low rise buildings and only subjected to a positive pressure coefficient.

Results

Within a few seconds of the pressure being applied a small damp spot appeared in the top left hand perpend of the wall. This spot initially grew in size to 65mm then proceeded to retract. At the end of the 4 hour period it was 55 mm long.

At 2 hours, a second damp spot appeared in the fourth perpend from the base also at the left hand edge of the wall (see Figure 4). Some water was noticed in the cavity of one core on the web three courses down from the top. The amount of water at this location was initially enough to spill over the width of the web and drop further down the cavity (see Figure 5).

As the pressure box extended over the base of the wall onto the supporting channel, some water penetrated the junction between the channel and the wall. Water that penetrated this junction was not considered relevant to the test as the test was only meant to be on the masonry wall. The extension over the junction between the supporting channel and the wall was required as there were insufficient blocks supplied to build an additional course at the top of the wall which would have enabled the pressure box to be fitted to the wall only.

Discussion

At the end of the 4 hour test period, with the only two damp spots visible on the non-wet side of the wall, both of which were retracting, the wall could be considered as being an effective against wind driven rain. Whilst this is a qualitative test, it was noted that the water penetration at the two mortar joints would be approximately equal to an area of 0.04% of the wall after 4 hours.

As the two damp spots were retreating, the test was continued for a duration of 4 days. By 24 hours the two damp spots had retreated to half their initial size, and at the end of the four day period had completely disappeared (see Figure 6). This would indicate that the small passage that was allowing water to track to these two location homogeneously healed during the test period.

Conclusion

Walls built with this system could be considered as waterproof against wind driven rain if they are free of cracking. It would be considered prudent to include weep holes to drain any water which may drain down the hollow cores of the block walls.

Barry L Schafer

B Budgen



Figure 1. Wall



Figure 2. Test chamber



Figure 5. Water through mortar - 2 hours



Figure 6. Close-up of dried out mortar



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CONSOLIDATED TILING SERVICES

1 September 2000
Our Ref. EN 13/713

TEST REPORT No. 1716

Requested by: Tasco Brick Block & Pavers
On: 10 August 2000
Manufacturer: Tasco Brick Block & Pavers
Product Desc. Tech-dry Concrete Masonry Unit
Sampling details:
Where: Delivered
Date: 10 August 2000
By whom: Courier
How (methods): N/A

The results reported relate only to the sample(s) tested.

No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.

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SUMMARY OF TESTS PERFORMED:

ASTM C1262-95 Standard Test Method for Evaluating the Freeze – Thaw Durability of Manufactured Concrete Masonry Units and Related Concrete Units.

Tiles damaged after test: NIL PASS

CERLABS European Network of National Ceramic Laboratories – Australian Member

Report No. 1716

DETERMINATION OF FROST RESISTANCE

TEST BASED ON ASTM C1262-95 TEST DATE: 1 September 2000
Standard Test Method for Evaluating the Freeze – Thaw Durability
Manufactured Concrete Masonry Units and Related Concrete Units.

| | |
|------------------------|--------------|
| Number of Specimens | 5 |
| Bath | Fresh water |
| Compressive Strength | not required |
| Defects before testing | NIL |

Date and Place 1 September 2000, Highett, Vic.

GEOFF QUICK
STONE SCIENTIST
TECHNICIAN

PETER WESTGATE
SENIOR LABORATORY



Improving the Built Environment

CONSOLIDATED TILING SERVICES

21 November 2000

Our Ref. EN 13/713

TEST REPORT No. 1782

Requested by: Tasco Brick Block & Pavers

On: 21 November 2000

Manufacturer: Tasco Brick Block & Pavers

Product Desc. Tasco Tech-dry Concrete Masonry Unit

Tasco Tech-dry Mortar

Product size 110mm x 228mm x 75mm

Sampling details:

Where: Delivered

Date: 21 November 2000

By whom: Tasco

How (methods): N/A

The results reported relate only to the sample(s) tested.

No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision.

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SUMMARY OF TESTS PERFORMED:

Test based on AS 3700 – 1988

Flexural Strength by Bond Wrench Average: 0.449 MPa

Report No. 1782

Flexural Strength by Bond Wrench Test

TEST BASED ON AS 3700 – 1988

Samples received 15 November 2000 Test Date 21 November

Flexural Strength

| Sample No. | Mpa |
|-------------------|--------------|
| 1. | 0.357 |
| 2. | 0.260 |
| 3. | 0.589 |
| 4. | 0.426 |
| 5. | 0.627 |
| 6. | 0.371 |
| 7. | 0.308 |
| 8. | 0.445 |
| 9. | 0.430 |
| 10. | 0.681 |
| Average | 0.449 |

Interpretation of results: The Tasco Techdry Masonry Unit with Techdry Mortar show a close and continuous range for the Flexural Strength test . The average of 0.449 Mpa is considered a high result for masonry products.

Date and Place 21 November 2000, Highett, Vic.

**BARRY SCHAFER
PETER WESTGATE**

**APPRAISALS MANAGER
SENIOR LABORATORY TECHNICIAN**