

DP0518 TECHNICAL REPORT

Evaluation of Cementitious Boards bonded to Styrofoam using Solfre 2, XP 2330A/B

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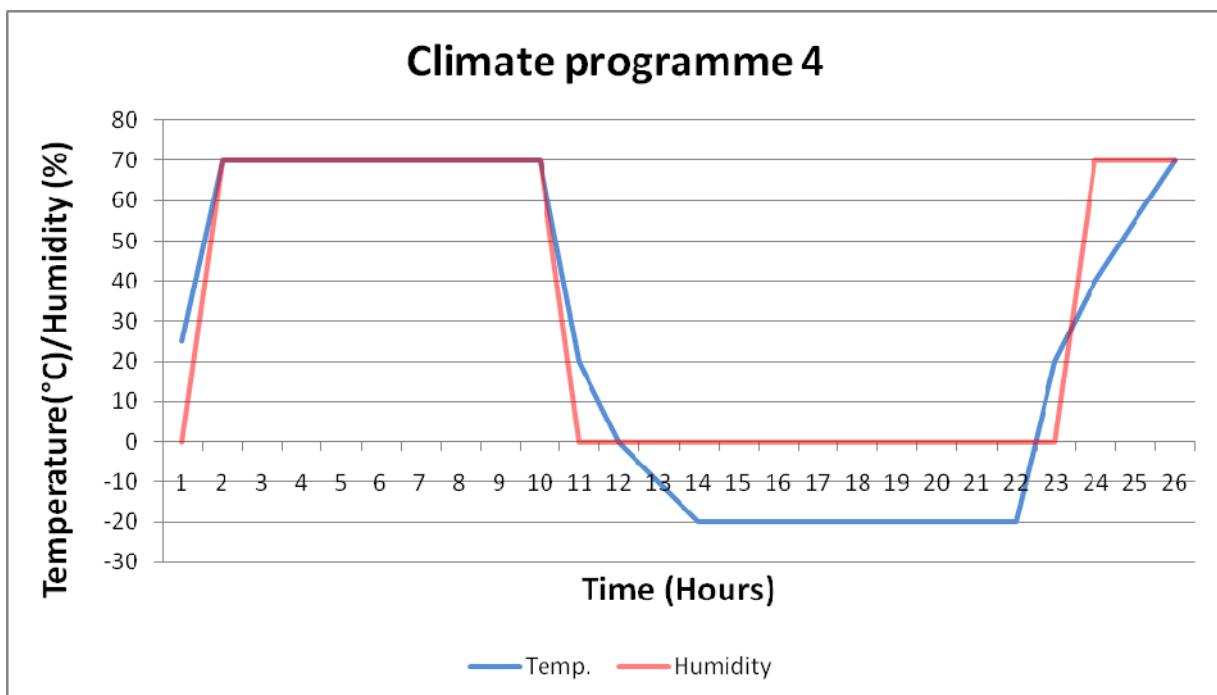
Date : 19.02.2009

Introduction

Panels were bonded by Chemique bonded by Panel systems using Solfre 2 grade XP 2330A/B. The panels consisted of two 600mm x 600mm panels bonded on one side only and a series of 100mm x 100mm panels bonded on both sides.

Method

The two large panels were placed in the environmental cabinet and subjected to 10 cycles of high temperature and humidity followed by a period of below freezing temperature. The exact cycle is shown graphically below. The theory behind this cyclic testing is to expose the panel to extremes of expansion and contraction together with high humidity looking to expose any areas of delamination where the humidity would ingress between the bondline then upon freezing would expand any delamination.



The smaller 100mm x 100mm panels were bonded between two steel plates then placed in the tensometer and pulled apart at a rate of 25mm/min. The mode of failure together with the maximum force was recorded.

Results

Both panels were examined after ten complete environmental cycles, neither panel shows any signs of delamination.

Tensile results:

Test Piece	Maximum force	Mode of Failure
1	3230 N	100% Styrofoam Failure
2	525 N	100% Styrofoam Failure
3	720 N	100% Styrofoam Failure
4	548 N	100% Styrofoam Failure
5	1065 N	100% Styrofoam Failure
6	2680 N	100% Styrofoam Failure
7	2737 N	100% Styrofoam Failure
8	2353 N	100% Styrofoam Failure
Mean	1732 N	



Picture showing the mode of failure

Conclusion

The adhesive and method of boning are more than adequate for the panel construction, and whilst the tensile strength is quite variable this is purely down to the variable strength of the Styrofoam.

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19.02.2008