



0013

PHYSICAL TESTING ANALYSIS REPORT

Description: Determination of Frost Resistance

Test Method: In House Method based on prEN772-22

Lucideon Reference: (174928)-37273

Client: South Downs Flint
1 Beechings
Henfield
BN5 9XB

For the Attention of: Sarah Willoughby

Date Logged: 24-Oct-2017

Date of Tests: 31-Oct-2017 to 29-Nov-2017

Report Date: 30-Nov-2017

Purchase Order No.: X

Please find attached the results for the sample(s) recently submitted for analysis.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Miss Zoe Kinally
Manager



DETERMINATION OF FREEZE/THAW RESISTANCE OF CLAY MASONRY UNITS (Tested in Accordance with DD/CEN/TS 772:22: 2006)

1 SAMPLES RECEIVED

Samples of Flint Faced Concrete Block measuring 440 x 210 x 75 mm were received from the client for testing.

2 TEST PROCEDURE

2.1 Introduction

The test has been carried out in accordance with the European Method DD CEN/TS EN 772-22: 2006 which involves subjecting a panel of blockwork to repeated freeze-thaw cycles designed to simulate naturally occurring conditions. From the test the blocks are given a freeze-thaw resistance classification, which categorises the blocks as being suitable to withstand the following conditions:

F2 – Severe Exposure
F1 – Moderate Exposure
F0 – Passive Exposure

The test method is summarised as follows:

2.2 Sample Preparation

Each unit was numbered and any existing defects on individual blocks noted before testing.

2.3 Construction of Test Panel

A panel of units was built to give approximate dimensions 740 x 660mm. The panel was then pointed and left to cure in ambient laboratory conditions for a minimum of 3 days before testing.

2.4 Freeze/Thaw Cycles

The panel was immersed in water at room temperature for 7 days before installation in a freeze-thaw apparatus which subjects the main face of the panel to repeated cycles of freezing and thawing following an initial freeze at an air temperature of -15°C for 6 hours. The rear of the panel was insulated with a 50 mm thick extruded polystyrene foam board and the sides insulated with a 25mm thick polystyrene board.

A freeze-thaw cycle consists of 120 minutes (± 5 mins) of freezing to -15°C ($\pm 3^\circ\text{C}$) air temperature, heating with re-circulated warm air to 20°C ($\pm 3^\circ\text{C}$) for 20 minutes, 2 minute flood coat spray at a water temperature of 18-25°C followed by a two minute drain period. This gives 10 cycles every 24 hours and a standard test will continue for 100 cycles.

2.5 Assessment of Freeze/Thaw Resistance

The panel was examined after 10 and 50 cycles. After 100 cycles the panel was allowed to thaw completely, removed from the apparatus and photographed. The panel was then dismantled and individual bricks examined for frost damage as categorised in Table 1.



Table 1

Categories/Types of Damage	Type
None	0
Crater (e.g. lime-burst)	1
Hair Crack $\leq 0.2\text{mm}$	2
Minor Crack	3
Surface Crack $> 0.2\text{mm}$	4
Through Crack	5
Chipping, Peeling, Scaling	6
Fracture	7
Spalling, Delamination	8

2.6 Results

Incidence of Damage

After 10 Cycles

After 50 Cycles

After 100 Cycles

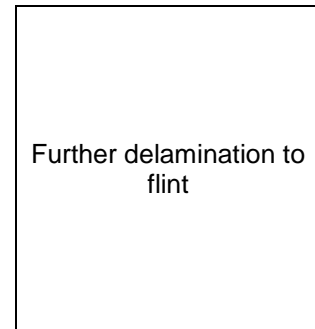
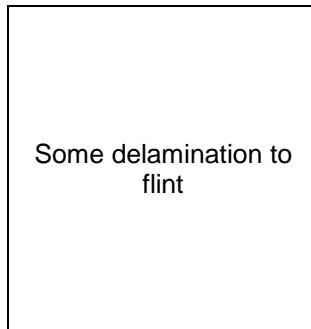
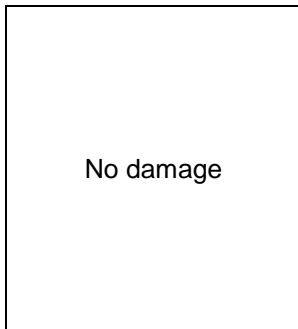




Figure 2 – Images of damage after 100 cycles at the end of the test.

3 CONCLUSIONS

From the test carried out damage greater than type 3 (see Table1) was observed after 100 freeze-thaw cycles and therefore the units are classified as being F1 i.e. suitable for use in conditions of moderate exposure.

Guidance on the type of masonry subject to moderate exposure conditions is given in Appendix B3.3 of BS EN 771-1 “Specifications for Clay Masonry Units”. Additional guidance may be offered by the manufacturer and the use of these bricks in specific situations.

END OF TEST REPORT