

**PHYSICAL TESTING ANALYSIS REPORT**

**Description:** Determination of Frost Resistance

**Test Method:** EN 539-2

**Lucideon Reference:** (144881)-23866

**Client:** Kent Clay Tiles Ltd  
Mountfield House  
Mountfield Road  
New Romney  
TN28 8LH

**For the Attention of:** Mr. Charlie Hope

**Date Logged:** 13-Oct-2014

**Date of Tests:** 08-Oct-2014 to 07-Nov-2014

**Report Date:** 11-Nov-2014

**Purchase Order No.:** N/A (C Hope)

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.



**Mr Simon Hall**  
**Author**

**Lucideon Reference:** (144881)-23866  
**Customer Reference:** Hanbury/Spicer  
**Description:** Handmade Clay Tiles



**CLAY ROOFING TILES –  
 TEST FOR FROST RESISTANCE FOR DISCONTINUOUS LAYING  
 DETERMINATION OF PHYSICAL CHARACTERISTICS  
 BS EN 539 Part 2 Test for Frost Resistance 2013**

**1 SAMPLES RECEIVED**

6 plain tiles with nominal dimensions 271 x 163 mm. As sampled by client.

**2 TEST PROCEDURE**

**2.1 Saturation of Tiles**

The samples were dried at 110°C, weighed and examined for existing defects, then progressively immersed in water over a period of 5 days. After the tiles are fully immersed they are then left to soak for a further 72 hours, then they are removed and weighed. The water absorption results are given in Table 2.

**2.2 Freeze/Thaw Tests**

The tiles were tested according to the method described in BS EN 539-2: 2013 European Single Test Method using the apparatus illustrated in that standard. The tiles were examined at 30, 90 and 150 cycles.

**2.3 Results**

The tiles are assessed for damage using the criteria stated in Table 1.

**Table 1 - Interpretation of the Result**

		Front	Back
<b>1</b>	Pit	-	-
<b>2</b>	Hair Crack	-	-
<b>3</b>	Nascent Crack	-	-
<b>4</b>	Surface Crack	X	X <sup>a</sup>
<b>5</b>	Surface Damage (chip, peeling, flaking)	X	X <sup>a</sup>
<b>6</b>	Structural	X	X
<b>7</b>	Loss of Interlocking ribs	X	X
<b>8</b>	Break	X	X
<b>9</b>	Delamination	X	X
<b>10</b>	Loss of all Nibs		X

**X** = unacceptable / **-** = acceptable

Note: the degree of damaging can be demonstrated through a change in the impermeability and/or flexural strength of the product

<sup>a</sup> Where the degree of damage indicates that the functional performance of the product would not be assured.

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Table 2

Tile No:	% Water Absorption	Frost Damage					
		30 Cycles (Front)	30 Cycles (Back)	90 Cycles (Front)	90 Cycles (Back)	150 Cycles (Front)	150 Cycles (Back)
1	8.5	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
2	8.5	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
3	8.1	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
4	8.7	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
5	8.5	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
6	8.6	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
<b>Mean</b>	8.5						

The tiles were examined after 150 cycles for signs of damage due to the action of frost.

### 3 SUMMARY AND CONCLUSIONS

The sample meets the criteria for level 1 minimum 150 cycles in the above standard.

**END OF TEST REPORT**