



0013

## PHYSICAL TESTING ANALYSIS REPORT

**Description:** Determination of Frost Resistance

**Test Method:** EN 539-2:2013

**Lucideon Reference:** (181571)-13583

**Client:** ACA (Kent) Ltd - T/A Spicer Tiles  
Mountfield House  
Mountfield Road  
New Romney  
TN28 8LH

**For the Attention of:** Mr. Adam Spicer

**Date Logged:** 21-Mar-2018

**Date of Tests:** 09-Apr-2018 to 10-May-2018

**Report Date:** 11-May-2018

**Purchase Order No.:** BACS

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**  
**Manager**



**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 265 x 165 mm were received for testing as sampled by the 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.

**Lucideon Reference:** (181571)-13583  
**Customer Reference:** SPIPT01  
**Description:** Handmade Clay Roof Tiles



**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	7.5	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
2	7.8	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
3	7.9	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
4	8.0	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
5	7.9	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
6	9.5	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE	NO DAMAGE
<b>Mean</b>	<b>8.1</b>	<b>NO DAMAGE</b>	<b>NO DAMAGE</b>	<b>NO DAMAGE</b>	<b>NO DAMAGE</b>	<b>NO DAMAGE</b>	<b>NO DAMAGE</b>

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. If after 150 cycles none of the tiles shows any of the damage described as unacceptable according to Table 1.

**NOTE:** The results given in this report apply only to the samples that have been tested.

**END OF TEST REPORT**