0013

PHYSICAL TESTING ANALYSIS REPORT

Description:	Determination of Frost Resistance
Test Method:	EN 539-2:2013
Lucideon Reference:	UK23913-6102
Client:	Heritage Clay Tiles Ltd Hangman's Wood Industrial Park Stifford Road South Ockendon Essex RM15 6RL
For the Attention of:	Mr. Aaron McLaughlan
Date Logged:	10-Mar-2023
Date of Tests:	21-Mar-2023 to 13-Apr-2023
Report Date:	17-Apr-2023
Purchase Order No.:	HAVP06333

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.

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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 clay roof tiles with nominal dimensions of 265x165 mm were received for testing 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 five 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 Results

		Front	Back
1	Pit	-	-
2	Hair Crack	-	-
3	Nascent Crack	-	-
4	Surface Crack	X	X[a]
5	Surface Damage (chip, peeling, flaking)	X	X[a]
6	Structural	X	X
7	Loss of Interlocking ribs	X	X
8	Break	X	X
9	Delamination	X	X
10	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.			
a Where the degree of damage indicates that the functional performance of the product would not be assured.			

Table 2 – Results

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	3.0	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
2	2.9	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
3	3.1	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
4	3.6	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
5	2.8	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
6	3.9	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage
Mean	**3.2**	No Damage	No Damage	No Damage	No Damage	No Damage	No Damage

The tiles were examined after 30, 90 and 150 cycles and showed no damage due to the action of frost.

3 SUMMARY AND CONCLUSIONS

The samples meet the criteria for level 1, if after 150 cycles, none of the tiles show any damage described as unacceptable according to the above standard in Table 1.

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

END OF TEST REPORT