



CLASSIFICATION TESTING OF ROOFING SLATE

ATS JOB # D120941-1

Prepared by _____
Joshua Kimble, Materials Testing

Prepared by _____
Rebecca Mason, Materials Testing

Approved by _____
Federico Lopez, Materials Testing

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Subject

Classification Testing of Roofing Slate

Material

Shaanxi Gray Black

Objective and Background

Global Slate submitted roofing slate samples for testing to determine the classification in accordance with ASTM C 406-06, *Standard Specification for Roofing Slate*.

Test Procedure**1. Water Absorption of Slate**

Testing was performed per ASTM C 121-06, *Standard Test Method for Water Absorption of Slate*. The samples were dried in a ventilated oven at 60°C for 48 hours. At the 46th, 47th, and 48th hour, the samples were weighed to ensure that the weight was constant. The samples were then completely immersed in distilled water at 20°C for 48 hours. The samples were removed one at a time, wiping the surface dry with a slightly damp absorbent towel, and immediately weighed.

2. Weather Resistance of Slate

Testing was performed per ASTM C 217-94(2004), *Standard Test Method for Weather Resistance of Slate*. The samples were dried in a ventilated oven at 60°C for 48 hours. At the 46th, 47th, and 48th hour, the samples were weighed to ensure that the weight was constant. The samples were marked and measured for thickness using a micrometer. Using a hand scraping tool, the samples were scraped at a 30° angle with 3 lb_f of applied pressure on the cutting edge. The specimens were again measured for thickness and recorded as the "depth of softening prior to the acid treatment". The scraped samples were soaked in a 1% sulfuric acid solution for 7 days¹ at ambient temperature. After the 7th day, the samples were measured and scraped again using the above procedure. The thickness measurements were recorded as "depth of softening after the acid treatment".

3. Modulus of Rupture

Testing was performed per ASTM C120-06, *Standard Test Methods of Flexure Testing of Slate (Breaking Load, Modulus of Rupture, Modulus of Elasticity)*. The samples were dried in a ventilated oven at 60°C for 48 hours. At the 46th, 47th, and 48th hour, the samples were weighed to ensure that the weight was constant. The center of the specimens were located and marked and then span lines were marked parallel to, and 1 inch from the center line. The specimens were placed flat on knife-edges of a testing fixture, and a constant load was applied at a test speed of 0.05 in/min until failure.

⁽¹⁾Note: The acid solution was changed daily

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Requirements**Table 1: Physical Requirements per ASTM C 406-06**

Classification	Breaking Load, Min (lb) ASTM C 120	Absorption, Max (%) ASTM C 121	Depth of Softening, Max (in) ASTM C 217
S ₁	575	0.25	0.002
S ₂	575	0.36	0.008
S ₃	575	0.45	0.014

Results**Table 2: Classification Test Results**

Test Material ID	Breaking Load (lb)	Absorption (%)	Depth of Softening (in)	Classification
Shaanxi Gray Black	603	0.24	-0.001	S ₁