

TR7.203-204

R. 415: Part 2

H1—CLAY FROM HAMILTON

Summary

The sample of plastic clay received from McHugh Brothers, Launceston, and stated to be from Hamilton has been examined for suitability for de-aired pipe and brick extrusion.

The material was suitable for this purpose. Pipes extrude well, dry and fire without cracks to form a body which withstands a water pressure of 40 lbs. per square inch without leaking. Bricks extrude well, dry and fire without cracking to form a sound brick free from faults. The bricks show a white scum on the surface in firing to 1100°C, but this scum disappears on firing to 1150°C.

Preparation and Testing

The sample was roll crushed to pass an $\frac{1}{8}$ inch screen. For extrusion the sample was thoroughly pugged with the necessary water, extruded at 28 inches of mercury vacuum, dried naturally and fired at the range of temperature shown with two hours soaking at maximum temperature.

Results

Sizing Analysis

	Per Cent Weight
+200	17.1
-200	82.9
Composite	100.0

The plus 200 mesh fraction consists of clean quartz with a small amount of iron oxides.

De-aired Extrusion

	Tempering Water %	Power KWH/1000g	% Drying Contraction	Per Cent Firing Contraction					% Loss of Weight on Firing
				1000°	1050°	1100°	1150°	1200°	
H1 pipe	25.6	—6.50	1.25	2.75	3.75	3.75	3.75	
H1 brick	26.0	.0183	7.00	3.00	4.00	5.00	5.00	6.7	

Modulus of Rupture (lbs. per square inch).

	Dried at 105°C	Fired at 1050°C
H1 brick	320-390	1670-1810

Power result represents the kilowatt hours needed to extrude 1000 grams of a clay column 1.25 x 1.5 inches in cross section.

Modulus of rupture is calculated from the weight necessary to rupture a bar 1.25 x 1.5 inches in cross section. Pipes and bricks can be rapid dried at 105°C without warping or cracking.

Pipes fired at the range of temperatures shown and pipes glazed by McHugh's at 1100°C, withstand a hydraulic pressure of 40 lbs. per square inch, without leaking. The colour of the fired bricks is reddish pink up to 1100°C and dark red at 1150°C to 1200°C. Yellow-Green vanadium efflorescence is apparent in bricks fired at temperatures up to 1100°C.