

TR 11-197-198

## R. 530

**37. WYNYARD BRICK Co.: BRICK MANUFACTURING TESTS**

Two samples were submitted by Mr Brian R. Archer on behalf of the above company for brick manufacturing tests by stiff plastic pressing.

**The Samples**

The following descriptions were supplied with the samples:—

No. 1—Yellow clay from W. Holyman's property near Deep Creek Road.

No. 2—Brown-greyish clay from W. Holyman's property in bush on flats.

Occasional quartzite pebbles, up to half an inch in diameter were observed in both samples.

**Summary**

Moderate to good quality bricks have been manufactured from both samples by stiff plastic pressing methods, over a range of firing temperatures from 950° C to 1100° C. Disfiguring laminations were observed in most specimens.

Firing contraction increased substantially in specimens fired at above 1050° C, and this factor should be considered in commercial brick manufacture from these materials. Addition of sand or grog to the mix would reduce contraction at all temperatures but could impair the strength of the finished products.

All bricks have been tested for transverse strength (Modulus of Rupture) and easily meet the S.A.A. Interim Specification 323 of 400 lb per square inch.

The colour of the fired bricks ranges from light orange for pieces fired at 950° C to rust red for firings at 1100° C.

All specimens show slight vanadium efflorescence. Stiff plastic mixes from both samples have good plastic and cohesive properties and the pressed bricks have good strength. There is however a fairly strong tendency to lamination in pressing, which has been mentioned previously as a disfiguring characteristic in the finished products. Sample No. 2 is less prone to lamination than is No. 1.

**Sample Preparation**

Both samples were partly dried, forced through a half inch screen and thoroughly mixed. Representative samples were then taken by riffle, further dried and jaw and roll crushed to minus 10 mesh.

The required amounts of water were then incorporated by hand mixing followed by a pass through a Rawdon pug mill.

### Pressing

No difficulties were encountered in pressing except that some slight surface bowing was observed on ejection from the die. Most specimens showed laminations, but all had good green strength.

### Drying and Firing

The pressed bricks were allowed to dry naturally for several days and finished in an electric oven at 110° C.

The dried bricks were then fired to the indicated temperatures, soaking for two hours at these temperatures.

Moisture content, firing losses, and drying and firing contractions are shown in tabulation.

Sample	Moisture in Green Brick	Drying	Per Cent							
			Contractions (Cumulative)				Firing Losses (° C)			
			Firing (° C)				Firing Losses (° C)			
No. 1	17.9	4	5	5	7	9	4.3	4.2	4.5	4.7
No. 2	17.8	3	4	5	7	9	5.1	5.4	5.5	5.5

### Tests on the Fired Bricks

#### Colour

Bricks from both samples showed a light orange colour on firing at 950° C progressing to rust red at 1100° C.

#### Modulus of Rupture

Modulus of rupture tests were carried out by Mr H. Boyd, Engineering Department, Launceston Technical College.

Sample	Firing Temperature (° C)	Modulus of Rupture (M) (lb per sq. in)
No. 1	950	700
	1000	900
	1050	1500
	1100	2600
No. 2	950	900
	1000	800
	1050	2000
	1100	2400

Note: In the above tests values for M have been written down to the lower hundred. One specimen only was tested for each temperature.

#### Efflorescence

All specimens tested showed slight vanadium efflorescence. No significant variation was observed in specimens fired at different temperatures.