

Section 2—Ceramic Investigations

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TR9-175-176 R. 453, R. 454

27. MACHEN'S BRICK WORKS, LAUNCESTON.

Samples

Six samples were submitted by Machen's Brick Works, Launceston, for brick manufacturing tests by the stiff-plastic pressing method.

The following descriptions were supplied with the samples:—

R. 453—

- Sample No. 1. "Relbia Clay".
- Sample No. 2. "Newman's Property, Relbia" 10' "Red".
- Sample No. 3. "Newman's Property, Relbia" 10'-15'.
- Sample No. 4. "Newman's Property, Relbia" 15'-18'.
- Sample No. 5. "Newman's Property, Relbia" 20'-25'.

R. 454 "West Tamar Clay".

Tests were also requested on a blend of equal parts of samples 1 to 5 inclusive.

Preparation and Testing

The dry lump samples were crushed to minus 10 mesh B.S.S. and thoroughly mixed. The required amount of water was then incorporated by hand mixing, followed by a pass through a Rawdon Pug Mill.

Bricks were formed from stiff-plastic mix by pressing in a helical screw press.

The pressed bricks were allowed to dry naturally for several days and finished in an electric oven at 110° C. They were then fired at a temperature of 1050° C, soaking for two hours at this temperature.

The per cent moisture, firing losses and drying and firing contractions were determined and details are shown in the tabulation.

Summary

1. Satisfactory quality bricks have been made by stiff plastic pressing and firing at 1050° C from all samples submitted except R. 453-4. The fired test pieces show slight random surface cracks and other imperfections, but these are not considered to be serious disabilities. In general, the fired bricks are of good appearance and shape. The edges are well defined but rather easily abraded.

2. The stiff plastic mixes from all samples except R. 453-4, have good plastic and cohesive properties, and are easily worked. No. 4 sample has very good plasticity and cohesion, but even with 30 per cent added water the mix is extremely tough and difficult to work.

3. Bricks made from sample R. 453-4 show high drying and firing contractions. The fired test pieces are rather distorted and show deep transverse cracks, in some cases through almost the entire width.

4. Bricks made from a blend of equal parts of samples R. 453 Nos. 1 to 5 exhibit the undesirable features of those from sample No. 4, but to a much lesser degree. Drying and firing contractions are still high, but the deep cracks apparent in No. 4 appear only as surface cracks in the blend.

There seems to be no point in including No. 4 sample in a blend as bricks of superior quality to the blend have been made from each of the other individual samples.

The moisture content of the green brick is expressed as (a) the moisture in the green brick and (b) the percentage of water added to the dry clay.

Test Results

Sample No.	Green Brick		Fired Brick Per Cent firing loss	Colour	Per Cent Contractions		
	(a) Per Cent moisture	(b) Per Cent water added to dry clay			Drying	Firing	Total
R.453-1	16.2	19.3	7.7	Pale creamy to orange	5	2	7
R.453-2	17.6	21.4	8.2	Deep rust red	4½	2½	7
R.453-3	16.8	20.2	6.9	Medium rust red	4	2	6
R.453-4	23.5	30.7	14.2	Medium rust red	7	9	16
R.453-5	15.0	17.7	7.2	Deep rust red	4	1	5
R.453- Blend (1-5)	18.3	22.4	9.5	Light to medium rust red	6	4	10
R.454	16.6	19.8	7.7	Pale creamy pink	5	1	6