

TR 12_185-187

R. 550**WYNYARD BRICK CO****Samples**

Three samples of clay were submitted by Mr B. Archer for Wynyard Brick Co. The samples were:—

- (1) Marshall's—Brown clays used for present red brick production.
- (2) Holyman's—Brown clays used for present red brick production.
- (3) Mawbanna—White clay.

Investigation

A blend of (1) and (3) or (2) and (3) was required, which would yield a white brick with good mechanical strength.

Testing

Initially a 50/50 mixture of (1) and (2) was pressed into sample bricks, the resultant products dried and fired over a range of temperatures to determine the optimum bonding temperature of these materials.

The white clay (3) was also pressed into sample bricks and fired over the same range of temperatures.

Blends of (1) and (3) and (2) and (3) were then made and sample bricks pressed out of each mixture. These were dried and fired at a range of temperatures. In the case of the white clay used alone, the green bricks were badly formed, flaked readily and had little mechanical strength. With the blends of brown and white clay, some improvement in mechanical strength was observed, but the pressed bricks had to be handled carefully in the green wet state. There was some improvement in all green products when dry but flaking at the edges on rough handling was still apparent.

Test Results

		BLEND					
		50/50 (1) and (2)	100% (3)	10% (1) 90% (3)	10% (2) 90% (3)	20% (1) 80% (3)	20% (2) 80% (3)
Firing temperature	750° C	no bond	no bond	....	....	....	....
	800° C	no bond	no bond	....	....	....	....
	850° C	no bond	no bond	....	....	....	....
	900° C	no bond	no bond	....	....	....	....
	950° C	bonded	no bond	no bond	no bond	no bond	slight bonding
	1000° C	bonded	bonded	bonded	bonded	bonded	bonded
Colour	.....	light red	white	off white	off white	white with pink streaks	white with pink streaks

Conclusion

The white material (3) contains approximately 20% clay and requires a temperature of 1000° C for a satisfactory bond to form. By mixing the white and brown clays it is impossible to reduce this firing temperature by a significant amount unless the proportion of white clay becomes minor in the mix. To do this would defeat the object, so that if a white brick must be produced, a compromise mixture can be used of 80% white and 20% brown. This will yield a whitish product if fired at a high enough temperature, but it is doubtful if the existing equipment will be capable of doing this, as bricks in current production show marked underfired characteristics.