

Note = May not be from the 93B 035 location. Exact location
is not known

Test of Sample of CLAY from Williams Lake, B. C.

(24)

Clay sample No. 13, G.G.A.

Submitted by Mr. William Hunt, per Mr. Oliver. ?

Location - Williams Lake, (South shore) B.C.

Date - Oct. 8, 1922.

Clay in large lumps - crushed by breaker, then ground
in mill (ordinary steel grinder) to 100 mesh screen.

Colour.

The clay is a grey-white, and is somewhat gritty to
the touch. It was noted in some of the samples which
had apparently been exposed to water action, that small
areas on the outside of the sample appeared to be of
finer and whiter texture and colour than the general
run of samples.

Two bricklets - size 4" x 2", moulded:-

No. 1 in thickness - .58"

No. 2 " " - .16"

The dry press bricklets formed up well, preserving a
good edge, but had to be handled carefully as they
were inclined to be powdery.

Wet Press.

The dry clay powder as above, showed water absorption
of 25 per cent.

Three bricklets, size 4" x 2", of this clay were moulded:-

No. 3 in thickness - .25"

No. 4 " " - .73"

No. 5 " " - .3"

The bricks, in moulding with 25% absorption, did not
stand up well, and were inclined to be flabby. The
clay appears to have poor plasticity, but has a body
which could be handled with about 15% absorption.

It is suggested that fine grinding and ageing in a
dark, moist cellar, would improve the plasticity of

also be resorted to.

If slurry were used, it could be made up and allowed to settle, when the top layer would have more plasticity, if such were desired.

This clay should be tested for casting.

Air Drying.

The bricklets were air dried in a dry atmosphere of 65° fahr. for about 16 days. They were then placed upon a heater of about 150° fahr. for 24 hours. At the expiration of this period, Nos. 1 and 2 (d.p.) showed an expansion of 1%, whilst Nos. 3, 4, and 5, (w.p.) showed an average air shrinkage of 3%. In air drying the clay did not show any checking or warping, but appeared to be stable.

Burning.

The five bricklets were then placed in a gas muffle kiln, and were given a "biscuit burn" for a period of 8 hours, to maximum temperature of 800 centigrade, or cone .015. Upon being examined after "biscuiting", the bricklets had practically no tensile strength, and were powdery. When cool, they were removed from this muffle and placed in another small gas muffle kiln, which has an electrical force draught allowing of attainment of higher temperature. These were burned for a period of 9 hours, reaching at the 9th hour a maximum of temperature 1510° centigrade, or cone 19.

At 1340° centigrade, when No. 4 cone was just beginning to bend, bricklets Nos. 2 and 5 were removed from the front of the kiln. These apparently stood the sudden change in temperature very well, and appear

In setting the bricklets in the muffle, bone ash was used, but unknowingly the bone ash furnished must have contained a percentage of fluxing impurities, as when the temperature of 1510° centigrade was reached, this bone ash fluxed, and also fluxed the bottom of the fire clay kiln. The kiln was cooled, and after cooling the three remaining bricks were removed from the muffle with some little difficulty.

Fire Shrinkage.

Bricklet No. 2 (d.p.) at temperature 1340° centigrade, had a shrinkage of 3.7%.

Bricklet No. 5 (w.p.) at temperature 1340° centigrade, had a shrinkage of 8%.

Bricklet No. 1 (d.p.) at temperature 1510° centigrade, had a shrinkage of 8%.

Bricklet No. 3 (w.p.) at temperature 1510° centigrade, had a shrinkage of 10%.

Bricklet No. 4 (w.p.) at temperature 1510° centigrade, had a shrinkage of 10%.

The shrinkages are all calculated from original moulding size.

Colour.

The bricklets, when burned at the lower temperature, had a dull white colour, whilst at the higher temperature, a good, clear white was obtained. The texture at 1340° centigrade would appear to be a good cohesion of the material. No test for tensile strength was made owing to the limited samples. At the higher heat, 1510° centigrade, the bricklets Nos. 1, 3, and 4 showed vetrification well advanced, shape well retained, and apparently a

Absorption.

The bricklets Nos. 2 (d.p.) and 5 (w.p.) were immersed in water for 8 days. Bricklet No. 2 (d.p.) then showed absorption of 12%, whilst No. 5 (w.p.) showed absorption of 7.7%.

Summary.

This clay, according to sample tested, is very satisfactory in moulding press work, and with proper testing would be suitable for casting. For moulding by jiggering it would appear to be somewhat flabby and inclined to tear.

In air drying, it stands up well, retains shape, and the shrinkage is small. In burning, it seems to stand excessive burning conditions successfully, and the colour is good.

No attempt is made here to express an opinion as to commercial value, as this would depend upon a thorough investigation of the clay field, the availability of necessary constituents for combining with the clay, and a survey of the market and the cost of manufacture.

Owing to the fact that our pyrometer does not register over 1500° Centigrade, a sample of the clay was sent to the University of Washington for test.

Mr. H. Wilson, Chief of the Department of Ceramic Engineering reports as follows;

" The cone fusion point of the sample which you sent Dean Roberts on October 6th. is Cone 27. In the fused condition, the mass remains almost pure white in colour."

COPY.



BUREAU OF MINES.

THE GOVERNMENT OF THE PROVINCE OF BRITISH COLUMBIA

Certificate No. 17700.

October 20, 1922. VICTORIA.

GOVERNMENT ASSAY OFFICE.

Assay Certificate.

I HEREBY CERTIFY that I have assayed the following sample handed me by Hon. J. Oliver, Premier, Parliament Bldgs. Victoria, B.C. and said to represent Clay from Williams Lake - Green Lake. Character of sample.

I find the same to contain, in dried sample:--

Table with 7 columns: Assayer's Mark, Description of Sample, Gold (Oz. per Ton.), Silver (Oz. per Ton.), Copper (% Wet Assay), Lead (% Wet Assay), Zinc (%). Rows include Analysis of Clay with components: Silica (72.5%), Iron Oxide (1.2%), Alumina (20.1%), Lime (1.0%), Magnesia (Trace), Manganese (0.2%), Loss on Ignition (4.4%).

This Analysis compares most closely to that of Bendorf, on Rhine, Germany, used in making stoneware. It closely approximates the Berlin Porcelain clay, used in making fine white porcelain. The 'cone' sent herewith, was burned to temperature of about 1500° Cent. and was not fused, being pure white and vitreous.

CHARGES \$

D. E. Whittaker Asst. Provincial Government Assayer.