

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

CLARKE CLAY PROSPECT
(Ceramic clay)
Morrow County

Owner: C. O. Clarke, 6129, S.E. Insley Street, Portland.

Location: The deposit is located about one half mile west of the Ellis Guard Station, on the headwaters of Turpentine Creek, near the south edge of the SE $\frac{1}{4}$ sec. 34, T. 4 S., R. 29 E., at an elevation of over 5000 feet. It is about 31 miles southeast of Heppner, over a road which is gravelled for all but the last 2 miles.

Area: The clay is discontinuous, but covers a general area of from 10 to 20 acres.

History and Development: William Henry Clarke discovered the deposit in the late 1900's; in 1938 he dug 10 or 15 shallow test pits through the clay to demonstrate its thickness. Samples were sent in to the Department at that time, and the clay proved to have unusually good ceramic properties for an Oregon clay. In one pit the clay is 36 inches thick, in another 24 inches, although in most of the pits it averages 12 to 18 inches. It has a thin overburden of soil, usually less than 6 inches, and grades downward into sandy clay and finally sandstone.

Geology: The bedrock is a medium to coarse-grained highly arkosic sandstone, with only a small percentage of quartz and mafic minerals. Bedding is indistinct or lacking, although there are some thin conglomerate lenses. Secondary limonite "ribs" which weather out to form hard resistant plates and nodules are not uncommon.

The clay itself is remarkably white, with occasional rusty spots and

fairly numerous fragments of organic material. An average profile would be:

3-6" soil
 12-24" pale gray to white clay, fine, soapy,
 no grit; some charcoal fragments, some
 yellow spots.
 2-5" decomposed sandstone, gritty, gray.
 Hard sandstone

The area is covered with a fairly dense growth of lodge pole pine generally less than 6 inches in diameter. The topographic relief is less than 20 feet, the land slopes about 1 in 20 to the northeast, and several parallel swales contain in their centers small gullies on bedrock. Bedrock also outcrops on the ridges, the clay occurring generally in the swales. A few small springs seem to have caused further decomposition of the rock surrounding them, the clay being thickest at these points.

Tests: Portland Lab. number: P-2988
 Ceramic test number: C-11
 Dry color: Very light gray
 Texture: smooth
 Visible impurities: some iron staining
 Wet color: gray
 Plasticity: moderately plastic
 Mineral group: kaolinite
 Drying shrinkage: 3.1%
 Water of plasticity: 37.1%
 Drying behavior: good
 Firing properties:

Cone	Temp.	Color	Firing Shrinkage	Total Shrinkage	Absorption
04	1940°F	Ivory	3.2%	6.3%	24.4%
4	2174°F	Ivory	11.5%	14.6%	9.6%
8	2300°F	Ivory	14.1%	17.1%	8.0%

General: This clay is, as far as Oregon is concerned, a unique white-burning plastic kaolin clay. The size of the deposit, however, and the distance from good transportation, make its economic development except possibly on a very small scale, very doubtful.

Report by: John Eliot Allen, July 28, 1947.



STATE DEPARTMENT OF GEOLOGY
AND MINERAL INDUSTRIES

702 WOODLARK BUILDING
PORTLAND 5, OREGON

August 21, 1947

Sample submitted by D.O.G.A.M.I. (J.E. Allen)

Analysis by:

Sample received on August 5, 1947

L. C. Hoagland
Assayer

Analysis requested Silica, Iron, Alumina assay

Lab. No.	Sample Marked	Results of Analysis	Remarks
P-6375	C.O. Clarke prospect	Silica (SiO ₂) 52.20% Iron (Fe) 0.95% 0.50 Alumina (Al ₂ O ₃) 32.79%	-----
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The Department did not participate in the taking of this sample and assumes responsibility only for the analytical results.