

State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

HAMISH BENTONITE (Ormico)

OWNER

Harry Hamish, 2805 N.E. Weidler Street, Portland, Oregon.

AREA

Four hundred acres of deeded land and 7 claims.

LOCATION

In secs. 4, 5, and 9, T. 38 S., R. 2 E. Camp is at the former location of Climax post office. The principal workings are reached from camp by approximately $1\frac{1}{2}$ miles of trail. It is 28 miles from Medford by road. This includes approximately 11 miles of paved and 17 miles of dirt and gravelled road, the latter part of which is accessible during the summer months only. Camp is at approximately 3500 feet elevation and the principal workings are located at 4300-4500 feet elevation.

HISTORY

Bentonite was first recognized in 1944. Prior to this the property was worked for the medicinal values obtained from the clay and springs, from which the Ormico Products are made . . . * *

In August 1948 seven claims were located in sec. 9 adjacent to the deeded property.

* Department report by H. M. Dole, September 10, 1946.

Dole's petrographic determinations limit the true bentonite clay to samples 5 through 9. These are characterized by a predominance of montmorillonite and by substantial swelling when placed in water.

A possible length in excess of 1500 feet for the bentonite is indicated; however, the continuity of the zone between widely spaced surface cuts has not been established. All of the bentonite cuts visited are in the "slide" area and at no point was the bentonite observed in place with the possible exception of the two cuts in sec. 4. Neither the width nor thickness of the deposit is indicated by present exposures.

Samples 2 and 3 appear to be common clays derived by surface weathering of the tuff. It is doubtful if they are related in origin to the bentonites.

Sample 4 is essentially a tuff rather than a clay. It has, however, been partially altered to a clay which shows some bentonite characteristics.

Of interest is the 5-15 percent feldspar content in all samples. Lewry* identified it as either basic oligoclase or acid andesine in Sample P-3277. These grains presumably occurred as phenocrysts in the original tuff.

Note: Complete results of petrographic examination, spectroscopic analyses, and ceramic tests are included in the supplement to this report.

Informant: Harry Hamish
Report by: H. D. Wolfe
Date of Report: February 10, 1949
Petrographic Report: H. M. Dole
Spectroscopic Analysis: Thomas C. Matthews
Ceramic Tests: C.W.F. Jacobs

* Letter to H. M. Dole - September 25, 1946.

SUPPLEMENT

to accompany report on

HANISH BENTONITE PROPERTY

Ashland Mining District - Jackson County

February 10, 1949

Included are:

Sketch map of property

Petrographic report

Spectrographic analyses

Ceramic tests

* Numbers refer to color in Maerz & Paul
"Dictionary of Color"

PETROGRAPHIC REPORT

<u>Sample No.</u>	<u>Color (Air-dried, Finely-ground)</u>	<u>Percent of Feldspars</u>	<u>Index of Refraction</u>	<u>Amount of Swelling in Water</u>	<u>Color Reaction With Bensidine Base</u>	<u>$\frac{1}{2}$ Anisotropic</u>	<u>Determination</u>
2 P-7993 IG-249	Tan-cream	5 - 10%	Circa 1.55 All > 1.54 99% < 1.56	None to extremely slight	Instant - colorless <hr/> After 5 min. - aquamarine 3I pg 93 *	70	<u>Predom.</u> Halloysite ?
3 P-7994 IG-250	White with tinge of cream	5% ±	> 1.55 < 1.56	Very slight	Very light blue <hr/> Medium lt. blue 5F pg. 93	80	<u>Predom.</u> Halloysite ?
4 P-7995 IG-251	Off-white (Grayish tinge)	5 - 10%	Circa 1.54 (1.543) est. to Circa 1.51 (1.528)	None to extremely slight	Very lt. blue <hr/> Medium dk. blue 4G pg. 95	75-80	<u>Predom.</u> Beidellite and/or montmorillonite
5 P-7996 IG-252	Off-white	10 - 15%	> & < 1.51 (Mostly >)	Slight 1-2 times	Dk. blue <hr/> Deep bright blue 12J pg. 95	50-60	<u>Predom.</u> montmorillonite
6 P-7997 IG-253	White with tinge of cream	10 - 15%	> & < 1.51 (Mostly >)	Estimated 5 x plus	Same	60-70	<u>Predom.</u> montmorillonite
7 P-7998 IG-254	White with slight tinges of gray	5 - 10%	> & < 1.52 (Mostly >)	Estimated 2-3 times	Same	75-85	<u>Predom.</u> montmorillonite
8 P-7999 IG-255	White with slight tinge of gray	5 - 10%	> & < 1.52 (About = amounts)	Estimated 2-3 times	Same	70-80	<u>Predom.</u> montmorillonite
9 P-8000 IG-256	Pure white	10 - 15%	> & < 1.51 (Mostly >) > & < 1.52 (Mostly <)	Estimated 1-2 times	Lt. blue <hr/> little lighter than above 10K pg 93	50-60	<u>Predom.</u> montmorillonite

Qualitative spectrographic analyses made on samples 4, 5, 6 and 9
are as follows:

QUALITATIVE SPECTROGRAPHIC ANALYSIS
(Quantities estimated to nearest power of ten)

Sample #4 (P-7995)	Sample #5 (P-7996)	Sample #6 (P-7997)	Sample #9 (P-8000)
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Elements present in concentrations over 10%

Si	Si	Si	Si
Al	Al		Al

Elements present in concentrations 10% - 1%

Na	Ca	Al	Na
Fe	Na	Fe	Fe
	Fe	Ca	Ca
	Mg		

Elements present in concentrations 1% - 0.1%

Mg		Mg	Mg
		Na	

Elements present in concentrations 0.1% - .01%

Ca	Ba	Mn	Ba	Ti	Ti
Ti	Sr	Ti	Ni		Pb
Pb	Ni	Pb	Sr		Ba
Cr					Ni

Elements present in concentrations .01% - .001%

Mn	V	B	Mn	Sr	Mn	B
Ca	B	V	V	B	V	Sr
		Ca	Ba	Ni	Ca	

Elements present in concentrations below .001%

Cu	Cu	Cr	Cr
	Cr	Cu	Cu
			Be

Ceramic tests

Samples 2, 3, 4, 8 and 9 were put through a standard test for clay for the ceramic industry as set up by the American Society of Testing Materials with the following results:

CLAY FIRING REPORT

Date: January 20, 1949

Reference No. 2
IG-249
P-7993 C-227

Dry color: Cream

Texture: Received pulps

Wet color: Dark cream

Plasticity: Very good

Drying shrinkage: 16%

Dry behavior: Good

Water of plasticity: 51.2%

Firing properties

At:	Color Buff Shrinkage	Total shrinkage	Absorption
1958° F	1.5%	17%	15%
2030° F	4.0%	20%	11.2%

At:	Color Buff	Total shrinkage	Absorption
2138° F	5.5%	22%	7.2%
2175° F	5.5%	21%	7.7%

Firing behavior: Good

CLAY FIRING REPORT

Date: January 20, 1949

Reference number: 3

10-250

P-7994 C-229

Dry color: Lt. cream

Texture: Pulp received

Wet color: Grey cream

Plasticity: Extreme

ing

Dry/shrinkage: 15%

Drying behavior: Very poor, great lamination and checking of bars. Did not dry in 7 days at 75° F.

Water of plasticity: 2.5%

Firing properties:

At:	Color Buff Shrinkage	Total shrinkage	Absorption
1938° F.	3.5	18.5	13.0
At:	Color Buff	Total shrinkage	Absorption
2175° F	5.0	20.0	5.9

Firing behavior: Poor - spalling and excessive checking.

CLAY FIRING REPORT

Date: January 20, 1949

Reference number: 4

IG-251

P-7995 C-228

Dry color: Cream

Texture: Pulps received

Wet color: Grey cream

Plasticity: Poor

Drying shrinkage: 6%

Drying behavior: Good

Water of plasticity: 45%

Firing properties:

At:	Color Pink Shrinkage	Total shrinkage	Absorption
1938° F	3	8	29
At:	Color Pink Shrinkage	Total shrinkage	Absorption
2030° F.	9	15	15

Firing behavior: Good

CLAY FIRING REPORT

Date: January 19, 1949

Reference number: 8

IG-255

P-7999 C-224

Dry color: Pale cream

Texture: Very fine grain massive

Wet color: Dark cream

Plasticity: Highly plastic

Drying shrinkage: 9% linear

Drying behavior: Poor, great deal of warpage and twisting

Water of plasticity: 54%

Firing properties:

At:	Color Pink Shrinkage	Total shrinkage	Absorption
1958° F	7%	16.4	9.7%
2030° F	7.5%	16.5%	0.4%

At:	Color Grey Pink	Total shrinkage	Absorption
2138° F	8.5%	17.5%	0.13%
2175° F	8.5%	17.5%	0.0

Firing behavior: Poor

CLAY FIRING REPORT

January 20, 1949

Reference number: 9

10-256

P-8000 C-230

Dry color: Lt. grey cream

Texture: Pulp received

Wet color: Grey cream

Plasticity: Extremely plastic

Drying shrinkage: 16%

Drying behavior: Poor

Water of plasticity: 68%

Firing properties:

At:	Color Buff Shrinkage	Total shrinkage	Absorption
1958° F	4	20	21.6
2030° F	5	21	16.7

At:	Color Buff	Total shrinkage	Absorption
2138° F	7	22	12.1
2175° F	6	22	12.8

Firing behavior: Fair

Ceramic tests

SUMMARY

These materials vary as to physical properties. Two, P-7993 and P-7995, are almost nonswelling and have the best drying qualities and lowest water of plasticity. These work more like clays. All the others, P-7994, P-7999 and P-8000, are of the swelling type and are gummy and sticky and show a great deal of warpage and rather high shrinkage. These are much too plastic to be used alone as a raw material for any ceramic product at the present time.

In samples P-7992 and P-7995 the shrinkage between C/04 and C/02 is rather high on a percentage basis. While in the other samples the shrinkage is not so great in this temperature range.

These samples were put through a standard test for clay for the ceramic industry as set up by the A.S.T.M. and the comparisons are therefore against a somewhat different material.

The only recommendation that could be made for these materials is for samples P-7994, P-7999 and P-8000. These could be used in the ceramic industry as a floative for enamel and glaze slips in percentages of $\frac{1}{2}$ - 1% and as a plasticizer or binder for plastic bodies in the amounts of 1 - 2 $\frac{1}{2}$ %.

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Report by H. M. Dole
September 10, 1946

Ormico (Hamish) Bentonite

Ashland Mining District
Jackson County

Owner:

Ormico Products
Harry Hamish, pres.

P. O. Box 345
Medford, Oregon

Wilford Long, Sec.

401 Pittock Block
Portland, Oregon

Area:

400 acres of deeded land.

Location:

In sections 4 and 5, T.38S, R.2E. Camp is at the former location of Climax P. O. The headwaters of Antelope Creek run through the property. It is 28 miles from Medford and 18 from Ashland by road.

History:

Bentonite was first recognized in 1944. Prior to this the property was worked for the medicinal values obtained from the clays and springs, from which the Ormico Products are made. Present work consists of leaching the "medicine" clay and preparation of their product.

Topography:

Typical landslide topography.

Development work:

One small (4' wide by 8' deep) cut and several hand auger holes for the bentonite. The "medicine clay" has been "opened up" by a few small cuts. There are several sheds to hold the "crystals" of the "medicine clay" and one building for the curing and bottling of the tonic.

Geology:

The Preliminary Geologic Map of the Medford Quadrangle (Wells '39) shows this to be a landslide area in the Tertiary lava series of the Western Cascades. A fault is mapped at this locality as forming the contact between the lava series and the overlying white rhyolitic tuff. One mile to the southeast is Shale City where Wells reports a "very thinly laminated, carbonaceous, tuffaceous shale containing leaf prints", and Mr. Hamish stated that coal seams are found on Grizzly Peak one mile to the southwest.

As far as could be determined, the bentonite and "medicine clay" has been explored only along the fault zone.

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The area that was visited and in which the exploration has been done is typical landslide topography: hummocky, small blocks tipped at all angles, disrupted drainage, and uneven slopes. Springs and seeps are common and evidently mark the fault mapped by Wells. It is believed that percolating waters along the fault have been largely responsible for the alteration of the ash. Throughout the shifted blocks there are spots of altered material which appear to be of a fairly good grade of bentonite and much better quality than the cut visited. These spots were not continuous and were mixed with the soil so are not of economic size. However, they indicate that alteration and saturation by solutions is the reason for the bentonite and the landslides. Therefore if any bentonite is to be found it will be near the fault zone and its quantity would be determined by the amount left after movement.

Mining:

None.

Economics:

The continuity of the bed exposed by the cut I saw is questionable. But if tests prove this to be a good grade of bentonite it is likely that the horizon could be found in place without too much expense.

Mr. Hamish states that in the cuts made, a thickness of 15' to 20' is indicated. He also stated that a small drift in bentonite was driven last year about a mile north of the one cut visited. This drift is now caved so was not seen. But if this is also of good quality considerable tonnage is indicated.

If possible several new cuts and drifts are to be made this autumn to try and determine the exact attitude of the bentonite horizon. If this work is done I will revisit the property.

At the present time the road from Medford to the property is only a fair weather road and in many spots is very rough. The last 3/4 to a mile must be made on foot. Next month, October, a logging outfit is supposed to start putting in a gravelled road which will connect with the road to Ashland. If this is done the property will be readily accessible.

Samples:

P-5218 From the 4'x8' cut visited. This has been exposed for some time and is somewhat weathered. The material is light yellowish-green in color, somewhat sticky, and has a "soapy" feel.

P-5219 Float from just below the bunkers of the "medicine clay". White in color, unctious, and has a conchoidal fracture. This is probably just a common clay. Mr. Hamish thought it might be dessicated "medicine clay".

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P-5220 Float from various places along the trail from end of the road to the mineral springs. Similar to #2.

Note: It is thought that insufficient exposures were seen to warrant anything but a cursory examination. As a result it is but a preliminary report and should be recognized as such. Also the whole thing seems quite "iffy" to me but I believe it is worthy of some kind of a report.

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February 10, 1949

Hamish Bentonite

Remarks

This report is intended primarily as a means of recording the various test work made on the clay, until such time as a regular report is justified.

The status of the property has not changed appreciably since Dole's report in 1946.

The road connection to the Ashland road mentioned in the report has never been constructed and the property is as inaccessible as ever.

Development work since Dole's report consists of several location cuts. Most of these are in obvious slide material and of little worth in determining the extent of the deposit.

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Mining:
None.

Economics:

The continuity of the bed exposed by the cut I saw is questionable. But if tests prove this to be a good grade of bentonite it is likely that the horizon could be found in place without too much expense.

Mr. Hamish states that in the cut made, a thickness of 15' to 20' is indicated. He also stated that a small drift in bentonite was driven last year about a mile north of the one cut visited. This drift is now caved so was not seen. But if this is also of good quality considerable damage is indicated.

If possible several new cuts and drifts are to be made this autumn to try and determine the exact attitude of the bentonite horizon. If this work is done I will revisit the property.

At the present time the road from Medford to the property is only a fair weather road and in many spots is very rough. The last $\frac{1}{2}$ to a mile must be made on foot. Next month, October, a logging outfit is supposed to start putting in a gravelled road which will connect with the road to Ashland. If this is done the property will be readily accessible.

Samples:

1. From the 4' x 3' cut visited. This has been exposed for some time and is somewhat weathered. The material is light yellowish-green in color, somewhat sticky, and has a "soapy" feel.

2. Float from just below the bunkers of the "medicine clay". White in color, unctious, and has a conchoidal fracture. This is probably just a common clay. Mr. Hamish thought it might be desiccated "medicine clay".

3. Float from various places along the trail from end of the road

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to the mineral springs. Similar to #8.

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