

TABLE 3—(Continued)

	LASALLE COUNTY			LAVACA COUNTY							LIVE OAK COUNTY					
Min. Tech. Lab. No.	60161	60162	60163	60333	60334	60335	60336	60337	60338	60339	60135	60136	60137	60138	60140	60141
Field locality No. ^a	2	7	8	1	2	4	5	6	7	8	2	3A	3B	3C	8	12
Free lime (carbonates)	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Negative	Positive	Negative	Negative	Negative	Negative	Positive	Positive
Benzidine test	Blue-gray	Blue-gray	Greenish blue	Greenish blue	Greenish blue	Greenish blue	Negative	Negative	Very faint	Light blue	Blue	Bluish	Blue gray	Blue gray	Dark blue	Greenish
Color (air-dried)	Dark buff	Light buff	Dark cream	Greenish light buff	Buff	Buff	Buff	Buff	Light blue	Light gray	Cream	Gray	Dark cream	Dark cream	Buff	Dark buff
Oil absorption—																
Calcline 450° C	....	45	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Air-dried	45	48	Slow	Fast	Fast	Medium	Medium	Medium	Fast	Fast	53	Fast	Medium	45	Medium	Slow
Moisture (H ₂ O—) (%)	5.61	8.09	6.75	3.55	4.32	3.63	3.60	3.49	3.33	2.72	1.96	15.48	7.89	6.19	11.86	7.96
Ignition loss—																
300–600° C (%)	2.07	3.61	5.74	4.53	3.62	3.99	3.51	4.55	1.88	1.87	2.69	3.17	2.99	2.84	3.31	4.51
105–1050° C (%)	5.61	8.26	27.26	18.95	21.14	25.36	17.95	19.69	4.15	10.39	8.59	8.52	7.69	7.71	7.33	13.74
Water of plasticity (Atterberg test)—																
Average (%)	53	77	36	49	51	54	55	53	40	35	35	57	69	44	56	114
Difference (%)	36	57	13	46	48	54	58	48	42	31	18	14	51	24	37	157
Swelling test (percent increase in volume)—																
In distilled water	100	200	12	114	109	96	96	108	71	95	50	31	82	40	88	830
In salt water	59	40	12	72	77	61	91	58	48	57	29	35	45	61	27	87
Slaking test (–100 mesh) (%)	26	73	67	9	12	14	17	17	36	46	<2	21	18	<2	19	94
Bloating test: 10 minutes at—																
2000° F	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2200° F	Negative	....	....	....	....	....	....	....	....	....	....	....	Negative	Negative	Negative	....
2400° F	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Yield of 15 cp. drilling mud (bbl. per ton)—																
Untreated	....	Medium	....	....	....	....	....	....	....	....	....	....	....	....	....	53
Treated with soda ash	....	68	....	....	....	....	....	....	....	....	....	....	....	....	....	56
pH value	8.6	8.1	9.0	8.6	8.6	8.7	9.1	9.0	8.5	8.7	8.3	7.3	8.5	7.4	8.2	8.4
Decolorizing efficiency compared to AOCS official clays—																
Natural with natural (%)	....	Very low	....	....	....	....	....	....	....	....	....	....	....	....	....	19
Activated with activated (%)	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	44
Firing test—																
Powder—2200° F (1204° C)	Red brown Sintered Friable	Brown Vitrified	Buff Powder	Brown Fused	Brown Fused	Brown Fused	Brown Fused	Brown Fused	Dark brown Steel hard	Buff Fused	Light buff Sintered	Gray Fused	Tan Fused	Brown Fused	Brown Vitrified	Brown Fused
2400° F (1316° C)	Black Fused	Brown Fused	Brown Fused	....	....	....	....	....	Dark brown >Steel hard	....	Gray Fused	....	....	....	....	....
2600° F (1427° C)	....	....	....	....	....	....	....	....	Dark brown Fused	....	....	....	....	....	....	....
Disks, ½-inch diameter—																
(Approx. cone 02) 2000° F (1093° C)	Red brown >Steel hard	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
(Approx. cone 7) 2200° F (1204° C)	Dark brown Vitrified	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
(Approx. cone 15) 2600° F (1427° C)	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Loss on ignition at—																
105–300° C	1.83	2.24	0.76	1.91	1.93	2.29	2.02	2.10	1.91	1.52	4.85	3.07	3.31	4.05	2.70	2.02
300–450° C	0.36	0.74	1.08	1.46	1.42	1.28	1.23	1.53	1.42	0.92	1.47	2.13	1.76	1.10	0.95	0.91
450–600° C	1.71	2.87	4.66	3.07	2.20	2.71	2.28	3.02	0.46	0.95	1.22	1.04	1.23	1.74	2.36	3.60
600–900° C	1.61	1.98	20.51	12.51	15.59	19.08	12.42	13.04	0.36	7.00	0.84	2.33	1.59	1.17	1.60	7.41
900–1050° C	0.13	0.43	0.25								0.21	....	....	....	....	....
Neutralization value as CaCO ₃	3.1	9.6	69.0	35.1	35.8	47.6	30.9	35.4	....	16.8	....	....	....	....	4.06	22.6

Remarks^b (samples arranged by Min. Tech. Lab. numbers)—

No. 60161 NIU as a clay ECB. Low oil absorbing capacity.

No. 60162 A bentonite capable of yielding 68 barrels of 15-cps drilling mud per ton of clay treated with sodium carbonate. As a drilling clay FTR. Very low oil decolorizing capacity. Low oil absorbing capacity.

No. 60163 NIU as a clay. Contains 69.0% carbonates NV.

No. 60333 NIU as a clay. A silty calcareous clay containing 35.1% carbonates NV.

No. 60334 NIU as a clay. Contains very fine silt and 35.8% carbonates NV.

No. 60335 NIU as a clay. A highly calcareous clay containing 47.6% carbonates NV.

No. 60336 NIU as a clay. A calcareous clay containing 30.9% carbonates NV.

No. 60337 NIU as a clay. A calcareous clay containing 35.4% carbonates NV.

No. 60338 NIU as a clay. A sandy and silty clay.

No. 60339 NIU as a clay. A silty calcareous clay containing 16.8% carbonates NV.

No. 60135 NIU as a clay. Low oil absorbing capacity. Rock contains montmorillonitic minerals (50%), glass shards, trace of quartz and biotite.

No. 60136 NIU as a clay. Low clay content. The rock is virtually all volcanic glass with rhyolitic composition and only slightly devitrified. No significant quartz, biotite, or dark minerals.

No. 60137 NIU as a clay. Low clay content. Consists of about 80% glass, 20% clay, and trace of quartz.

No. 60138 NIU as a clay. Low clay content. Low oil absorbing capacity. Contains about 60% glass, 10% quartz, and 30% clay.

No. 60140 NIU as a clay. Low clay content; about 50% quartz and 50% clay and traces of marine fauna.

No. 60141 A bentonite with a yield of 53 barrels of 15-cps drilling mud per ton of clay. Treatment with sodium carbonate increased the yield to 56 barrels per ton. It may be possible to increase this yield by varying the chemical treatment. FTR. The oil decolorizing capacity of this bentonite after acid activation is 44% compared to the AOCS official activated earth.

^a See Plate 2 for location.

^b The following abbreviations are used:

AOCS—American Oil Chemists' Society.

FTR—Further testing by a specialized laboratory is recommended.

NIU—No important industrial (or commercial) use.

NV—Neutralization value expressed as calcium carbonate.

ECB—With the possible exception of common brick. Clays containing as high as 20% carbonates have been included in this classification because there are several plants in operation in Texas producing brick from such clays. Normally it is not desirable to use clays containing more than 3% carbonates (U.S. Bureau of Mines Bulletin 565). The presence of excessive carbonates (lime and magnesia) causes undue shrinkage and shortening of the firing range. Closely regulated firing is required to overcome the latter.

15-CP—15-centipoise.