

TABLE 3—(Continued)

	ATASCOSA COUNTY	LIVE OAK COUNTY	McMULLEN COUNTY	VAL VERDE COUNTY			WEBB COUNTY					
Min. Tech. Lab. No. Submitted by	60117 D. L. Mullen, San Antonio, Texas	60062 Clyde Aylesworth, McAllen, Texas	60067 W. C. Price, Corpus Christi, Texas	60156 R. L. Rhodes, Del Rio, Texas	60157 R. L. Rhodes, Del Rio, Texas	60158 R. L. Rhodes, Del Rio, Texas	60074 Lee Payne, Laredo, Texas	60343 Meyer Leventhal, Laredo, Texas	60344 Meyer Leventhal, Laredo, Texas	60345 Meyer Leventhal, Laredo, Texas	60346 Meyer Leventhal, Laredo, Texas	60347 Meyer Leventhal, Laredo, Texas
Location	Atascosa County	On Highway 99, 6 to 6½ miles NE of Whitsett	J. Peitevent Tract Abstract 380, about 10 miles north of Tilden	Val Verde County	Val Verde County	Val Verde County	Webb County	At mile post 9 on Texas-Mexican Railroad and along Highway 359 east of Laredo	At mile post 9 on Texas-Mexican Railroad and along Highway 359 east of Laredo	At mile post 9 on Texas-Mexican Railroad and along Highway 359 east of Laredo	At mile post 9 on Texas-Mexican Railroad and along Highway 359 east of Laredo	At mile post 9 on Texas-Mexican Railroad and along Highway 359 east of Laredo
Free lime (carbonates) Benzidine test	Negative Blue	Positive Positive, slightly blue	Negative Deep blue	Positive Dark blue	Positive Blue gray	Slightly positive Bluish-gray	Positive Indefinite	Negative Blue	Positive Negative	Positive Slightly blue	Positive Slightly blue	Positive Slightly blue
Color (air-dried)	Light gray	Light green-gray	Cream	Brown	Tan	Dark buff	Pinkish-tan	Buff	Tan	Tan	Tan	Tan
Oil absorption— Calcine 450°C	----	----	----	----	----	----	----	----	----	----	----	----
Air-dried	Slow	Medium	Low	Medium	Slow	Medium	Low	Slow	Slow	Slow	Slow	Slow
Moisture (H ₂ O-) (%)	2.92	3.69	7.34	6.29	5.29	5.34	5.88	6.23	4.41	4.85	2.08	1.82
Ignition loss— 300–600°C (%)	2.35	2.48	1.39	4.88	3.20	2.15	2.56	1.62	4.80	4.69	3.28	3.13
105–1050°C (%)	7.97	5.33	5.35	11.07	7.73	5.73	11.22	4.45	9.76	10.23	11.63	10.01
Water of plasticity (Atterberg test)— Average (%)	97	62	76	49	47	42	68	70	50	48	29	26
Difference (%)	124	60	90	28	25	22	58	50	34	32	9	13
Swelling test (percent increase in volume)— In distilled water	170	96	60	65	82	75	172	270	86	70	0	0
In salt water	143	52	124	43	55	20	44	56	52	50	0	0
Slaking test (–100 mesh) (%)	55	6.7	7	----	----	----	42	----	----	----	----	----
Bloating test: 10 minutes at— 2000°F	----	Negative	Negative	----	----	----	Negative	----	----	----	----	----
2200°F	----	----	----	----	----	----	----	----	----	----	----	----
2400°F	----	----	----	----	----	----	----	----	----	----	----	----
Yield of 15 cp. drilling mud (bbl. per ton)— Untreated	Very low	Very low	Very low	----	----	----	Very low	----	----	----	----	----
Treated with soda ash	Low	29	Very low	----	----	----	----	----	----	----	----	----
Treated with soda ash (saturated salt water instead of fresh water)	----	----	80	----	----	----	----	----	----	----	----	----
pH value	6.6	9.4	7.5	----	----	----	----	----	----	----	----	----
Decolorizing efficiency compared to AOCS official clays— Natural with natural (%)	18	10	27	----	----	----	Negative	----	----	----	----	----
Activated with activated (%)	40	----	25	----	----	----	Not economical	----	----	----	----	----
Firing test— Powder—2000°F (1200°C)	----	Fused Dark brown	Cream Sintered Friable	----	----	----	Dark brown Vitrified	----	----	----	----	----
2200°F (1204°C)	Dark cream Sintered	----	----	Light tan Powder	Red brown Sintered	Brown >Steel	Dark brown Melted	Gray Fused	Dark buff Vitrified	Dark brown Fused	Brown Fused	Brown Fused
2400°F (1316°C)	Light buff Steel hard	----	Gray Vitrified Steel hard	Gray Steel hard	Brown Fused	Brown Vitrified Partially fused Bubble	----	----	----	----	----	----
2600°F (1427°C)	Light gray >Steel hard	----	----	Brown Fused	----	----	----	----	----	----	----	----
Loss on ignition at— 105–300°C	1.24	0.95	2.17	1.85	1.72	1.52	1.85	1.80	2.63	2.08	0.93	0.84
300–450°C	1.11	1.16	0.13	0.35	0.35	0.28	1.31	0.49	0.38	0.76	0.34	0.39
450–600°C	1.24	2.98	1.30	4.53	2.85	1.87	3.25	1.13	4.42	3.93	2.94	2.74
600–900°C	4.00	0.08	1.48	3.74	2.65	1.93	4.78	0.79	2.21	3.36	7.39	5.99
900–1050°C	0.38	0.16	0.31	0.60	0.16	0.13	0.03	0.24	0.12	0.06	0.05	0.05
Neutralization value as CaCO ₃	1.7	7.6	7.6	5.7	5.9	3.3	16.4	4.0	13.3	14.9	22.8	19.0

Remarks^b (samples arranged by Min. Tech. Lab. numbers)—
No. 60117 NIIU. Behaves as a low grade subbentonite. The oil decolorizing capacity is 40% of AOCS clay after acid activation.
No. 60062 NIIU as a clay ECB. Contains 7.6% carbonates NV.
No. 60067 In saturated salt water, this clay is capable of yielding 80 bbl. of 15-cp mud per ton of clay treated with sodium carbonate. FTR. The yield of drilling mud in fresh water is low.
No. 60156 NIIU as a clay ECB. FTR.
No. 60157 NIIU as a clay ECB. FTR.
No. 60158 NIIU as a clay ECB. FTR.
No. 60074 NIIU as a clay.
No. 60343 NIIU as a clay. Low yield of drilling mud.
No. 60344 NIIU as a clay ECB. Contains 13.3% carbonates NV.
No. 60345 NIIU as a clay ECB. Contains 14.9% carbonates NV.
No. 60346 NIIU as a clay. Contains 22.8% carbonates NV.
No. 60347 NIIU as a clay. Contains 19.0% carbonates NV.

^b The following abbreviations are used:
AOCS=American Oil Chemists' Society.
FTR=Further testing by a specialized laboratory is recommended.
NIIU=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.