

TABLE 3—(Continued)

	DEWITT COUNTY					DUVAL COUNTY					GOLIAD COUNTY				GUADALUPE COUNTY		
Min. Tech. Lab. No.	60313	60314	60316	60317	60318	60104	60111	60112	60113	60114	60322	60323	60324	60325	60190	60191	60192
Field locality No. <sup>a</sup>	1	2	4	6A	6B	3	1	7	9	9A	1	2	3	4	1A	5	6
Free lime (carbonates)	Positive	Positive	Positive	Positive	Positive	Positive	Negative	Negative	Negative	Negative	Negative	Positive	Positive	Positive	Positive	Negative	Positive
Benzidine test	Very faint blue	Slight blue	Very slight blue	Very faint blue	Faint blue	Negative	Negative	Pale blue	Pale blue	Faint blue	Very faint blue	Negative	Light blue	Faint blue	Dark blue	Light blue	Blue
Color (air-dried)	Tan	Greenish	Light tan	Tan	Cream	Cream	Light gray	Cream	Pinkish light gray	Greenish light gray	Reddish brown	Dark gray	Light gray	Greenish gray	Dark green- ish gray	Buff	Light buff
Oil absorption—																	
Calcline 450°C	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Air-dried	Slow	Fast	Fast	Medium	Medium	Slow	Medium	Very slow	Very slow	Slow	Fast	Fast	Medium	Slow	Slow	Slow	Medium
Moisture (H <sub>2</sub> O-) (%)	2.22	3.58	5.81	5.14	1.84	9.35	1.11	10.84	9.53	8.16	1.93	6.40	4.36	2.85	3.74	3.95	6.72
Ignition loss—																	
300–600°C (%)	2.09	3.95	4.66	3.84	2.79	6.77	0.94	5.40	2.37	1.86	1.08	5.45	2.37	1.55	3.57	3.03	4.08
105–1050°C (%)	22.47	10.51	14.71	21.95	33.71	10.47	1.71	7.11	5.39	5.87	2.27	15.47	10.47	20.81	8.25	5.76	21.02
Water of plasticity																	
(Atterberg test)—																	
Average (%)	35	38	79	61	33	61	43	65	56	40	26	63	50	42	80	68	72
Difference (%)	31	41	95	65	34	16	2	8	6	6	24	61	54	44	80	72	70
Swelling test (percent																	
increase in volume)—																	
In distilled water	44	119	162–	118	46	33	0	29	25	20	30	135	120	59	309	105	75
In salt water	39	52	100	83	25	13	28	85	52	65	25	104	80	45	65	68	65
Slaking test (–100 mesh) (%)	75	22	43	19	<5	20	0	0	<5	0	17	13	30	37	13	51	15
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	----	----	Very low	----	----	----	----	----	----	----	----	----	----	----	Very low	----	----
Treated with soda ash	----	----	Very low	----	----	----	----	----	----	----	----	----	----	----	Very low	----	----
pH value	9.4	9.5	9.2	9.2	9.0	8.6	8.8	8.3	8.2	8.5	8.3	8.1	9.1	8.2	9.0	8.4	8.6
Decolorizing efficiency compared																	
to AOCS official clays—																	
Natural with natural (%)	----	----	19	----	----	----	----	----	----	----	----	----	----	----	Very low	----	----
Activated with activated (%)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	20	----	----
Firing test—																	
Powder—2200°F (1204°C)	Dark brown	Buff	Dark brown	Dark brown	Gray	Brown	White	White	Light tan	Dark brown	Gray	Dark brown	Dark buff	Tan	Brown	Brown	Brown
2400°F (1316°C)	Vitrified	Fused	Fused	Fused	Powder	Fused	Powder	Powder	Powder	Vitrified	Steel hard	Fused	Fused	<Steel hard	Steel hard	Sintered	Fused
2600°F (1427°C)	----	----	----	----	Light buff	----	White	White	Light tan	Dark brown	Brown	----	----	Buff	Dark brown	Dark brown	----
2600°F (1427°C)	----	----	----	----	Powder	----	Powder	Powder	Powder	Fused	<Steel hard	----	----	Steel hard	Fused	Fused	----
2600°F (1427°C)	----	----	----	----	Dark brown	----	Light cream	Cream	Buff	----	Brown	----	----	Greenish	----	----	----
2600°F (1427°C)	----	----	----	----	Fused	----	Powder	Sintered	Sintered	----	<Steel hard	----	----	brown	----	----	----
2600°F (1427°C)	----	----	----	----	----	----	----	Friable	----	----	----	----	----	Fused	----	----	----
Disks, ½-inch diameter—																	
(Approx. cone 02) 2000°F	----	----	----	----	----	----	----	----	----	----	----	Buff	----	----	----	Reddish	----
(1093°C)	----	----	----	----	----	----	----	----	----	----	----	Bloated	----	----	----	brown	----
(Approx. cone 7) 2200°F	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	>Steel hard	----
(1204°C)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	Dark brown	----
(Approx. cone 15) 2600°F	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	Vitrified	----
(1427°C)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Loss on ignition at—																	
105–300°C	1.21	1.30	2.51	2.00	0.80	3.56	0.60	1.10	2.30	3.25	0.97	4.41	1.37	1.14	0.95	1.88	2.78
300–450°C	0.49	1.94	2.13	1.43	0.56	0.94	0.52	1.16	1.37	0.97	0.78	3.17	1.13	0.66	1.13	0.99	1.00
450–600°C	1.60	2.01	2.53	2.41	2.23	5.83	0.42	4.24	1.00	0.89	0.30	2.28	1.24	0.89	2.44	2.04	3.08
600–900°C	19.17	5.26	7.54	16.11	30.12	2.88	0.06	0.63	0.59	0.72	0.22	5.61	6.73	18.12	3.68	0.79	14.09
900–1050°C						0.26	0.11	----	0.13	0.04					0.05	0.06	0.07
Neutralization value as CaCO <sub>3</sub>	46.0	17.0	25.3	41.0	73.3	18.0	0.42	0.89	2.0	1.8	----	17.7	17.8	42.0	13.5	----	36.6

Remarks<sup>b</sup> (samples arranged by Min. Tech. Lab. numbers)—

- No. 60313 NIIU as a clay. A highly calcareous clay containing 46.0% carbonates NV.  
No. 60314 NIIU as a clay. A silty calcareous clay containing 17.0% carbonates NV.  
No. 60316 Low yield of drilling mud. NIIU as a clay. A calcareous containing 25.3% carbonates NV.  
No. 60317 NIIU as a clay. A highly calcareous clay containing 41.0% carbonates NV.  
No. 60318 NIIU as a clay. A highly calcareous clay or chalk containing 73.3% carbonates NV.  
No. 60104 NIIU as a clay. Contains 18.0% carbonates NV. The rock consists of approximately 50 percent clay, 35 percent glass and 15 percent quartz.  
No. 60111 A refractory nonplastic material.  
No. 60112 A semirefractory material of very low plasticity.  
No. 60113 A nonplastic material.  
No. 60114 A material of very low plasticity.  
No. 60322 NIIU as a clay. High sand content. As a foundry sand FTR.  
No. 60323 Known to have been used as brick clay about 1890. See note ECB. When this clay was fired at 2000°F (approx. cone 02), it bloated. A calcareous clay containing 17.7% carbonates NV.  
No. 60324 NIIU as a clay. A silty calcareous clay containing 17.8% carbonates NV.  
No. 60325 NIIU as a clay. A highly calcareous clay containing 42.0% carbonates NV.  
No. 60190 NIIU as a clay. Contains 13.5% carbonates NV. Contains appreciable amount of finely divided non-clay material.  
No. 60191 Should be further tested as a clay for structural ceramics.  
No. 60192 NIIU as a clay. Contains 36.6% free carbonates NV.

<sup>a</sup> See Plate 2 for location.

<sup>b</sup> 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.