

UNITED STATES DEPARTMENT OF COMMERCE  
WASHINGTON 25, D.C.

# National Bureau of Standards

## Certificate of Analyses

### Standard Sample 198 Silica Brick

(All results are based on samples dried at 105° to 110° C.)

Analyst	Al <sub>2</sub> O <sub>3</sub>	Total iron as Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	ZrO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	MnO	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Li <sub>2</sub> O	*Loss on ignition
1.....	{ <sup>b</sup> 0.17 <sup>c,d</sup> 0.15	{ <sup>e</sup> 0.65 <sup>f,g</sup> 0.67}	0.02	<0.01	<sup>h</sup> 0.022	<sup>i</sup> 0.006	2.72	0.07	<sup>j</sup> 0.007	<sup>j</sup> 0.016	<sup>j</sup> 0.001	0.21
2.....	<sup>k</sup> 0.19	<sup>k</sup> 0.64	<sup>k</sup> 0.01	-----	<sup>k</sup> 0.012	-----	<sup>k</sup> 2.74	<sup>k</sup> 0.06	<sup>k</sup> 0.009	<sup>k</sup> 0.010	<sup>k</sup> 0.001	.32
3.....	{ <sup>b</sup> 0.17 <sup>f</sup> 0.15	{ <sup>m</sup> 0.67 <sup>n</sup> 0.65}	.01	-----	<sup>o</sup> 0.011	-----	2.75	.06	<sup>p</sup> 0.02	<sup>p</sup> 0.03	-----	.22
4.....	<sup>q</sup> 0.17	<sup>f</sup> 0.69	.02	-----	<sup>o</sup> 0.026	-----	2.73	.08	<sup>r</sup> 0.008	<sup>k</sup> 0.016	<sup>k</sup> <.007	.15
5.....	<sup>b</sup> 0.17	<sup>s</sup> 0.66	.01	-----	<sup>t</sup> 0.025	-----	2.72	.07	<sup>i</sup> 0.005	<sup>i</sup> 0.012	<sup>i</sup> 0.002	.23
6.....	-----	.68	.03	-----	.026	-----	2.72	.07	<sup>i</sup> 0.005	-----	<sup>i</sup> 0.001	.23
7.....	<sup>b</sup> 0.16	<sup>f</sup> 0.68	.03	-----	.025	<.005	2.69	.09	<sup>i</sup> 0.02	<sup>i</sup> 0.02	<sup>i</sup> 0.001	.22
-----	<sup>u</sup> 0.16	<sup>f</sup> 0.66	.02	-----	<sup>b</sup> 0.019	-----	2.70	.08	-----	-----	-----	.20
-----	<sup>k</sup> 0.15	<sup>v</sup> 0.66	.02	-----	{ <sup>t</sup> 0.024 <sup>k</sup> 0.02}	<sup>i</sup> 0.008	2.74	.07	-----	-----	<sup>k</sup> <.01	.14
10.....	<sup>b</sup> 0.16	<sup>f</sup> 0.66	.01	nil	-----	-----	2.67	.06	-----	-----	-----	.20
11.....	<sup>u,w</sup> 0.16	<sup>f</sup> 0.68	.01	-----	<sup>t</sup> 0.024	<sup>x</sup> 0.01	2.67	.09	-----	-----	-----	-----
12.....	<sup>u</sup> 0.16	<sup>f</sup> 0.67	.02	-----	<sup>t</sup> 0.024	.008	2.71	.08	<sup>i</sup> 0.02	<sup>i</sup> 0.018	-----	-----
Average....	0.16	0.66	0.02	-----	0.022	0.008	2.71	0.07	0.012	0.017	0.001	0.21

<sup>a</sup> 1 g heated at 900° to 1,000° C. in a covered platinum crucible to constant weight.  
<sup>b</sup> Weighed ignited NH<sub>4</sub>OH precipitate corrected for Fe<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, and P<sub>2</sub>O<sub>5</sub>.  
<sup>c</sup> Aluminum separated from iron, titanium, etc., with sodium hydroxide, precipitated, and weighed as AlPO<sub>4</sub>.  
<sup>d</sup> Same value obtained by the Aluminon photometric method.  
<sup>e</sup> Thiocyanate photometric method.  
<sup>f</sup> SnCl<sub>2</sub>-K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> method.  
<sup>g</sup> Same value obtained gravimetrically as Fe<sub>2</sub>O<sub>3</sub>.  
<sup>h</sup> Molybdenum-blue photometric method.

<sup>i</sup> Periodate photometric method.  
<sup>j</sup> Flame-photometric method.  
<sup>k</sup> Spectrographic determination.  
<sup>l</sup> Aluminum separated from iron and titanium by ion exchange, and weighed as aluminum oxyquinolate.  
<sup>m</sup> SnCl<sub>2</sub>-KMnO<sub>4</sub> method.  
<sup>n</sup> Iron separated from aluminum and titanium by ion exchange, precipitated with ammonium hydroxide, and weighed as Fe<sub>2</sub>O<sub>3</sub>.  
<sup>o</sup> Gravimetric. Weighed as Mg<sub>2</sub>P<sub>2</sub>O<sub>7</sub>.  
<sup>p</sup> Titration with AgNO<sub>3</sub>, following ion exchange separation of sodium and potassium chlorides.

<sup>q</sup> 8-Hydroxyquinoline precipitation. Bromate-thiosulfate titration. See Trans. British Ceramic Society 51, No. 9, 438 (1952).  
<sup>r</sup> Sodium uranyl zinc acetate-gravimetric method.  
<sup>s</sup> Titrated with Ti<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>.  
<sup>t</sup> Phosphomolybdate-alkalimetric method.  
<sup>u</sup> Weighed as AlPO<sub>4</sub>.  
<sup>v</sup> Orthophenanthroline photometric method.  
<sup>w</sup> Same value obtained by eriochrome cyanine-R photometric method.  
<sup>x</sup> Persulfate-arsenite method.

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