National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 199

Silica Brick

This Standard Reference Material (SRM) is in the form of a powder and is intended for use in evaluating chemical and instrumental methods of analyses.

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

Analyst	Al_2O_3	Total Iron as Fe_2O_3	TiO_2	ZrO_2	P_2O_5	MnO	CaO	MgO	Na_2O	K_2O	Li_2O	[a] Loss on Ignition
1	[b] 0.47 [c] .48	[d] 0.76 [e] .74	0.07	0.01	[f] 0.010	[g] 0.005	2.41	0.13	[h] 0.015	[h] 0.09	[h] 0.001	0.14
2	[i] .49	[i] .70	.05	---	[i] .016	---	[i] 2.45	[i] .14	[i] .010	[i] .07	[i] .002	.23
3	[b,j] .48	[k] .75	[i] 05	---	---	---	2.42	.12	[i] .02	[l] .11	---	.16
4	[m] .48	[d] .73	.06	---	[n] .026	---	2.38	.14	[o] .014	[h] .11	[i] <.007	.12
5	[b] .51	[p] .74	.06	---	[q] .012	---	2.39	.13	[h] .010	[h] .088	[h] .002	.16
6	---	---	.07	---	.015	.008	2.46	.14	[h] .004	[h] .10	[h] .001	.12
7	[b] .50	[d] .75	.07	---	.025	<.005	2.43	.10	[h] .02	[h] .09	[h] .002	.16
8	[r] .48	[d] .76	.07	---	[f] .005	---	2.38	.14	---	---	---	.13
9	---	[s] .72	.06	---	[q] .013	[g] .007	---	[i] .14	---	---	[i] <.01	.30
10	[b] .49	[d] .75	.06	nil	.03	---	2.37	.13	---	---	---	.17
11	[r,t] .48	[d] .74	.06	---	[q] .008	[u] .01	2.38	.14	---	[v] .097	---	---
12	[r] .48	[d] .74	.06	---	[q] .010	[g] .007	2.39	.14	[h] .03	[h] .087	---	---
Average[1]	0.48	0.74	0.06	---	0.015	0.007	2.41	0.13	0.015	0.094	0.002	0.17

[1] The average value listed for a constituent is the present best estimate of the "true" value. The average values are given as the oxide on an equivalent weight basis and assume stoichiometry in the form of the oxide listed.

a 1g heated at 900 to 1,000 °C in a covered platinum crucible to constant weight.
b Weighed ignited NH_4OH precipitate corrected for ZrO_2, Fe_2O_3, TiO_2, and P_2O_5.
c Aluminum separated from iron, titanium, and zirconium by cupferron, precipitated with ammonium hydroxide, weighed as Al_2O_3 and corrected for P_2O_5.
d $SnCl_2$-$K_2Cr_2O_7$ method.
e Weighed as Fe_2O_3.
f Molybdenum-blue photometric method.
g Periodate photometric method.
h Flame-photometric method.
i Spectrographic determination.
j Same value obtained by separating aluminum from iron and titanium by ion exchange, and weighing as aluminum oxyquinolate.
k $SnCl_2$-$KMnO_4$ method.

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(over)

William P. Reed, Acting Chief
Standard Reference Materials Program

l Titration with $AgNO_3$, following ion exchange separation of sodium and potassium chlorides.

m 8-Hydroxyquinoline precipitation. Bromate-thiosulfate titration. See Trans. British Ceramic Society 51, No. 9,438 (1952).

n Gravimetric. Weighed as $Mg_2P_2O_7$.

o Sodium uranyl zinc acetate-gravimetric method.

p Titrated with $Ti_2(SO_4)_3$.

q Phosphomolybdate-alkalimetric method.

r Weighed as $AlPO_4$.

s Orthophenanthroline photometric method.

t Same value obtained by eriochromecyanine-R photometric method.

u Persulfate-arsenite method.

v Gravimetric. Decomposition with NH_4Cl-$CaCO_3$.

List of Analysts

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