



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 ₂ O ₃ | Total Iron as Fe ₂ O ₃ | TiO ₂ | ZrO ₂ | P ₂ O ₅ | MnO | CaO | MgO | Na ₂ O | K ₂ O | Li ₂ O | ^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 | ^b .010 | ^h .088 | ^h .002 | .16 |
| 6 | --- | --- | .07 | --- | .015 | .008 | 2.46 | .14 | ^b .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 |

¹The 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 NH₄OH precipitate corrected for ZrO₂, Fe₂O₃, TiO₂, and P₂O₅.

c Aluminum separated from iron, titanium, and zirconium by cupferron, precipitated with ammonium hydroxide, weighed as Al₂O₃ and corrected for P₂O₅.

d SnCl₂-K₂Cr₂O₇ method.

e Weighed as Fe₂O₃.

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 SnCl₂-KMnO₄ method.

Gaithersburg, MD 20899

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William P. Reed, Acting Chief
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(over)

- l Titration with AgNO₃, 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 Mg₂P₂O₇.
- o Sodium uranyl zinc acetate-gravimetric method.
- p Titrated with Ti₂(SO₄)₃.
- q Phosphomolybdate-alkalimetric method.
- r Weighed as AlPO₄.
- s Orthophenanthroline photometric method.
- t Same value obtained by eriochromecyanine-R photometric method.
- u Persulfate-arsenite method.
- v Gravimetric. Decomposition with NH₄Cl-CaCO₃.

List of Analysts

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