

# National Bureau of Standards Certificate of Analysis Standard Reference Material 81a Glass Sand

(In Cooperation with the American Society for Testing and Materials)

This SRM is issued in the form of a ground powder (95% less than 106  $\mu\text{m}$ ) blended to ensure homogeneity. It should be dried for 2 hours at 105 °C before use.

<u>Constituent</u>	<u>Recommended Value</u>		
	<u>Percent by Weight</u>	<u>Range</u>	<u>s</u>
Al <sub>2</sub> O <sub>3</sub>	0.66	0.62 - 0.69	0.011
Fe <sub>2</sub> O <sub>3</sub>	.082	.075 - .089	.0024
TiO <sub>2</sub>	.12	.10 - .14	.0064
ZrO <sub>2</sub>	.034	.025 - .042	.0026
Cr <sub>2</sub> O <sub>3</sub>	46 $\mu\text{g/g}$	33 - 58	3.9

**Certification** - The recommended value listed for each oxide is the best estimate of the true value based on the analytical data from both cooperators and NBS. The range of values listed is the tolerance interval, constructed such that it will cover at least 95% of the population with a probability of 0.99. It is computed as  $X \pm Ks$ : where  $s$  is the standard deviation,  $K$  is a factor that depends on  $n$  (the number of samples measured),  $p$ , the proportion of the total sample covered (95%), and  $\gamma$ , the probability level (99%). In all cases none of the  $n$  values used exceeded the range specified. Thus, it includes variability between laboratories and between samples.

The overall direction and coordination of the round-robin analysis leading to certification were performed by Paul Close, Chairman of ASTM Subcommittee C-14.02 on Chemical Analysis of Glass and Glass Products.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by W. P. Reed.

Washington, D.C. 20234  
January, 1978

J. Paul Cali, Chief  
Office of Standard Reference Materials

(over)

Chemical analyses for certification were performed in the following laboratories:

Anchor Hocking Corp., Lancaster, Ohio, R. E. Carr

Brockway Glass Co., Inc., Brockway, Pa., E. L. McKinley.

Corning Glass Works, Corning, N.Y., Y. S. Su.

Ford Motor Co., Lincoln Park, Mich., T. O. LaFramboise.

National Bureau of Standards, Analytical Chemistry Division, E. J. Maienthal, J. D. Messman and T. C. Rains.

Kimble Div. Owens-Illinois, Vineland, N. J., H. S. Moser.

Owens-Illinois, Inc., Toledo, Ohio, P. Close.

Penn State Univ., University Park, Pa., J. B. Bodkin.