



# National Bureau of Standards

## Certificate of Analysis

### Standard Reference Material 112b

#### Silicon Carbide

This Standard Reference Material (SRM) is intended for use in validating analytical methods and in calibrating instruments used in the analysis of this type of material.

The certified concentrations of the constituents and their uncertainties are listed in Table 1. These concentrations are the average concentrations calculated from interlaboratory analyses of the material; the uncertainties represent two standard deviations of these averages. No evidence of sample heterogeneity was observed.

Table 1. Certified Concentrations of Constituents

<u>Constituent</u>	<u>Concentration,<sup>1</sup> percent by weight</u>
Silicon carbide	97.37 ± 0.20
Total carbon	29.43 ± 0.08
Free carbon	0.26 ± 0.03
Aluminum	0.44 ± 0.02
Iron	0.13 ± 0.01
Calcium	0.04 ± 0.01

<sup>1</sup>Based on a minimum sample size of 0.5 gram dried at 105 to 110 °C for 2 hours.

This certification is valid for five years after the shipping date. Should it be invalidated before then, purchasers will be notified by NBS.

Statistical evaluation of the data was carried out by R.C. Paule, NBS National Measurement Laboratory.

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 R. Alvarez.

November 4, 1987  
Gaithersburg, MD 20899  
(Revision of Certificates  
dated 1-15-85 and 12-30-85)

Stanley D. Rasberry, Chief  
Office of Standard Reference Materials

(over)

## ADDITIONAL INFORMATION ON THE COMPOSITION

Additional constituents were determined. The concentration of these constituents listed in Table 2, are not certified, but are included for information only. They were determined in an interlaboratory study.

Table 2. Noncertified Concentrations of Constituents

<u>Constituent</u>	<u>Concentration,<sup>1</sup> percent by weight</u>
Free Silica	$(0.77 \pm 0.15)^2$
Free Silicon	$(0.46 \pm 0.09)$
Titanium	$(0.023 \pm 0.005)$
Magnesium	$(0.02)^3$

<sup>1</sup> Based on a minimum sample of 0.5 gram dried at 105 to 110 °C for 2 hours.

<sup>2</sup> The concentrations are the average concentrations calculated from the interlaboratory analyses of the material; the uncertainties represent two standard deviations of these averages

<sup>3</sup> Insufficient data were available to provide uncertainties for the average concentrations.

## PREPARATION, TESTING AND ANALYSIS

The blended material for this SRM was provided by the Norton Co., Worcester, Mass. through the courtesy of W. Andruchow, Jr. Analyses were performed on random samples using the previously issued SRM 112, Silicon Carbide, as a control. The following members of an ad hoc committee on chemical analysis of the Abrasive Grain Association provided analyses.

Dresser Industries, General Abrasives Div., Niagara Falls, N.Y., M. Dashineau.

Exolon-Esk Co., Towanda, N.Y., R.C. Koch.

Ferro Corp., Refractories Div., Buffalo, N.Y., J.A. Daily.

Norton Co., Worcester, Mass., W. Andruchow, Jr., and G.M. Willard.

Norton Co., Niagara Falls, Ontario, Canada, K. Varangu and M. Sandstrom.

Sohio Electro Minerals Co., North American Div., Niagara Falls, N.Y., J.G. Kipler and D.L. Marinaccio.

In addition to these analyses, iron was determined by General Activation Analyses Inc., San Diego, Calif. using neutron activation analysis and by J.R. Moody and J.D. Fassett, National Bureau of Standards, Inorganic Analytical Research Division, using isotope dilution mass spectrometry.