

# Alpha Resources, Inc. Certificate Of Analysis

AR 952

CARBON STEEL CHIP STANDARD

LOT # 1045698

**% CARBON**  
MEAN = 0.449  
ONE SIGMA = 0.009  
TWO SIGMA = 0.018  
RANGE = 0.431 - 0.466

**% SULFUR**  
MEAN = 0.024  
ONE SIGMA = 0.001  
TWO SIGMA = 0.002  
RANGE = 0.022 - 0.026

**PPM NITROGEN**  
MEAN = 89  
ONE SIGMA = 3  
TWO SIGMA = 6  
RANGE = 84 - 95

Method of Analysis is ASTM E 1019 (Latest Revision)  
Carbon & Sulfur combustion IR detection  
Nitrogen inert gas fusion

Standards employed:  
NIST SRM 368, 50c, 361, 12h, 13g, 11h, 73c  
German BAM 035-1, 021-1, 227-1  
British BCS 306

Notes:

The mean analytical values were determined by a number of data sets provided by ASTM approved instruments.

The precision values represent the standard deviation, two times the standard deviation, and complete range of analyses.

The statistical analysis and overall coordination leading to certification was performed by K.E. Dyer at Alpha Resources.

Remedies for any claimed defect in this product will be limited to product replacement or refund of the purchase price. In no event shall Alpha Resources be liable for incidental or consequential damages.

This is a Certified Reference Material (CRM), and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

Certified September, 1998

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Page 1 Of 1



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