

Alpha Resources, Inc.

Certificate Of Analysis

AR-4021
COMPOSITE SOIL STANDARD
LOT # 814A

% CARBON
MEAN = 3.04
Expanded Uncertainty = 0.16
(k=2, 95% confidence)

% SULFUR
MEAN = 0.032
Expanded Uncertainty = 0.013
(k=2, 95% confidence)

This data was reported from tests using induction and resistance type furnaces with infrared detection. Accelerants such as vanadium pent-oxide (V₂O₅) and tungsten oxide (WO₃) were used in the resistance furnace. Tungsten metal and iron chip were used in the induction analysis.

Standards Employed for traceability:

NCS	DC73326, HC11010
IPT	66
NIST	338, 107c, 4L

Notes:

The mean analytical values were derived by 5 data sets (n=50) showing traceability to the above mentioned NMI standards and reported in mass fraction. The precision values represent the estimated uncertainty derived from the data sets and may not represent your testing capabilities. Refer to your test method for the expanded method derived uncertainty if needed. When necessary, professional judgment is applied toward consideration of data and statistical information. The statistical analysis and the overall direction and coordination of the analytical measurements leading to certification were performed by K.E. Dyer, Technical Manager, at Alpha Resources.

There were limited primary standards of this type of matrix available at the time of certification. Multiple types of reference materials were used in the certification process, ranging from iron to high purity inorganic for calibration and quality verifications. This bottle contains 100g of fine powder to be used directly from the bottle without preparation, and has an indefinite shelf life.

The material used in production of this standard was tested and identified in accordance with ARI 032. The samples for round robin testing were selected in accordance with ARI 014. The above values relate only to the material used to produce this standard. This reference was produced in accordance to ISO Guide 34 and Guide 31.

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. 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 standard was produced in accordance to Guide 34. Alpha Resources has become accredited under the ISO Guide 34:2009 for RMP and holds an ISO 17025 accreditation. Refer to certificate and scope of accreditation(s) for details.

Certified June 29, 2015



Kent Dyer - Technical Manager