

Sulfur in Coal Blank Reference Material

Product No: AR1681**Lot No: 240821**

Material and Intended Use

AR1681 is a sulfur blank coal reference material (RM). The intended use of this RM is for the verification of tube furnace combustion and other appropriate analysis methods for the determination of sulfur. This RM can also be used to verify value assignment of in-house reference materials. A unit consists of one bottle containing 50 g of reference material as a 60-mesh powder. All reference materials should be verified as fit for purpose prior to use.

Instructions for Use

This product should be dried before use to account for moisture. The minimum sample size for analysis is dependent upon the test method and instrumentation used. It is recommended that no less than 0.5 g of material be used for destructive test methods. Bottles of powder should be kept sealed tight and stored in a cool, dry location. Reported values are valid for 15 years from the initial date of release if handling and storage instructions are followed. Values are rendered null and void if the RM is in any way modified or damaged.

Reported Values

Assigned values indicate the amount of each element present in the overall material matrix and are metrologically traceable to the International System of Units (SI) derived unit of mass fraction expressed as a percent (%). For AR1681, the assigned value is reported in relation to the method limit of detection using replicate analysis. Sampling and calculation of reported values for each measurand are performed using practices consistent with ISO 17034:2016 and ISO Guide 35. Certified values are accredited under Alpha Resources, LLC ISO/IEC 17025 and ISO 17034 certificates issued by ANSI National Accreditation Board (ANAB), AT-1200 and AR1920.

Table 1. Reference values for AR1681, Lot 240821 (dried basis).

Element	Property Value	Method & Detection
%Sulfur	< 0.0030	Combustion/IR

Assigned values were validated using the following primary reference standards:

NCS	FC 28113
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Homogeneity

This product was manufactured from raw material using pulverizing and blending. Samples were randomly selected using practices consistent with ISO Guide 35 Section 7. Homogeneity was evaluated by replicate analysis. Within- and between-sample variance was evaluated using Analysis of Variance (ANOVA).

Methods and References

ARI-LAB-616 – Alpha Resources Method, Sulfur Analysis by High Temperature Tube Furnace Combustion
ASTM D4239 – Standard Test Method for Sulfur in the Analysis Sample of Coal and Coke Using High-Temperature Tube Furnace Combustion
ISO/IEC 17025:2017 – General requirements for the competence of testing and calibration laboratories
ISO 17034:2016 – General requirements for the competence of reference material producers
ISO 33401:2024 – Reference materials – Contents of certificates, labels, and accompanying documentation
ISO Guide 30:2015 – Terms and definitions used in connection with reference materials
ISO Guide 35:2017 – Reference materials – General and statistical principles for certification

**Dustin Jenkins, Ph.D.****Global Technical Director****Certification Date:** October 7, 2024**Revision Date:** February 11, 2025

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