

Alpha Resources, LLC

Certificate Of Analysis

AR-1682
ULTRA LOW SULFUR COAL STANDARD
LOT # 682217 LID ID # 682217

DRIED BASIS VALUE
WEIGHT PERCENT SULFUR = 0.022
EXPANDED UNCERTAINTY = 0.002

METHOD:

Combustion by Resistance Furnace with IR Detection *ASTM 4239 (below method described range)

This Reference Material is traced to AR1682-682514, AR1683-683610, AR1683-831015, AR1684-684414

This Reference Material (RM) was prepared by gravimetric blending. The analytical value was calculated from a number of data points (n=38) obtained on instrumentation using combustion by resistance furnace with IR detection similar to ASTM D4239. The precision value represents the expanded degree of uncertainty based on errors from analytical assay at a 95% confidence level (coverage factor k=2). 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 at Alpha Resources. This RM is below actual test method limits and no known SRM/NMI references at this concentration are available.

The material used for this standard was identified by AR 041. The samples for testing were selected in accordance with ARI 031. The above values relate only to the material used to produce this standard. The analytical samples were dried under a nitrogen atmosphere for a minimum of 30 minutes at $107^{\circ} \text{C} \pm 3^{\circ} \text{C}$, or until a steady mass is achieved. This bottle contains 50g fine powder to be used per your test method. Kept sealed this bottle has an indefinite shelf life. Once opened this certificate is valid for 2 years. Keep sealed and store under normal laboratory conditions.

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. The above values relate only to the material used to produce this standard. This certificate cannot be reproduced except in full.

This is a RM, and is traceable to the above-mentioned standard(s). For good laboratory practice, it is recommended that all standards be verified prior to use. This reference was produced in accordance to ISO 17034 and ISO Guide 31.

* Past certified RM were used in comparisons.

EXPIRATION DATE

THIS RM IS VALID FOR TWO YEARS FROM THE DATE OF OPENING

Certified March 9, 2017

