Alpha Resources, LLC
Certificate Of Analysis

AR-3701

MERCURY AND CHLORINE IN COAL REFERENCE STANDARD

LOT # 701617 LID ID # 701617

	Mean Value	Expanded Uncertainty k=2, @ 95%	ASTM Method(s)	Traceability
µg/g MERCURY	0.071	± 0.004 µg/g	D6722	NIST:1632d, 2693, 2691, 2682c, 2685c, 2684c, 2683c, 2692c, 2709 SARM 20, CRM 7
µg/g CHLORINE	(1645)	(± 138)	D6721	NIST: 2692c, 2693, 2682c
*% SULFUR	1.50	± 0.03	D4239	NIST: 1632d, NCS FC28010e, FC28004f
PERCENT ASH	4.47	± 0.04	D7582, D3174	Gravimetric Consensus
% CARBON	79.18	± 1.60	D5373	High Purity Organic Analytical Standards
% HYDROGEN	5.23	± 0.07	D5373	High Purity Organic Analytical Standards
% NITROGEN	(1.70)	(± 0.19)	D5373	High Purity Organic Analytical Standards

NOTE: all are Dried Basis Values – ( ) Indicates reference only values

The intended use of this reference material is for the quality validation of Mercury, Chlorine, Sulfur, Ash, Carbon, Hydrogen, and Nitrogen in coal by ASTM or other valid test methods. The analytical values were derived by a consensus of analytical testing, and reported in mass fraction. The sample size used and minimum sample size is dependent upon your test method or instrument manufacturer recommendations. The precision value represents the expanded degree of uncertainty based on errors from analytical assay at a 95% confidence level (k=2), and may not fit within your testing capabilities. Formal testing procedures should be followed when using this standard; this includes using the *reproducibility* and *repeatability* factors of the method for establishing overall analytical uncertainty. 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.

The material used in production of this reference standard was identified in accordance with ARI 041. The samples for round robin 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 per the NMI used or corrected for moisture as per the test method. This reference was produced in accordance to ISO 17034 and ISO Guide 31.

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 bottle contains 50g, minus 60 mesh (250 micron) coal powder. When kept stored and sealed properly this product has an indefinite shelf life. Once opened this certificate is valid for two years.

This is a Certified Reference Material (working reference standard), and is traceable to the above-mentioned standards. For good laboratory practice, it is recommended that all standards be verified prior to use. *These test results are accredited under the Alpha Resources LLC laboratory's ISO/IEC 17025 and ISO Guide 34 accreditation (RMP) issued by ANSI-ASQ/ANAB. Refer to certificate and scope of accreditation(s) AT-1200 and AR-1920.

EXPIRATION DATE
THIS CRM IS VALID FOR TWO YEARS FROM THE DATE OF OPENING

Certified September 21, 2017

Kent Dyer

Technical Manager

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