



Certificate of Analysis

AR 100

RESIDUAL OIL CRM

LOT # 100622

LID ID 100622

Analysis		n=	k=	ASTM
% Carbon	88.60 ± 0.54	6	2.6	D5291
% Hydrogen	10.29 ± 0.92	6	2.6	D5291
% Nitrogen	0.17 ± 0.03	6	2.6	D5762
% Sulfur	1.09 ± 0.10	35	2.0	D4294
Btu/lb	18390 ± 66	6	2.6	D240

The intended use of this standard is for the verification of various tests by the above-mentioned methods. Typical sample size for analytical testing and minimum size is subject to the test method and instrumentation used. The uncertainty values represent the expanded uncertainty at a 95% confidence level obtained through analytical testing by the mentioned ASTM methods utilizing ANOVA, ISO Guide 35, and the Guide to Uncertainty Measurement. Metrological traceability is to the SI derived units expressed as mass fraction percent, or BTU/lb. Normal test procedures should be employed when using this standard; this includes using the *reproducibility* and *repeatability* factors of the method for establishing analytical 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, Chief Chemist at Alpha Resources.

The material used in production of this standard was prepared and sampled in accordance with ARI-LAB-603. The samples for round-robin testing were selected in accordance with ARI-LAB-625. The above values relate only to the material used to produce this standard. Before use, the contents of the bottle should be mixed gently. Any exposure to air and light should be kept to a minimum. Keep sealed and store upright under normal laboratory conditions. This bottle contains 100ml to be used as per the test method. While unable to determine a definite shelf life this reference should be reviewed 10 years from the date of certification. Once opened this certificate is valid for two years. Keep sealed tight and store under normal laboratory conditions. This certificate cannot be reproduced except in full. 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 references. For good laboratory practice it is recommended that all standards be verified as fit for purpose prior to use. This standard was produced in accordance with and accredited under ISO17034 (RMP) accreditation issued by ANSI-ASQ/ANAB. Refer to certificate and scope of accreditation AR1920.

EXPIRATION DATE**THIS CRM IS VALID FOR TWO YEARS FROM THE DATE OF OPENING****CERTIFIED November 9, 2022****Kent Dyer****Chief Chemist**