

Alpha Resources, Inc.

Certificate Of Analysis

AR 1622

ULTIMATE RESIDUAL OIL STANDARD

LOT # 622111

LID ID 622111

			Uncertainty	Method(s)
Mean Weight % Sulfur	=	2.08	0.19	ASTM D4294, D2622
BTU/Pound	=	18,913	62	ASTM D 240, D4809
Mean ug/g Iron	=	16.4	2.9	ASTM D4326, D5185, IP501, IP470
Mean ug/g Nickel	=	4.6	1.0	ASTM D3683, D5185, IP501, IP470
Mean ug/g Silicon	=	(4)*	--	ASTM D5185, IP501, IP470
Mean ug/g Sodium	=	(5)*	--	ASTM D4326, D5185, IP501, IP470
Mean ug/g Copper	=	<1	--	ASTM D3683, D5185, IP501, IP470
Mean Weight % Carbon	=	85.54	1.3	ASTM D5291
Mean Weight % Hydrogen	=	12.37	1.24	ASTM D5291
Mean Weight % Nitrogen	=	0.16	0.04	ASTM D5291, D5762, D4629

*Reference only

This standard was produced gravimetrically using high purity materials, with balances calibrated and checked by precision NIST traceable weights, and verified using the above ASTM testing methods. The precision value represents the expanded standard deviation ($k=2$, 95% confidence limits) derived from analysis. 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. Normal ASTM procedures should be employed when using this standard. This includes using the *reproducibility* and *repeatability* factors for the ASTM method you wish to employ.

Notes:

Before use, the contents of the bottle should be mixed through vigorous shaking. The contents should not be exposed to air for a lengthy period of time. Store tightly sealed, and upright, in a cool dry location

This is a Certified Reference Material (CRM), and is verified by the above-mentioned testing 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.

EXPIRATION DATE

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

April 7, 2011

