

Alpha Resources, Inc.

Certificate Of Analysis

AR-2044

CRUDE OIL STANDARD

LOT #441208

LID # 441208

WEIGHT PERCENT SULFUR = 0.41
STANDARD DEVIATION = 0.06

High Purity Materials/Standards used:

T-Butyl Di-Sulfide

Phenothizine

Methods used for analysis:

ASTM D 5453-93, D 2622, D 4294

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 method. The precision value represents the 95% confidence limit ($k=2$) 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.

This is a Certified Reference Material (CRM), and is traceable to the above-mentioned 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.

The test results were validated on May 21, 2014 against NIST 1632b, 1619a and 2717 utilizing ASTM D 4294. These test results are accredited under the Alpha Resources Inc. laboratory's ISO/IEC 17025 accreditation issued by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AC-1200.

EXPIRATION DATE

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

January 13, 2009

