



Certificate of Analysis

AR-3001

SULFUR IN GASOLINE

LOT # 011218 LID ID 011218

WEIGHT PERCENT SULFUR = 0.0001

EXPANDED UNCERTAINTY = ± 0.000002

(k=2, 95% confidence limit)

Method(s) used for verification: ASTM D 4294-16, D 7220-12, ARI-078

References used for Traceability - AR3015-015117, AR3014-014117, AR3013-013117, AR3012-012117, AR3002-002910, VHG-SISO-5-100LOT102600-1, VHG-SISO-20-100LOT85635-7, NIST SRM 2770

The intended use of this standard is for the calibration and or verification of sulfur analysis in gasoline by XRF or other valid testing methods. This standard was produced gravimetrically using high purity materials, with balances calibrated and checked by precision NIST traceable weights. The above-mentioned ASTM test method was used for validation. The uncertainty value represents the 95% confidence limit (k=2) derived from errors in weighing of high purity materials. The sample size used for verification was placed into a removable sample cup, equipped with replaceable X-ray transparent plastic film and providing a sample depth of at least 4mm and a diameter of at least 10mm. 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. Normal test procedures should be employed when using this standard. This includes using the *reproducibility* and *repeatability* uncertainty for the test method you wish to employ. The material used in production of this standard was identified in accordance with ARI 041. The samples for validation were selected in accordance with ARI 031. The above values relate only to the material used to produce this standard.

Before use, the contents of the bottle should be mixed by vigorous shaking. Any exposure to air and light should be kept to a minimum. Keep sealed and store upright under proper refrigeration. This bottle contains 100ml gasoline to be used as per your test method. Sample size and minimum sample size may be contingent upon your test method or instrumentation manufacturer recommendations. While unable to determine a definite shelf life this reference should be reviewed 10 years from certification. Once opened this certificate is valid for one year. This reference material 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. This certificate cannot be reproduced except in full.

This is a Certified Reference Material and is SI traceable to the above-mentioned traceable references. For good laboratory practice, it is recommended that all standards be verified as fit for purpose prior to use. These test results are accredited under the Alpha Resources LLC laboratory's ISO/IEC 17025 and ISO 17034 (RMP) accreditation issued by ANSI-ASQ/ANAB. Refer to certificate and scope of accreditation(s) AT-1200 and AR1920.

EXPIRATION DATE

THIS CRM IS VALID FOR ONE YEAR FROM THE DATE OF OPENING

Certified December 20, 2018

Chief Chemist