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Certificate of Analysis

Petrochemical Test Reference Material

ISO 17034 | ISO/IEC 17025 | ISO 9001

Product Name: Red Dye #26 QC Check 10 mg/L

Product No.: VHG-DSLRED26-QC-100 **Lot No.:** 1428446 ***Expiration Date:** 30 April 2025

Matrix: Kerosene

Intended Use:
This solution is intended for use as a certified reference material or calibration standard for the analysis Solvent Red Dye #164 in diesel by ASTM D6258.

Analyte	Assigned Concentration	Uncertainty
Red Dye #26	10.0 mg/L	+/- 2.9

Certification & Traceability:
This RM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to **ISO 17034, ISO/IEC 17025 and ISO 9001**. This RM was prepared to the certified concentration(s) shown above by gravimetric methods in accordance to ASTM D6258. A well-characterized, certified Solvent Red Dye #26 was used in all preparations. Analytical measurements for the dye certification include the following: Nuclear Magnetic Resonance Spectroscopy, High Performance Liquid Chromatography, Ultraviolet-Visible Spectroscopy, Infrared Spectroscopy, Liquid Chromatography Mass Spectrometry, and Karl Fischer Titration. The Solvent Red Dye #26 concentrate was prepared in xylene and diluted to the final concentration in kerosene. The balances used in the preparation of RMs are calibrated regularly with traceability to NIST by a calibration provider accredited to **ISO/IEC 17025** by a mutually recognized accreditation body. Secondary verification of the assigned concentration was performed using UV-VIS by ASTM D6258. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use:
We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. **Store protected from light**. To achieve the highest accuracy the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) use a minimum sub-sample size of 500 µL, (4) make dilutions using calibrated balances or certified volumetric class A flasks and pipettes, (5) dilute with the same matrix as the original CRM, and (6) never pour used product back into the original container. The solution should be kept tightly capped and stored under normal laboratory conditions. Fresh solutions should be prepared daily. Do not freeze, heat, or expose to direct sunlight. Minimize exposure to moisture or high humidity.

Period of Validity:
LGC Standards ensures the accuracy of this solution until the date shown above or ***12 Months** from the date opened, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

3 January 2024
Certification Date

Date Opened

ISO 17034 Accredited: Reference Materials Producer, Certificate # 2848.02
ISO/IEC 17025 Accredited: Chemical Testing, Certificate # 2848.01

Quality Certifications

This material was prepared under a quality management system that is accredited to the following:

- ISO 17034:2016 Accredited: Reference Materials Producer, A2LA Certificate No. 2848.02 – General Requirements for the Competence of Reference Material Producers
- ISO 17034 references additional requirements specified in ISO Guide 31 and ISO Guide 35
- ISO/IEC 17025:2017 Accredited: Chemical Testing, A2LA Certificate No. 2848.01 – General Requirements for the Competence of Testing and Calibration Laboratories
- ISO 9001:2015 Certified: Quality Management Systems, Registrar: TUV NORD Certificate Registration No. 56 100 19560101

Health and Safety Information

Refer to the **Safety Data Sheet** (SDS), which can be obtained at **lgcstandards.com**

Homogeneity

This solution was determined to be homogeneous by procedures consistent with the requirements of **ISO 17034** and **ISO Guide 35**. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with internal procedures for the assessment of homogeneity and stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Further Information

Please contact LGC for further information about this material.

VHG™ CRMs are traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM
Ag	3151	VHG™
Al	3101a	VHG™
As	3103a	3103a
Au	3121	VHG™
B	3107	3107
Ba	3104a	VHG™
Be	3105a	3105a
Bi	3106	3106
Br^-	3184	VHG™
Ca	3109a	3109a
Cd	3108	VHG™
Ce	3110	3110
Cl^-	3182	1818a
Co	3113	3113
Cr	3112a	VHG™
Cs	3111a	VHG™
Cu	3114	VHG™
Dy	3115a	VHG™
Er	3116a	VHG™
Eu	3117a	VHG™
F-	3183	VHG™
Fe	3126a	VHG™
Ga	3119a	VHG™
Gd	3118a	VHG™
Ge	3120a	VHG™

Analyte	Aq. SRM	MO SRM
Hf	3122	VHG™
Hg	3133	3133
Ho	3123a	VHG™
In	3124a	3124a
K	3141a	3141a
La	3127a	3127a
Li	3129a	3129a
Lu	3130a	VHG™
Mg	3131a	3131a
Mn	3132	3132
Mo	3134	3134
Na	3152a	VHG™
Nb	3137	VHG™
Nd	3135a	VHG™
Ni	3136	VHG™
NO_{3-}	3185	VHG™
P	3139a	3139a
Pb	3128	VHG™
Pd	3138	VHG™
PO_4^{-3}	3186	VHG™
Pr	3142a	VHG™
Pt	3140	3140
Rb	3145a	VHG™
Re	3143	VHG™
Rh	3144	3144

Analyte	Aq. SRM	MO SRM
S	3154	2770
Sb	3102a	3102a
Sc	3148a	3148a
Se	3149	3149
Si	3150	VHG™
Sm	3147a	VHG™
Sn	3161a	VHG™
SO_4^{-2}	3181	VHG™
Sr	3153a	3153a
Ta	3155	VHG™
Tb	3157a	VHG™
Te	3156	VHG™
Th	VHG™	VHG™
Ti	3162a	3162a
Tl	3158	3158
Tm	3160a	VHG™
U	3164	VHG™
V	3165	VHG™
W	3163	3163
Y	3167a	3167a
Yb	3166a	VHG™
Zn	3168a	3168a
Zr	3169	3169

VHG™: Indicates VHG™ RM as NIST SRM is not available