

Certificate of Analysis

Micro Carbon Residue Tester

Check Standard

ASTM D4530

Product Code	Carbon Residue %	Lot Number	Expiration Date
MCRT-2.4-100	2.4	051520LL	May 18, 2021

Repeatability, r	Reproducibility, R		
0.171	0.253		

The r and R value were not obtained by multiple analysis but are calculated using figure 3 in the method ASTM D4530.

Thoroughly shake before each use. Store in a cool, dry place.

ASI Standards



Vishal Patel
Quality Control Mgr

1. **Quality Documentation:** This certificate is designed in accordance with ISO guide 31 (Reference Materials - Contents of Certificates and Labels) and ISO Guide 35 (Reference Materials - General and Statistical Principles for Certification).
2. **Quality Standards:** ISO 9001:2015 Quality Management System - Requirements SAI Global Registrations Certificate Number CERT 0107357
3. **Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under section 11. If dilution is required use Class A Glassware and diluent compatible with all certified analytes in this preparation. All solutions should be thoroughly mixed prior to use.
4. **Raw Materials:** Reference Standards are prepared from the highest quality starting materials with defined purities. All analytes and solvents are obtained from pre-qualified vendors and then analyzed or evaluated prior to use.
5. **Manufacturing:** All Balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Class A glassware is used in the manufacture and quality control of all standards and calibrated using an in-house procedure. Good Laboratory Practices have been used throughout the preparation of this CRM. Please refer to the nist test number listed on the front of this certificate.
6. **Homogeneity Assessment:** Homogeneity of the finished product is assessed by analyzing sample batches or by other methods consistent with the intended use of the product and by procedures that comply with the appropriate Quality System requirements.
7. **Stability Assessment:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label when handled and stored according to the conditions stated on the label. To ensure a uniform solution, mix the contents of the sealed container prior to use. Care should be taken not to contaminate the contents of the original container.
8. **Analytical Quality Control:** Products are tested by validated analytical methods specified in the manufacturer's Quality Management System.
9. **Uncertainty Statistics and Confidence Limits:** The Uncertainty values as stated on the face of this certificate have been determined using EURACHEM/CITAC Guide (Quantifying Uncertainty in Analytical Measurement). We have evaluated both Type A (based on a series of observations) and Type B (manufacturers specifications and calibration data) factors and report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula $u_m = \sqrt{(u(P))^2 + (u(m))^2 + (u(V))^2}$. The expanded uncertainty, U, assumes a normal distribution and a coverage factor of k=2 is chosen using a 95% confidence level. For analysis, the certified value should be used as the actual value.
10. **Labels:** We have determined that label would peel off or become illegible if an excessive amount of solvent came in contact with the label. For any replacement label, provide the invoice number or record of purchase with lot number.

11. **Warranties:** The Manufacturer warrants that its products shall conform to the description of such products as provided in its catalog or on specific product label. This warranty is exclusive, and the manufacturer makes no other warranty, express or implied, including any implied warranty of merchantability or fitness for any purpose.
12. **Legal Notice and limit of liability:** This product is for routine laboratory analysis and research purposes only. Due to the hazardous nature, only trained personnel should handle this product. The Company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

Our Standards are traceable to various NIST SRMs

Element	Nist SRM	Element	Nist SRM
Ag	1077a	Li	3129a
Al	1075a	Mg	3131a
As	3103a	Mn	3132
Au	3121	Mo	3134
B	3107	Na	1069b
Ba	1051b	Ni	1065b
Be	3105a	P	3139a
Bi	3106	Pb	1059c
Br	3184	Pt	3140
Ca	3109a	S	2723b
Cd	1053a	Sb	3102a
Ce	3110	Se	3149
Cl	1818a	Si	1066a
Co	3113	Sn	1057b
Cr	1078b	Sr	3153a
Cu	1080a	Ti	3162a
Fe	1079b	Tl	3158
Ga	3119a	V	1052b
Hg	3133	Y	3167a
K	3141a	Zn	3168a
		Zr	3169

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