

Product No.: 045282 Nickel 61 Isotope Standard

Matrix: 2% HNO₃

Lot No.: 1477595
Expiry Date: December 31, 2025

Element	Concentration and Uncertainty		
Ni	Certified W/V	10.00 µg/mL	+/- 0.10 µg/mL

Isotopic Composition						
Isotope	Abundance	Relative Std Error (%)		Isotope	Abundance	Relative Std Error (%)
⁵⁸ Ni	1.57	---		⁶² Ni	2.19	---
⁶⁰ Ni	4.97	---		⁶⁴ Ni	0.17	---
⁶¹ Ni	91.10	0.5				

Intended Use: This solution is intended for use as a calibration or Reference Material (RM) standard for inductively coupled plasma mass spectroscopy (ICP-MS) where known values for isotopic abundance are required.

Certification & Traceability: Thermo Fisher Scientific is ISO 9001:2015 certified. This RM was manufactured and certified by a Thermo Fisher Scientific supplier under an ISO 9001, ISO/IEC 17025, and ISO 17034 quality management system. This RM was prepared to a nominal concentration of 10 µg/mL by gravimetric methods using a single-element concentrate that was certified using the "High Performance ICP-OES" protocol developed by NIST and is directly traceable to the NIST SRMs when available. This solution was stabilized using appropriate high purity acid as indicated in the listed matrix and diluted with filtered (0.22µm), 18 M-ohm deionized water. The balances used in the preparation of this RM are calibrated regularly with traceability to NIST. All volumetric dilutions are performed in Class A calibrated glassware. Secondary verification of the certified concentration was performed using ICP-OES that was calibrated and/or referenced against NIST SRM 3136. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2. Atomic abundance and/or ratio values are based upon raw material values and are verified using ICP-MS analysis.

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

Period of Validity: Thermo Fisher Scientific guarantees the accuracy of this Specpure® solution until the expiry date shown above, 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.

8/9/2024
Certification Date

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Page 1 of 2

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Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO 17034 and ISO 17034. Samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 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.

Quality Certifications: This material was prepared under a quality management system that is:

- Registered to ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- Accredited to ISO 17034 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO 17034 references additional requirements specified in ISO Guide 31 and ISO Guide 35
- Accredited ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)

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Page 2 of 2

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