

Product No.: 047172  
 Yttrium Metallo-Organic Standard

 Certified Concentration of Y:  $1000 \pm 10 \mu\text{g/g}$ 

Lot No.: 1493481

Matrix: Hydrocarbon Oil

Expiry Date: February 28, 2026

**Intended Use:** This solution is intended for use as a Certified Reference Material (CRM) or calibration standard for the analysis of this element in petroleum products or other organic matrices using inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), rotating disc electrode atomic emission spectroscopy (RDE-AES), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

**Certification & Traceability:** Thermo Fisher Scientific is ISO 9001:2015 certified. This CRM was manufactured and certified by a Thermo Fisher Scientific supplier under an **ISO 9001**, **ISO/IEC 17025**, and **ISO 17034** quality management system. This CRM was prepared to the certified concentration shown above by gravimetric methods using a single-element concentrate that is traceable to the NIST SRM listed below. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST. The certified concentration was determined based upon gravimetric procedures. Secondary verification of the certified concentration was performed using ICP-OES and these data are traceable to **NIST SRM 3167a**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of  $k=2$ .

**Uncertified Values:** ICP-OES was used to determine trace metal concentrations in this product.

Trace Concentrations ( $\mu\text{g/g}$ )					
Ag	<1	Cr	<1	Mo	<1
Al	<1	Cu	<1	Na	<1
As	<1	Fe	<1	Ni	<1
B	<1	Hg	<1	P	<1
Ba	<1	K	<1	Pb	<1
Bi	<1	La	<1	Sb	<1
Ca	<1	Li	<1	Sc	<1
Cd	<1	Mg	<1	Se	<1
Co	<1	Mn	<1	Si	<1
				Sn	<1
				Sr	<1
				Ti	<1
				Tl	<1
				V	<1
				Y	Major
				Zn	<1

**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 CRM's original container, (3) use a minimum sub-sample size of 500mg, (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. We suggest the addition of stabilizer (Stock No. 43871) to enhance the stability of metallo-organic standards that have been diluted using solvents.

**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. Any dilutions to lower concentrations may have reduced storage life. 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.

10/11/2024  
 Certification Date

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Products are processed under ISO 9001:2015 quality management systems and samples are tested for conformance to the noted specifications. Certain data may have been supplied by third parties. We disclaim the implied warranties of merchantability and fitness for a particular purpose, and the accuracy of third party data or information associated with the product. Products are for research and development use only. Products are not for direct administration to humans or animals. It is the responsibility of the final formulator or end user to determine suitability, and to qualify and/or validate each product for its intended use.

**Homogeneity:** This solution was determined to be homogeneous by procedures consistent with the requirements of ISO 17034 and ISO 17035. Multiple 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 CRM 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)