



Certificate of Analysis

Secondary Reference Standard NIST traceable

Manganese Standard Solution 1000 mg/L (in 5% HNO₃)

Molecular Formula:	NA	Lot No.:	M-002
Molecular Weight:	NA	Cat No.:	NIST -052
Packing :	100 mL	Dt. of Issue of Certificate:	18/04/2026
CAS No.:	NA	Dt. of Mfr:	April 2026
Traceability:	To NIST SRM 3132	Exp. Dt.:	Mar 2028

TABLE :1 Certified Value

Measurand / Constituent	Certified Value	Expanded Uncertainty (K=2)
Manganese mass fraction (mg/kg)	1007	± 6
Manganese Concentration (mg/L)	1000	± 6

- This Manganese Standard Solution is prepared by using ISO 17034:2016 certified RM & comparing with Manganese Standard solution of NIST SRM 3132.
- The Manganese Standard Solution is prepared gravimetrically using ISO 17034:2016 CRM Manganese Metal as starting material, whose purity is determined by primary method. The Manganese Standard Solution is prepared in 0.8 mol/L nitric acid. One unit of this Reference Material consists of 100 ml Manganese Standard Solution packed in tightly sealed white HDPE bottles. Certified value of Manganese Standard Solution along with the associated uncertainty was calculated at 95% confidence level with coverage factor $k=2$, considering major sources of uncertainty including measurement replication, instrument background, buoyancy correction.

Traceability: The test result is traceable to Standard Reference Material of National Institute of Standards and Technology (USA), SRM 3132.

Intended use: This reference material is intended to be used as a standard for AAS/ICP-OES & ICP-MS quantitative determination of *Manganese* and calibration of instruments.

Precautions:

- The sampling should be done using clean and dry pipette/micropipette.
- Excess sample must be rejected and must not be put back into the original bottle.
- Gloves, masks, goggles and other general precautionary measure should be used while handling the reference material.

Accreditation: Sabiha Research And Development ltd. is accredited to ISO 17025:2017.

Expiry: The validity of the standard is 2 years from date of manufacturing, However once the bottle is opened the expiry shall be one year from date of opening but within overall shelf life of the standard.

Do not freeze, store the bottle tightly closed between 5 - 30°C at room temperature protected from light, keep container tightly closed. Do not put back unused solution into original bottle. For laboratory and industrial use only, not for Human/Animal consumption.

QC Supervisor
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