SRD

CERTIFICATE OF ANALYSIS

Iron Standard Solution
(Certified Reference Material)

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Product Description:

Version No. : 00	**Certificate No.:** SRD/CRM/F-01/26/001
Lot No. : CRM/F/001/1	**Issue date** : July 2026
Catalogue Number : F-01	**Expiry date** : January 2028
Matrix : 2 % (v/v) HNO_3	**Mfg. Date** : January 2026
Starting Material : Iron metal	
Starting Material Purity: 99.9 %	
Unit Quantity : 100mL	
Density : 1.011 g/cm^3 (25 ºC ± 3 ºC)	
Storage: The certified reference material should be stored in tightly sealed original bottle between 23 ± 5 ºC and should protected from light.	

Certified Value and Expanded Uncertainty

Sr. No	Certified Value	Expanded Uncertainty
1.	1000 mg/L	± 8 mg/L
2.	989 mg/kg	± 8 mg/kg

Measurement Method

The certified value is determined through the characterization by inductively coupled plasma optical emission spectroscopy (ICP-OES) method against NIST SRMs or similar CRMs in accordance with ISO/IEC 17025.

Metrological Traceability

This product is Traceable to NIST SRM 3126a via an unbroken chain of comparisons.

Intended Use

This reference material is intended to be used as a calibration standard for AAS/ICP-OES &ICP-MS in elemental analysis.

Instruction for handling and use

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

Associated uncertainty:

The associated uncertainty (U_{crm}) reported with the certified values is calculated as combined expanded uncertainty $U_{crm} = k \times u_{crm}$ in accordance with ISO 33405: 2024 with k=2 as the coverage factor for a 95 % coverage probability.

The combined uncertainty u_{crm} is derived for combination of the squared uncertainty contribution:

$$u_{crm} = \sqrt{u^2_{homo} + u^2_{char} + u^2_{stab}}$$

$u_{characterization}$: Is the uncertainty in accordance with ISO/IEC 17025 which includes the contribution of the primary reference material and the measuring system.

$u_{homogeneity}$: Is the between bottle variance in accordance with ISO 17034. The assessment of homogeneity is performed by analysis of a representative number of systematically chosen samples units.

$u_{stability}$: Is the uncertainty obtained from short term and long-term stability in accordance with ISO 17034. The Stability studies are the basis for the quantification of the expiry date of this standard for the unopened bottle.

Validity period

The validity of this CRM/RM is no longer than one year from the date of opening the aluminized bag.

Disclaimer:

Development of this CRM has been carried out at Sabiha Research and Development Ltd., Dera Bassi Punjab Accreditation as per ISO 17034: 2016 and testing is performed with compliance as per ISO/IEC 17025:2017. The certification of this CRM is done complying with the requirements of ISO 33405:2024. However, it assumes no liability with respect to or for damages resulting from, the misuse of any information, material, apparatus, method or process disclosed in this certificate or any warranties with respect to material safety. The certified values of the parameters given in this certificate are the best estimates of true value within with stated uncertainties.

References:

1. ISO 17034:2016-General Requirements for the competence of reference material produces.
2. ISO Guide 33405:2024- Reference materials- Approaches for characterization and assessment of homogeneity and stability.
3. ISO/IEC 17025:2017- General requirements for the competence of testing and calibration laboratories.
4. ISO 33401:2024- Reference materials- contents of certificate, labels and accompanying documentation.

Safety Information

Refer to the material safety data sheet.

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Approving Officer

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