

Spectrochemical Reference Materials

Certified Reference Materials for
Analysis of Aluminium & its Alloys

Product Catalogue



Quality Accreditations

ISO 17034: 2016

ISO/IEC 17025:2017

**JAWAHARLAL NEHRU ALUMINIUM RESEARCH
DEVELOPMENT AND DESIGN CENTRE, Nagpur**

Autonomous Body, Ministry of Mines, Govt of India

ISO 17034 accredited RMP by NABL; Certificate number RC-1022

www.jnarddc.gov.in

Introduction

Jawaharlal Nehru Aluminium Research Development and Design Centre, Nagpur is a “Centre of Excellence” set up in 1989 to provide major R & D support system for the emerging modern aluminium industry in India by undertaking basic and applied research in the areas of bauxite, alumina, and aluminium. JNARDDC, a Central Government autonomous body of Ministry of Mines, Govt of India offers services to Indian aluminium industry in the areas of technological evaluation of ore, casting, extrusion, analytical, bauxite refining, alumina smelting, waste utilisation, recycling, etc. For more information, visit www.jnarddc.gov.in

JNARDDC Spectrochemical Reference Materials

JNARDDC ventured into production of spectrochemical reference materials for aluminium alloys during March, 2023 after its successful accreditation to ISO 17034:2016 by National Accreditation Board for Testing and Calibration Laboratories (NABL), a Constituent Board of Quality Council of India. JNARDDC is also accredited with ISO/IEC 17025:2017 for chemical analysis of aluminium and its alloys. Presently, JNARDDC offers 5 different aluminium alloy grade CRMs which are developed to support analysis by Spark-OES.

We perform all facets of CRM production and analysis

Extrusion and machining | Homogeneity Assessment | Characterisation | Certification



CERTIFIED REFERENCE MATERIALS FOR WROUGHT ALUMINIUM ALLOYS

Alloy Grade	AA 6063	AA 2024	AA 7075	AA 3103	AA 6063	AA 6082
CRM ID	AC-PP001	RWA-2024-PP002	RWA-7075-PP003	RWA-3103-PP004	RWA-6063-PP006	RWA-6082-PP007
Si	0.4447	0.1090	0.0897	0.1191	0.4173	0.9006
Fe	0.1579	0.1313	0.1125	0.1197	0.1740	0.1540
Cu	--	4.3682	1.4608	0.056	--	--
Mn	(0.0081)	0.6655	0.0267	1.2409	0.0100	0.8430
Mg	0.4675	1.5341	2.3866	0.0201	0.4983	0.6611
Cr	(0.0013)	0.0136	0.2218	0.0037	(0.0009)	0.0024
Ti	0.0200	0.0333	0.0452	--	0.0111	0.0304
Zn	--	0.0169	5.4560	--	(0.0018)	--
V	(0.0139)	(0.0084)	(0.0115)	(0.0138)	(0.0017)	(0.0204)
Zr	(0.0009)	--	(0.0281)	--	--	(0.0011)
Pb	(0.0012)	(0.0016)	(0.0007)	(0.0031)	(0.0011)	
Bi	(0.0003)	(0.0005)	--	--	--	
Ga	(0.0103)	(0.0096)	--	(0.0122)	(0.0099)	(0.0092)
Ni	(0.0040)	(0.0028)	(0.0023)	(0.0051)	--	(0.0053)
B	(0.0022)	--	--	(0.0038)	(0.0019)	(0.0022)
Sn	--	(0.0026)	(0.0011)	(0.0027)	--	--
Actual Price	₹ 18,750	₹ 25,000	₹ 25,000	₹ 25,000	₹ 25,000	₹ 25,000
Discounted price exclusively for stakeholders*	₹ 15,000	₹ 20,000	₹ 20,000	₹ 20,000	₹ 20,000	₹ 20,000

*Stakeholders registered on nfmrecycling portal (nfmrecycling.jnarddc.gov.in)

Size: DISC of Ø50 mm X ~25 mm thickness

Actual certified values may vary both above and below those indicated and may have more or less significant figures.

Values given in parenthesis are not certified for use as calibrants or analytical performance checks. These values are provided for information only and therefore no uncertainties are provided for these elements.

A copy of the current CRM certificate shall be made available upon request.



Application Notes

Preparation and analysis

The material is obtained in the form of DC cast billets. DC cast billets were extruded using 14MN direct extrusion press at JNARDDC to bar of 50mm diameter. Extruded bar was sliced and packaged at JNARDDC. Homogeneity analysis was performed by JNARDDC (ISO / IEC 17025:2017 accredited) using spark optical emission spectrometer (OES) in simple randomized block design and ANOVA single factor method was used to statistically evaluate uncertainty associated with homogeneity as per IS 19806 : 2026 (ISO 33405 : 2024) Reference Materials – Approaches for Characterization and Assessment of Homogeneity and Stability. Each element certified has been analysed by several laboratories, and assigned values is the robust average of laboratory means. The final certified uncertainty for each element has been derived by combining uncertainty due to homogeneity and uncertainty due to characterisation (inter-laboratory testing).

Intended Use

JNARDDC CRMs in disc form are intended for use with spark OES instruments for analysis of aluminium alloys. CRMs may be used for calibration, type standardizing, control standards and method validation for spark-OES methods.

Instructions for use

Spark-OES: This certification is applicable to the entire thickness of the disc. The surface of the disc should be prepared using a lathe, milling, or grinding machine. User must determine the correct surface preparation procedure for each analytical method. Avoid use of tool bits or emery papers that may contaminate the surface with elements of interest. If using a machining lubricant, make sure that it is of sufficient purity to avoid contamination of the surface with elements of interest. Do not touch the prepared analysis surface or allow the surface to come in contact with any source of contamination. Sparks should be placed without overlapping. Users are advised to check against possible bias between CRM and test sample due to differences in metallurgical history and be aware of possible inter-element effects.

Storage

For best results, CRM should be stored in a place free from corrosive fumes. Exposure to temperatures above approximately 200 °C may cause metallurgical changes that will invalidate the certificate of analysis.

Application Notes

Shelf Life

The certification is valid for 05 years from the date of certification, within the measurement uncertainty specified, provided the CRM is handled and stored in accordance with the instructions given in this document (see “Instructions for use” and “Storage”). Periodic recertification of this CRM is not required. This certification of CRM is nullified if the CRM is damaged, contaminated, or otherwise modified or identification mark is removed. JNARDDC will monitor this material over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, JNARDDC will notify the purchaser. As a continuous development activities, JNARDDC reserves the right to amend the certificate.

Traceability

CRMs are prepared and certified for the spectrochemical analyses of aluminium alloys using methodology similar to that described in ASTM method E1251. All certifications are produced using at least 9 independent data sets and detailed statistical analysis to assure homogeneity. Traceability to NIST is maintained through the use of NIST Standard Reference Material® (SRM), or certified reference materials, directly traceable to NIST SRMs.

Technical Assistance

Before placing an order, you may seek clarification if the availability, description, or applicability of the CRMs is unclear.

Experts in the production and application of CRMs are available to assist with technical questions concerning the use of JNARDDC CRMs and the analysis of aluminium and aluminium alloys.

Inquiries for technical assistance can be placed to the following:

R N Chouhan, HoD, Metal Processing & Reference Materials

Quality Manager, ISO 17034:2016,

Phone: +91 - 7104299556

Email: rnchouhan@jnarddc.gov.in

website: <https://jnarddc.gov.in/CRM.aspx>

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Autonomous Body, Ministry of Mines, Govt of India
Amravati Road, Wadi, Nagpur-440023, INDIA

Purchase Procedure

**For enquiry and order Please contact
Consultancy & Testing Services Cell (CTSC), JNARDDC**

In-Charge: Mr Mahin Sapkal,
Phone: 07104 - 221892, Mobile Phone: 92269 56937

Email Id: testingcell@jnarddc.gov.in

JNARDDC GST Details: https://jnarddc.gov.in/en/rti/GST_Certificate-JNARDDC_1_.pdf

GUIDELINES FOR ORDERING

All orders for spectrochemical CRMs must include the following:

1. Customer purchase order number and date
2. Address for invoicing
3. Name & Address for shipping
4. CRM UNIQUE ID mentioned in this catalogue
5. Additional Information: GST number for domestic sales

PRICING AND SHIPPING

Prices are quoted by the CTSC and are subject to change without notice. CRMs and related documents are shipped F.O.B. destination via Courier partner (domestic sales only). Requests for special handling of domestic orders and shipments outside India will be subject to the discretion of JNARDDC, with applicable charges being levied on an actual cost basis. Permission for partial shipment will ensure prompt delivery of available CRMs in the event some are out of stock. This catalogue lists the CRMs available at the time of publication of this document, but JNARDDC reserves the right, to discontinue any CRM, to limit the quantity supplied to any customer, to modify compositions as necessary, and to change prices at any time.



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