



Certificate of Analysis
(BARC-D3101)
Lead in noodle powder

**BARC-National Centre for Compositional Characterization of Materials (NCCCM),
Hyderabad-500062**

BARC Certified Reference Material of trace element Lead in Noodle powder is intended for use as a calibration standard in evaluating analytical methods, instruments performance for the determination of this element. This CRM can also be used for data quality control (DQC) in the routine analysis of noodle or food materials for lead. One bottle contains about 20 g of the powdered material packaged in a HDPE sealed bottle.

The noodle powder material for its trace element impurity has been certified by NCCCM-BARC by means of an inter-laboratory comparison (ILC) exercise as given in table below. Analytical techniques used for lead measurements in noodles by the participating labs are ICP-OES, ICP-MS, GFAAS and Voltametry. The assigned property values of trace elements were established according to ISO Guide - 35:2006 guidelines.

Sr. No.	Element/ Analyte	Mass fraction ¹ (dry matter basis)	Expanded uncertainty ²
1	Pb	2.55 mg kg ⁻¹	0.12 mg kg ⁻¹
The given uncertainty of the certified value is at a confidence level 95% (coverage factor k = 2)			
¹ ISO 35: 2006 guidelines ² JCGM100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement.			

ILC participating laboratories:

1. Analytical Chemistry Division, Bhabha Atomic Research Centre (BARC), Trombay, Mumbai
2. Analytical Control laboratory, BARC, Mysore-571130
3. Centre for Materials for Electronics Technology (C-MET), Cherlapally, Hyderabad-500051
4. Central Food Technology and Research Institute (CFTRI), Mysore
5. First Source Laboratory, Nacharam, Hyderabad
6. National Metallurgical Laboratory (NML), Jamshedpur, India.
7. National Institute of Nutrition (NIN), Hyderabad
8. National Centre for Compositional Characterization of Materials (NCCCM, BARC), Hyderabad-500062

Origin and preparation of the material

A sample of ~2.75 kg of noodle material was collected from local market and analyzed for the lead content. The initial lead content was less than $<0.5 \mu\text{g g}^{-1}$ in the procured material (analysed by GFAAS after Microwave digestion). The material was spiked with lead nitrate solution and food preservative (TBHQ), dried at 100°C for overnight milled to a powder in a grinder and then sieved through a 150 micron sieve. The sieved material with a particle size less than 150 μm was further homogenized. Homogeneity was achieved by mixing the material in a polypropylene rotating homogenizer for 24 hours. 20g of aliquots were packed into pre-cleaned high density polyethylene (HDPE) 120 bottles.

Homogeneity and Stability study

Sample processing and homogeneity tests were carried out at National Centre for Compositional Characterization of Materials (NCCCM) Hyderabad, a unit of BARC. Minimum sample size used for analytical homogeneity is ~500 mg. Homogeneity within and between the bottles was carried out as per ISO Guide 35. Samples were sent to participating laboratories for lead measurement for certification. Noodle powder sample is stable since last twelve months. The material is expected to be stable for twenty four months when stored at 4 °C and its further long term stability study would be checked quarterly until stock lasts.

Validity and Instructions for Handling and storage

This certificate is valid for two years from the date of certification provided when used with recommended handling and stored at 4°C. This validity may be extended as further evidence of stability becomes available and will be intimated in our website (www.cccm.gov.in). NCCCM will periodically check for its stability and inform the customer if required. This certification is nullified if the seal is damaged, contaminated or modified. User should take the precaution to prevent contamination of the material during use or storage. The material should be handled putting on gloves in hands and only authorized person should handle. After taking the weight, any excess material left should be discarded.

Maintenance of Certification

BARC-NCCCM continuously monitors the certified value of lead in noodle powder over the period of its certification. If any substantive change occurs due to unforeseen reasons that affect the certification before expiration of certification, BARC-NCCCM will notify to the purchaser immediately.

Coordination for this RM preparation and certification was done by at BARC-NCCCM by Dr. K. Dash, Mrs. Lori Rastogi, Shri S.Thangavel and Mrs. R. Manjusha. The data analysis and statistical evaluation for certification has been done by Dr. K Chandrasekaran (BARC-NCCCM).

Traceability

The quantity values assigned to the certified reference material are the mass fractions of specified trace element, expressed in the derived SI unit mg kg^{-1} . Evidence on metrological traceability to the SI units of reference materials and calibrators used in the characterization process was provided by all participant laboratories.

Analytical Method

After shaking the bottle well about 500 mg sample aliquot is recommended to be taken for acid digestion. The recommended sample processing is microwave assisted acid digestion method by conc. nitric acid (2mL, HNO_3), hydrogen peroxide (1 mL, 30 %, v/v) and 7ml DI water (the microwave digestion step includes a hold time of 30 min at 220 - 230°C). Quantification was carried out using external calibration. The sample for analysis should be taken as it is. The moisture content should be determined by drying a separate portion of sample at 100°C for 1 hr.

Legal disclaimer

The certified values of trace elements given in this certificate are the best estimates of true values within the stated uncertainties and based on the techniques described in this certificate. The certifying organizations, *i.e.* BARC-NCCCM has taken into account appropriate international guidelines for the preparation and certification of material, however, they assume no liability with respect to, or for damages resulting from, the use of any information, material, apparatus, method or process disclosed in this certificate or any warranties with respect to the material (PI. see the material safety data sheet) safety and the data contained in this reference sheet and shall not be liable for any damage that may result from the use of such material/ data.

Note: A detailed technical report on the certification procedure, on the methods used, statistical analysis is available with BARC-NCCCM, Hyderabad.

Accepted as CRM, April 21st, 2017

Validity: March 21st, 2019

Signature:

Authorised Signatory

Dr. Sunil Jai Kumar

Head, NCCCM, ECIL-post

Hyderabad – 500 062

India

Annexure: 1

Material Safety Data Sheet (MSDS) for Noodles Powder

HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 1 Reactivity = 0

Major Health Hazards:

Physical Hazards: There are no known physical hazards associated with this material.

Potential Health Effects (Acute and Chronic):

Inhalation: Should be avoided as it contains food additives and lead

Skin Contact: NA

Eye Contact: Mechanical Irritation

Ingestion: No information available on severe effects.

Listed as a Carcinogen/Potential Carcinogen: No