

1.0 DESCRIPTION: Matrix Reference Material **Lead in paint, Level 1**
 Catalogue Number: 140-025-200
 Lot Number: **S201127037**
 Expiration Date: 2 years from date of shipment (See Ship Date label on bottle)

2.0 CONSENSUS VALUES (See section 8 for additional details):

Parameter	Consensus Value (mg/kg)	Uncertainty (+/-)	Confidence Interval (mg/kg)	Tolerance Interval (mg/kg)
Pb	177.7	3.5	174.3 – 181.2	139.6 – 215.9

3.0 APPROVAL AND REVISION:
 Approval: Daniel Boisvert, Chemist
 Date of Issue of Report: May 7th, 2021



4.0 DESCRIPTION AND INTENDED USE:

Lead in Paint level 1 is a Matrix Reference Material (MRM) for lead (Pb) contaminated surface coated painted items (toys, furniture,...). This standard was designed specifically for periodic quality control verification, and methods development for Lead in paint analysis. The MRM is traceable to NIST 2582 (lead in powdered paint). Not intended for calibration.

5.0 INSTRUCTIONS FOR USE AND STABILITY:

Instructions for use: The material must be dried at 105°C for two hours before use. In order to have a representative sample, the minimum use quantity is 200 mg to conform to previous homogeneity testing. Results are to be calculated on a dry weight basis.

Stability: This MRM is guaranteed to be stable up to 2 years from the shipping date provided the material is kept sealed, stored under normal laboratory conditions and used according to good laboratory practices. Shipping date will be stamped on container at time of shipping. **SCP SCIENCE** will monitor the stability of representative samples regularly and if any changes occur that invalidate the reported results, **SCP SCIENCE** will notify purchasers.

Date of last verification: **N/A**

6.0 HAZARDOUS INFORMATION:

Please refer to the associated Safety Data Sheet (SDS) for information regarding this product (available at <http://www.scpscience.com/ecert>).

7.0 PREPARATION METHOD AND HOMOGENEITY:

Preparation Method: The initial sample consists of a water based colored paint that has been contaminated with a known quantity of a lead solution. The contaminated paint was mixed for 4 hours to homogenize the liquid material. The liquid paint has been spread on a hard surface and left to dry. Once dry the paint is scraped and grinded to obtain finer particles. The final material has been packaged in 20 g containers and tested for homogeneity.



Homogeneity: The homogeneity of the material has undergone verification by acid digestion according to method CPSC-CH-E1001-08 and using ICP-AES for analysis. The method used for material homogeneity determination is based on ISO Guide 35.

8.0 ANALYSIS AND DETERMINATION OF CONSENSUS VALUES:

These values were the result of an inter-laboratory study involving eighteen international laboratories. Each laboratory was asked to supply analysis data for a specific element (lead) employing a method based on CPSC-CH-E1001-08, CPSC-CH-E1003-09, EPA (3050B, 6010B, 6020). Participating labs have used microwave or hot plate / heating bloc for sample digestion. For testing ICP-OES or, ICP-MS has been used. .Consensus value is based on an average of 72 values.

The outliers were removed using the Interquartile range rule Test and by data comparison after confirmation that there was neither a connection between outliers and the methods used for analysis nor between the outliers and the nature of the sample.

The Confidence Interval has been calculated using the 95% Confidence Level (equivalent to 2σ) using the following formula:

$\bar{x} \pm ts/\sqrt{n}$ where

n:	number of data
s:	Standard Deviation of the Average
t:	factor for Student Test
x:	Reference Value

The Confidence Interval should be used for routine quality control.

The Tolerance Interval has been calculated using again a 95% probability with a 95% inclusion of the population. The following formula was used:

$\bar{x} \pm ks$ where

k:	factor for two-sided Tolerance Limits
s:	Standard Deviation of the Average
x:	Reference Value

The Tolerance Interval is an indication of the lowest possible value and the highest possible value based on the complete set of data, exclusive of outliers, used to calculate the Consensus Value.

The following table is a guideline on how to interpret the results:

Results within Confidence Interval	Method working properly
Results outside Confidence Interval but within Tolerance Interval	Method may need improvement
Results outside Tolerance Interval	Method not working properly



9.0 REFERENCES:

ISO Guide 30: Terms and definitions used in connection with reference materials
ISO Guide 31: Reference materials – Contents of certificates, labels and accompanying documentation
ISO Guide 35: Certification of reference materials--General and statistical principles
Standard Reference Materials-Handbook for SRM Users - John K. Taylor
Quality Assurance of Chemical Measurements - John K. Taylor
CPSC-CH-E1001-08 - Standard Operating Procedure for Determining Total Lead (Pb) in Children's Metal Products (Including Children's Metal Jewelry) (December 4, 2008)
CPSC-CH-E1003-09 - Standard Operating Procedure for Determining Lead (Pb) in Paint and Other Similar Surface Coatings (April 26, 2009)
ASTM E1645-01 - Standard Practice for Preparation of Dried Paint Samples by Hotplate or Microwave Digestion for Subsequent Lead Analysis (2007)
AOAC 974-02, Lead in paint – Atomic Absorption Spectrophotometric Method, 1976
EPA 3050B - Acid Digestion of Sediments, Sludges and Soils (Revision 2, 1996)

10.0 QUALITY SYSTEM CERTIFICATIONS:

ISO 9001 Certification: This reference material was produced in a facility which operates under a **registered** ISO 9001 Quality Management System. Please consult our web site for a copy of the most recent revision of our certificate of registration.

ISO 17025 Accreditation: **SCP SCIENCE (Corporate Headquarters)** operates an ISO 17025 accredited laboratory. Please consult our web site for a copy of the most recent revision of our certificate and scope of accreditation.

ISO 17034 Accreditation: **SCP SCIENCE (Corporate Headquarters)** is an ISO 17034 accredited Reference Material Producer. Please consult our website for a copy of our most recent certificate and scope of accreditation.

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