



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material[®] 2570

Lead Paint Film for Building Surfaces (Blank) (Color: White)

This Standard Reference Material (SRM) is intended as a blank for the Lead Paint Film for Building Surfaces SRMs, which are used for validation of results from portable, hand-held, X-ray fluorescence analyzers when testing for lead in paint coatings on interior and exterior building surfaces. A unit of SRM 2570 consists of a white polyester sheet, approximately 7.6 cm wide, 10.2 cm long, and 0.2 mm thick, coated with a single, lacquer layer, approximately 0.04 mm thick. Each unit is over-coated with a clear, thin, plastic laminate to protect the surface from abrasion.

Certified Value: The measurand is the total lead (Pb) areic mass in cured paint indicated below [1]. A NIST certified value is a value for which NIST has the highest confidence in its accuracy, in that all known or suspected sources of bias have been investigated or taken into account [2]. Value assignment categories are based on the definitions of terms and modes used at NIST for certification of chemical reference materials. The certified value is based on measurements by isotope dilution inductively-coupled plasma mass spectrometry (ID-ICP-MS) and is an estimate of the limit of detection for Pb in paint. The uncertainty associated with the certified value is 100 % relative. Metrological traceability is to the SI units for mass and length (expressed as milligrams per centimeter-squared).

Level	Color	Lead Areic Mass (mg/cm ²)
SRM 2570	White (blank)	< 0.001

Expiration of Certification: The certification of **SRM 2570** is valid, within the measurement uncertainty specified, until **01 July 2026**, provided the SRM is handled and stored in accordance with the instructions given in this certificate (see "Instructions for Use"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet or register) will facilitate notification.

Coordination of technical measurements for the certification of this SRM was performed by G.C. Turk and J.D. Fassett of the NIST Chemical Sciences Division.

Measurements for value assignments of this SRM were performed by K.E. Murphy, J.R. Sieber, A.F. Marlow, L.J. Wood, P.R. Seo, and M. Lankosz of the NIST Chemical Sciences Division.

Statistical consultation for this SRM was provided by E.S. Lagergren and N.F. Zhang of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Office of Reference Materials.

Carlos A. Gonzalez, Chief
Chemical Sciences Division

Gaithersburg, MD 20899
Certificate Issue Date: 14 April 2016
Certificate Revision History on Last Page

Steven J. Choquette, Acting Director
Office of Reference Materials

INSTRUCTIONS FOR USE

The SRM sheet must first be removed from the plastic sleeve in which it is stored. Position the sheet so that the side labeled with the NIST logo and SRM number faces the X-ray source. Additional layers of material placed between the sheet and the measurement instrument may bias the measurements by absorbing radiation impinging on the sheet and fluorescent X-rays emanating from lead in the paint, if any. For best results, the X-ray beam should irradiate an area of the SRM that is at least 2.5 cm in diameter and is centered on the sheet. Care must be exercised not to compromise the protective plastic laminate that prevents scratching or chipping of the painted surface (See "Preparation and Analysis"). Upon completion of the measurement, store the SRM in the plastic sleeve provided. It is also recommended that this SRM be stored indoors at ambient room temperature and away from direct sunlight when not in use.

PREPARATION AND ANALYSIS

The coated polyester sheets for SRM 2570 were prepared by an automated coating process at a commercial facility under contract to NIST. A colorless, lead-free lacquer was applied to the polyester sheet. A thin, protective overlay of plastic laminate was applied to the sheet. The lacquer layer and white polyester sheet are approximately 0.04 mm and 0.2 mm thick, respectively. The attenuation of lead $L_{3-}M_{4,5}$ ($L\alpha_{1,2}$) X-rays due to the protective overlay does not exceed 2 % relative, while attenuation of K- $L_{2,3}$ ($K\alpha_{1,2}$) X-rays is negligible.

REFERENCES

- [1] Thompson, A.; Taylor, B.N.; *Guide for the Use of the International System of Units (SI)*; NIST Special Publication 811; U.S. Government Printing Office: Washington, DC (2008); available at www.nist.gov/pml/pubs/index.cfm/ (accessed Mar 2016).
- [2] May, W.; Parris, R.; Beck, C.; Fassett, J.; Greenberg, R.; Guenther, F.; Kramer, G.; Wise, S.; Gills, T.; Colbert, J.; Gettings, R.; MacDonald, B.; *Definitions of Terms and Modes Used at NIST for Value Assignment of Reference Materials for Chemical Measurements*; NIST Special Publication 260-136; U.S. Government Printing Office: Washington, DC (2000); available at www.nist.gov/srm/publications.cfm (accessed Mar 2016).

Certificate Revision History: 14 April 2016 (Change of expiration date; editorial changes); 24 March 2009 (Extension of certification period); 29 November 1999 (Original certificate date).

Users of this SRM should ensure that the Certificate of Analysis in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srminfo@nist.gov; or via the Internet at <http://www.nist.gov/srm>.