



# Certificate of Analysis

## Standard Reference Material<sup>®</sup> 2574

Lead Paint Film for Building Surfaces  
(Nominal Pb 0.7 mg/cm<sup>2</sup>) (Color: Gold)

This Standard Reference Material (SRM) is intended 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 2574 consists of a white polyester sheet, approximately 7.6 cm wide, 10.2 cm long, and 0.2 mm thick, coated with a single, gold-colored paint layer, approximately 0.04 mm thick. Included is one unit of SRM 2570, which is coated with a lead-free, lacquer layer of the same thickness as a lead paint layer and is intended as a blank. All sheets are over-coated with a clear, thin, plastic laminate to protect the surface from abrasion.

**Certified Values:** The measurand is the total lead areic mass in cured paint for each level listed 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 [2]. The certified value is based on measurements by isotope dilution inductively coupled plasma mass spectrometry (ID-ICP-MS).

Level	Color	Lead Areic Mass (mg/cm <sup>2</sup> )
SRM 2570	White (blank)	< 0.001
SRM 2574	Gold	0.714 ± 0.083

The uncertainty associated with each certified value is an expanded uncertainty,  $U$ , and was evaluated in accordance with the ISO/JCGM Guides [3,4]. Because of variability in the paint film between different sheets of each SRM, the uncertainties are 95 % prediction intervals. The expanded uncertainty is calculated as  $U = ku_c$ , where  $u_c$  is intended to represent, at the level of one standard deviation, the combined uncertainty due to material variability and measurement uncertainty. The coverage factor,  $k$ , is determined from the Student's  $t$ -distribution corresponding to the calculated effective degrees of freedom and 95 % level of confidence. Metrological traceability is to the SI units for mass and length (expressed as milligrams per centimeter-squared).

**Expiration of Certification:** The certification of SRM 2574 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.

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