

New reference material to help get the lead out of paints for children's products

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To help manufacturers adhere to new regulations intended to reduce the risk of lead poisoning in children, researchers at the National Institute of Standards and Technology (NIST) have developed standard test samples of lead paint films of the sort sometimes found on children's products, as well as a guide to their use.

Manufacturers can use the new test—or "reference"—materials to demonstrate that their test methods yield accurate results when used to show compliance of [products](#) with the [Consumer Product Safety Improvement Act \(CSPIA\)](#) of 2008. The law requires that paints used on children's products contain no more than 90 milligrams of [lead](#) per kilogram of paint, a marked decrease from the prior standard, which allowed up to 600 mg/kg. It is enforced by the U.S. [Consumer Product Safety Commission](#) (CPSC).

Lead is a powerful toxin that can cause harm to nearly every system of the body. According to the [Centers for Disease Control and Prevention](#), about 250,000 U.S. children have blood levels of lead in excess of 10 [micrograms](#) per [deciliter](#), the point at which they recommend treatment.

Lead compounds were once widely used as pigments and durability agents in nearly all paint formulations. The use of lead ingredients is in decline as more alternatives become available and more regulations are brought to bear on the issue; however, lead can still occasionally be found in children's products.

The CSPIA requires that results be reported in terms of total mass per kilogram instead of by unit area, i.e., micrograms per square centimeter, which the industry presently measures directly using handheld X-ray fluorescence instruments. Although the CPSC will not accept the results these instruments give as evidence of compliance, manufacturers will likely continue to use the method for fast screening and do more thorough checks if the results rise above a certain level.

Manufacturers can prove compliance using a standard test method developed by ASTM International (ASTM F2853) that calls for the use of multiple X-ray beams with different energies to determine accurately the mass of lead per kilogram of paint.

NIST researchers designed new Standard Reference Material (SRM) 2569 so it gives equally valid results when used with either of these measurement technologies. The reference material consists of polyester panels with one of three different paint compositions: one with no lead, one containing lead at 85 mg/kg, and one at 314 mg/kg. The paints on the panels have assigned values for paint thickness and density as well, which can be used to validate results, although they are not intended to be used as calibration standards or routine control materials for the instruments.

This SRM joins a suite of NIST SRMs offered in support of measurements of lead in consumer products and buildings and their surroundings. For more information and to purchase, see SRM 2569 - [Lead Paint Films for Children's Products at www-s.nist.gov/srmors/view_detail.cfm?srm=2569](http://www-s.nist.gov/srmors/view_detail.cfm?srm=2569).

Standard [reference materials](#) are among the most widely distributed and used products from NIST. The agency prepares, analyzes and distributes about 1,300 different materials that are used throughout the world to check the accuracy of instruments, validate test procedures and serve as

the basis for quality assurance worldwide.

More information: J.R. Sieber and J.L. Molloy, "A guide to using SRM 2569 to validate analytical methods." www-s.nist.gov/srmors/view_detail.cfm?srm=2569

Provided by National Institute of Standards and Technology

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