

*Connecting Metrology, Standards, and Conformity Assessment at NIST and Beyond
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Lead in Children's Products

**Test Method Validation and
Conformity Assessment in a Global Market**

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Lead Paint on Children's Products

- **Consumer Product Safety Improvement Act (CPSIA) of 2008**
 - initially lowered regulatory limit from 600 mg/kg to 300 mg/kg
 - decreased to 90 mg/kg in August 2009
- **Testing performed around the world**
 - At or near assembly lines
 - At ports of entry
 - At regulatory labs
- **Video on YouTube**
 - www.youtube.com/watch?v=jBS60Xv6tAk



Role of Consumer Product Safety Commission

- **Create regulations based on interpretation of the law**
- **Designate approved test methods**
- **Conformity assessment**

Role of NIST

- **Technical resource for CPSC**
 - **XRF evaluation, public meetings, method assessment**
- **SRM development**
- **Test method development through consensus committees**
 - **ASTM International Committee F40**
- **Conformity assessment program development**

Why A New SRM?

- Existing paint SRMs not good enough
 - SRMs for powdered paint
 - SRM 2570 series for building paint
- Variety of instrumentation
 - Next slide
- Law requires mass fraction units
- Difficult substance – variety of formulations
 - Lacquer, latex, numerous additives

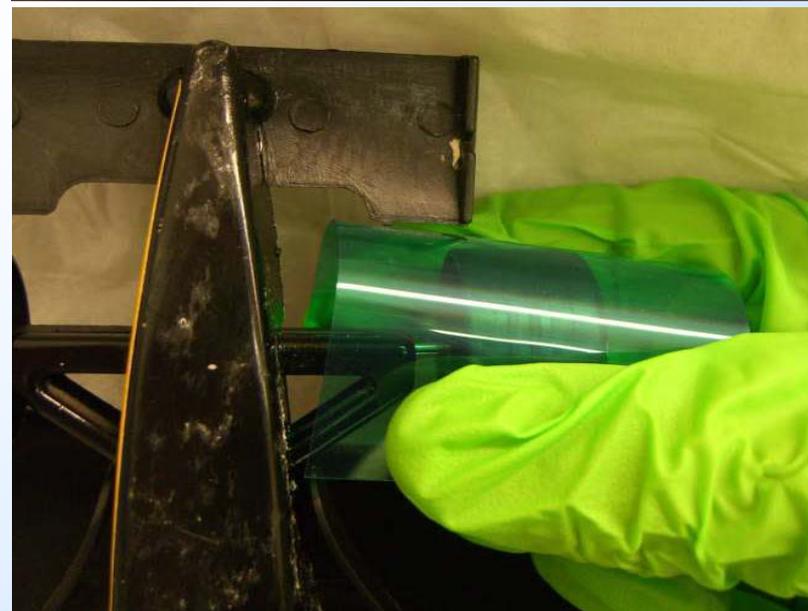
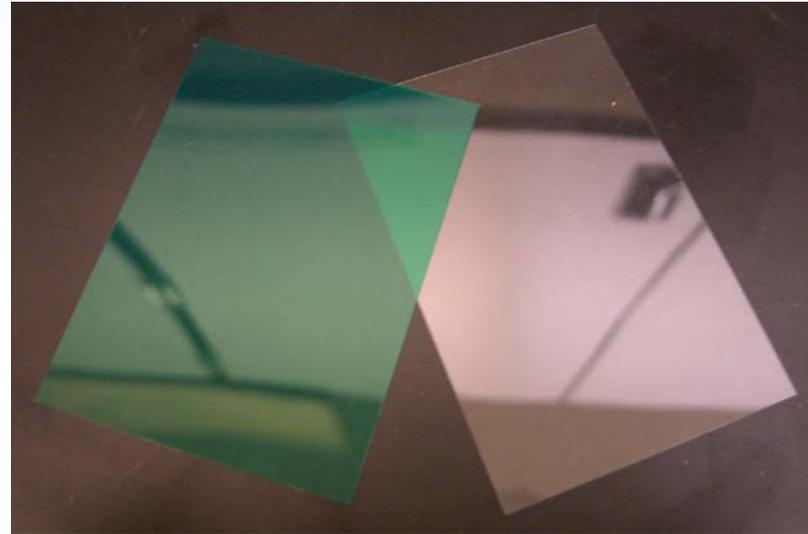
Instrumentation



ICP-OES Plasma for liquid samples

SRM 2569 Design

- **Polyester Substrate**
 - 164 μm thick
 - Flexible to simulate complex geometry
 - Extra sheets included to simulate thicker plastic
- **Lacquer with pigment and Pb compound**
 - Transparent for uniformity testing
 - 2 coating thicknesses: 20 μm , 40 μm
 - 3 levels of Pb: blank, 85 mg/kg , 314 mg/kg

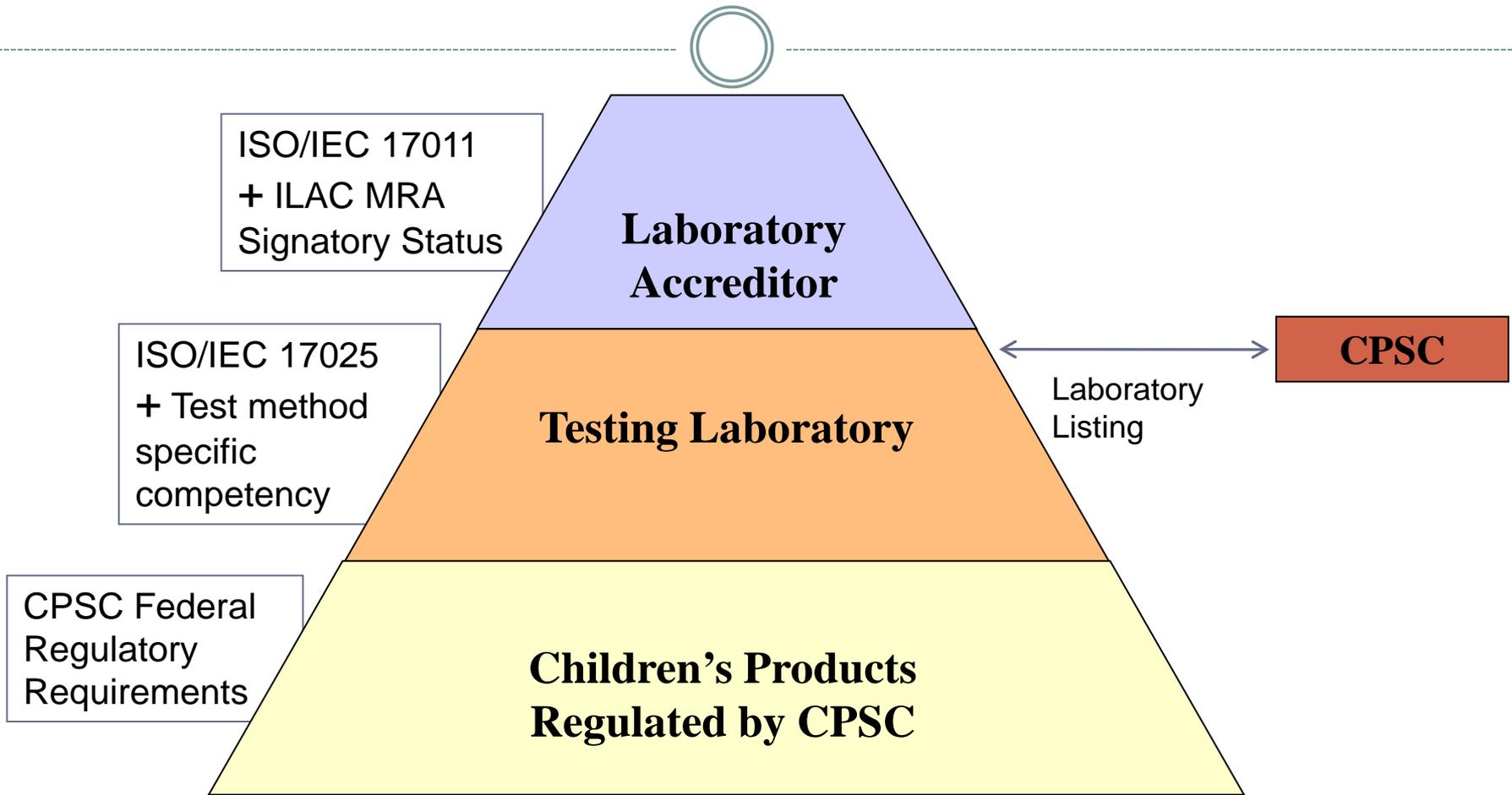


SRM 2569 Values

Level 1	Pb Mass fraction (mg/kg)	< 0.2		certified
	Pb Mass per unit area ($\mu\text{g}/\text{cm}^2$)	< 0.02		certified
	Density (g/cm^3)	1.145	0.008	reference
	Thickness (μm)	40.17	0.66	certified
Level 2	Pb Mass fraction (mg/kg)	85.0	3.8	certified
	Pb Mass per unit area ($\mu\text{g}/\text{cm}^2$)	0.225	0.043	certified
	Density (g/cm^3)	1.158	0.020	reference
	Thickness (μm)	22.9	2.4	certified
Level 3	Pb Mass fraction (mg/kg)	314.4	3.6	certified
	Pb Mass per unit area ($\mu\text{g}/\text{cm}^2$)	1.453	0.073	certified
	Density (g/cm^3)	1.160	0.012	reference
	Thickness (μm)	39.4	2.4	certified

Users guide available at: https://www-s.nist.gov/srmors/view_datafiles.cfm?srm=2569

CPSC Lab Listing



ISO/IEC 17011: Conformity assessment -- General requirements for accreditation bodies accrediting conformity assessment bodies

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories

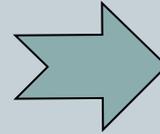
Example: Regulatory Use of International CA Standards

Consumer Product Safety Improvement Act of 2008

- Mandates testing of children's products
- Requires use of accredited labs for the specific tests



Limited to labs accredited to ISO/IEC 17025 by an accreditation body that is a signatory to the ILAC MRA and has appropriate scope of accreditation



To date, CPSC has recognized **373** testing laboratories in **35** countries based on the work of **46** accreditation bodies

Consumer Product Safety Commission (CPSC)