

**CERTIFYING LEAD CONTENT IN CHILD-ACCESSIBLE PRODUCTS,
A NEW GENERATION OF CALIBRATION AND CERTIFIED REFERENCE
MATERIALS**

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Mandated steep reductions in the lead (Pb) content of child-accessible products, required by the United States Consumer Product Safety Improvement Act of 2008 (“CPSIA”), generated an immediate need for calibration materials (standards) and certified reference materials (CRMs) with lead contents well below 0.68 ug/cm^2 (100 mg/kg). Of particular interest, because of the technology’s extensive use in lead content screening and certification testing, are calibration / reference materials intended specifically for use with, Energy Dispersive X-Ray Fluorescence (EDXRF) spectrometry.

Described is research and data that led to the development of a new generation of “Low Lead” EDXRF compatible calibration standards and CRMs that can be used to certify results down to near-zero levels of lead in paint used on surfaces of children’s products. The materials are formulated using a proprietary liquid lead source to ensure homogeneous distribution throughout the paint coating that can be applied with various paint film coating thicknesses on 2 or 5 mil polyester substrates. Key quality assurance procedures and protocols employed during various steps of the manufacturing process are described, including various production quality control data using inductively coupled plasma-atomic emission spectrometry (ICP-AES) and X-Ray Fluorescence measurement techniques. Incorporated in the data discussion is an evaluation of calibration curve performance and comparisons of lead results to other reference materials. An overview of consensus group standard testing organization activities (such as ISO & ASTM) is also presented.