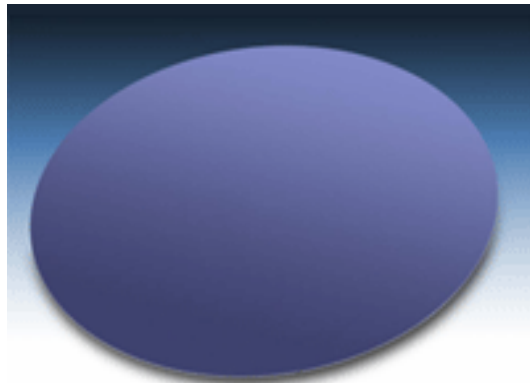




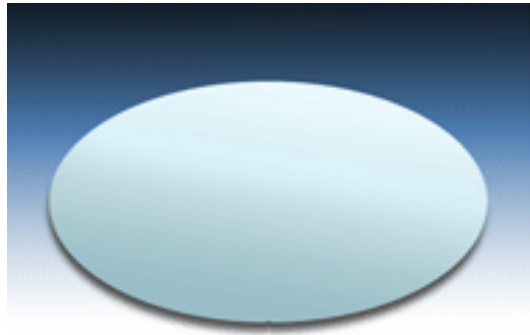
Calibration Products for the Photovoltaic and Renewable Energy Industries

ACCURATE, NIST TRACEABLE STANDARDS. VLSI has over 20 years of experience in supplying NIST Traceable Calibration Standards to industries where measurement accuracy and instrument monitoring are required. VLSI Standards designs and manufactures an extensive array of products for the semiconductor, data storage, flat panel display, and photovoltaic industries. The majority of our products are NIST Traceable, and accredited to the ISO-17025 metrology laboratory standard, allowing customers to meet national and international quality standards such as ISO 9000, TS16949, and the APLAC MRA.

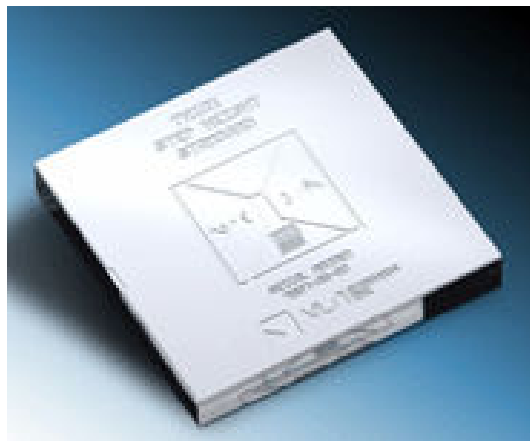
Contact VLSI Standards with any particular calibration standards that you may require. We welcome the opportunity to partner with our customers in developing the most useful and innovative products possible.



Use the **Silicon Nitride Film Thickness Standard (NFTS)** to verify the accuracy of anti-reflective coatings as measured by single wavelength or spectroscopic ellipsometers (SWE or SE) and reflectometers. Silicon nitride standards come in 4", 5" or 6" round wafer formats and the certified nitride coating spans the range from 20 nm to 200 nm in thickness.



Use the **Resistivity Standards (RS)** to verify the accuracy of the resistivity measurements for your starting material, and for doped layers, as measured by contact and non-contact resistivity measuring instruments. Resistivity standards come in a 3" round wafer format, and span the range of 0.002 to 75 ohm cm for resistivity, and 0.04 to 1500 ohm for sheet resistance.



Use the **Step Height Standards (SHS)** to verify the accuracy of the roughness measurements of your solar cells, as measured by mechanical or optical surface profilers. These standards consist of a 25 mm x 25 mm x 3 mm quartz block with a precisely etched uniform bar along with various test and diagnostic features. They span the range of 8 nm to 250 microns in height.*

**Step heights 100 microns and larger are mounted onto a 50mm x 50 mm x 5 mm anodized aluminum substrate.*