DUAL STEP HEIGHT

Calibration Standards

psi Standards

Calibration Standards for the Semiconductor Industry

P R E C I S I O N

is the gateway to perfection

— Archimedes

S I M P L Y T H E B E S T

PSI Standards

Move into the future of step height calibration and ISO compliance with PSI Standards

Process Specialties introduces its exclusive line of NIST traceable Dual Thickness Step Height Standards to IC manufacturers and metrology tool users worldwide.

After two decades of manufacturing OEM standards for major U.S. metrology tool companies, Process Specialties brings this experience and skill to its growing product line of NIST traceable calibration standards.

All of our PSI Standards are the most uniform and innovative calibration standards available in the industry today.

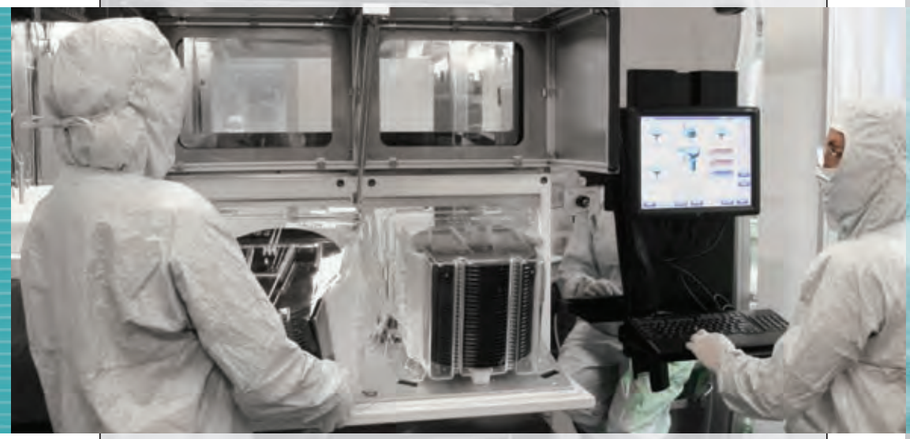
Having no affiliations with metrology tool companies or IC manufacturers, we are the only independent manufacturer of calibration standards in the semiconductor industry.

You can count on PSI Standards to deliver the highest quality, most uniform and most trusted semiconductor metrology calibration standards available today.

The PSI Standards

A D V A N T A G E

PSI Standards are simply the best step height calibration standards in the semiconductor industry today...



A New Way to Calibrate Step Height

Process Specialties has introduced an exclusive line of Dual Step Height Standards to the semiconductor, FPD and nanotechnology industries. These standards are offered in a wide range of nominal thicknesses for the calibration, monitoring and standardization of all step height and AFM metrology tools.

Exclusive Dual Thickness Technology

The dual step height design from PSI offers the advantage of two NIST traceable, calibrated thickness steps on each standard. This allows the user to establish the linearity of tools in specific height ranges—without the need to load or set up an additional standard.

A Better Alternative

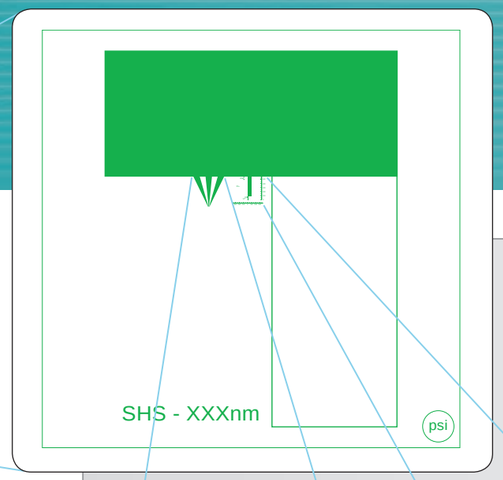
PSI's dual thickness technology obsoletes other single, nominal step height standards and is a more practical and cost-effective alternative. With fewer standards to inventory and recertify, operating costs are reduced. The Dual Step Height Standards are available in precision SiO_2 for mechanical profilers and tools.

Diagnostic Features

The dual thickness design incorporates valuable diagnostic features for stylus integrity, alignment and magnification. The features also have useful micro-rulers to assist in determining appropriate scan lengths. In addition, the standards incorporate on-wafer pattern recognition for autoloading and precise standard placement for the highest measurement repeatability.

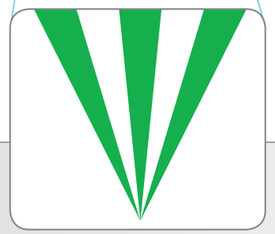
Magnification grating and zoom box

This diagnostic feature is 10 mm x 10 mm, and one is located below each calibration area. The feature consists of sets of equal lines and spaces from 7 μm to 1000 μm. In the upper right-hand corner of this diagnostic feature is a zoom box. This feature is provided as an aid for instrument camera magnification evaluation. It consists of concentric boxes from 50–1000 μm in size.



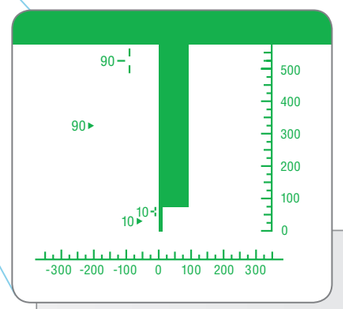
Dual calibration areas

The calibrated areas (two each) are located directly above the centerline of the standard and are spaced 50 microns apart. The left calibrated area contains the lower nominal thickness, and the area on the right contains the higher nominal thickness.



Stylus test feature

This feature is located in the calibrated areas just to the left of the certified step height bars. The V-shaped feature is designed to test the stylus cleanliness, integrity and symmetry. To check the quality of the stylus, a scan across the feature is made. If the stylus is clean and undamaged, the trace will appear as three symmetrical pulses on the instrument.



Certified feature

Each calibrated area contains the calibrated and certified feature. This feature consists of two positive rectangular bars, 90 μm wide and 10 μm wide. These different sizes allow for the use of styli with different size radii, various scan lengths and fields of view. The narrower 10 μm rectangle/step facilitates the calibration of instruments with a relatively narrow field of view—such as an AFM tool. The exact step height and specific information about the measurement conditions is contained in the Certificate of Calibration that accompanies each standard. (Please note, only the 90 μm and 10 μm bars are certified. All other features, including scales and diagnostic features, are for reference only.)

E X C L U S I V E

Dual Thickness Technology

New Dual Thickness Technology

After years of research and development, Process Specialties now offers a revolutionary new step height calibration standard for the semiconductor and related industries.

The Dual Step Height Standards are not only NIST traceable—they are a leap forward in calibration standard technology. Incorporating two different calibrated thickness areas on the same standard, these standards allow the user to check and calibrate the linearity of step height tools in specific thickness ranges—without the need to load or set-up an additional standard. This reduces inventories and costs.

DUAL STEP HEIGHT

Calibration Standards

Available Dual Step Height Standards

Process Specialties offers its DSHS calibration standards in 150 mm, 200 mm, and 300 mm sizes (300 mm by special order). PSI Dual Step Height Standards are designed for the calibration, standardization and monitoring of all mechanical profilers and AFM tools.

In the chart at the right you will find the technical specifications for these standards in brief. More detailed specifications are available from Process Specialties USA or from our international representatives.

PSI Standards Laboratory is ISO/IEC 17025 accredited by NVLAP, Lab Code 200669-0.

Dual Step Height Standards

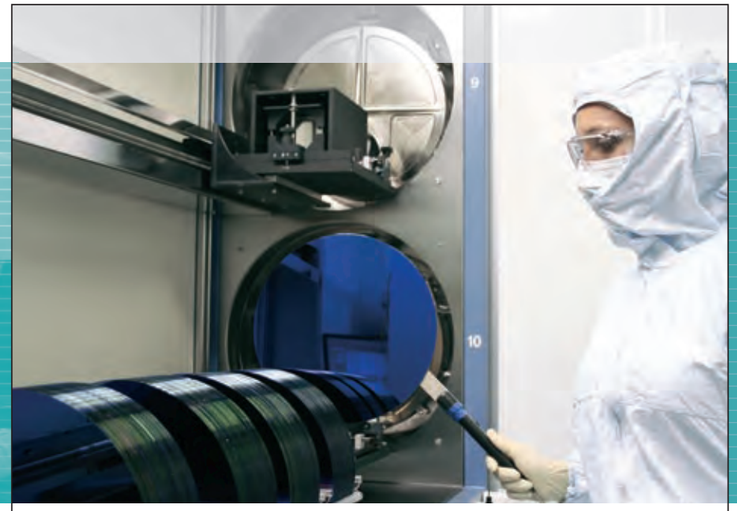
for mechanical profilers and AFM tools

Model Number	Nominal Thickness Left	Thickness Range	Nominal Thickness Right	Thickness Range
*SHOXX-00070-00170	7 nm	6 – 8 nm	17 nm	16 – 18 nm
SHOXX-00450-00900	45 nm	44 – 46 nm	90 nm	88 – 92 nm
SHOXX-01800-03800	180 nm	178 – 182 nm	380 nm	375 – 385 nm
SHOXX-04700-09500	470 nm	465 – 475 nm	950 nm	940 – 960 nm

*XX = 6 for 150 mm, 8 for 200 mm, 12 for 300 mm

A HISTORY OF

Innovation



Founded by process engineers in 1988, Process Specialties has a long history of innovation in the semiconductor industry.

In 1996 we were the first company in the world to introduce 300 mm production thermal oxide processing services to the semiconductor industry. In 1997 Process Specialties was the first company offering 300 mm PolySilicon processing. We also developed the world's first 300 mm production LPCVD Silicon Nitride process later that same year.

For two decades ultra-uniform thin films, custom production processing, and R&D processing have been the focus of our business. Our thin films are trusted throughout the semiconductor industry, and they have often been called the industry standard. In fact, most major U.S. metrology tool companies use Process Specialties to manufacture their OEM standards.

Now Process Specialties offers a line of NIST traceable calibration standards, PSI Standards. Come experience the highest quality standards, fastest delivery times, and the best customer service in the industry!

Contact Us

International representation

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psi Standards
Calibration Standards for the Semiconductor Industry

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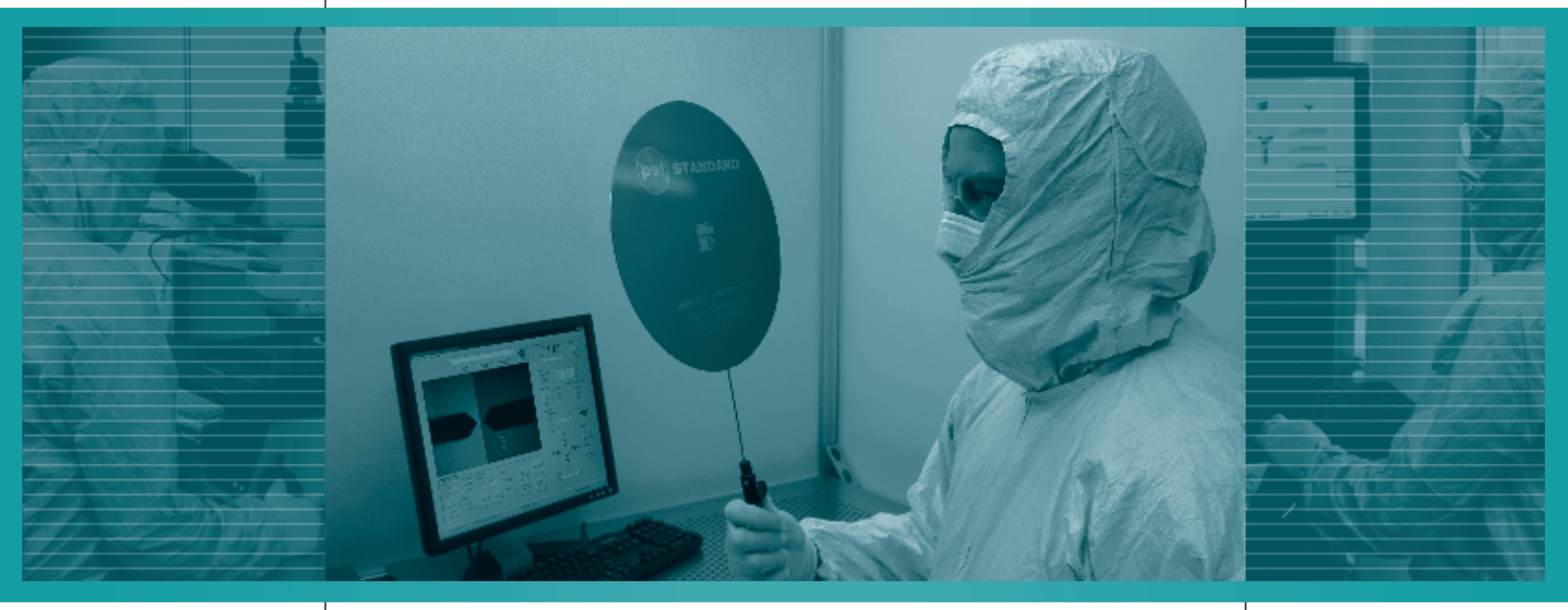

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