

T H I N F I L M

quality

uniformity



certified

Calibration Standards



Standards

Calibration Standards for the Semiconductor Industry



P R E C I S I O N

is the gateway to perfection

— *Archimedes*

SIMPLY THE BEST PSI Standards



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

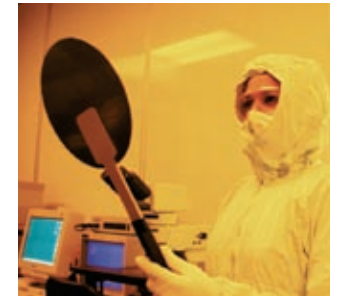
Process Specialties introduces its new line of NIST traceable thin film calibration standards, PSI Standards, to IC manufacturers and metrology tool users worldwide.

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

Our thin film 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 thin film standards available.



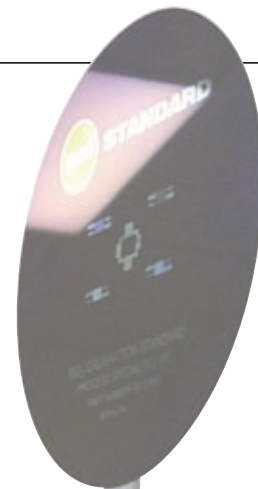
The PSI Standards

A D V A N T A G E



PSI Standards are simply the best thin film calibration standards in the semiconductor industry today...

Chances are, if you are using a "check sample" standard provided by the metrology tool manufacturer, you may already be using a product manufactured by Process Specialties.



Superior Uniformity

Our thin film standards have the lowest non-uniformities and lowest uncertainties of any thin film calibration standards on the market today.

Diagnostic Features

Our new and exclusive diagnostic features make PSI Standards thin film standards more useful in the calibration and monitoring of all optical thin film measurement instruments. These features have been designed and tested by our metrology tool experts and have been proven valuable in the field by tool users at customer sites.

ISO/IEC 17025 Accredited

PSI Standards Laboratory is ISO/IEC 17025 accredited by NVLAP, Lab Code 200669-0. In addition, we are ANSI/NCSL Z540-1 compliant.

All PSI thin film standard artifacts are traceable to the National Institute of Standards and Technology, USA.

Fast Turnaround Times

Process Specialties can normally ship your thin film standards in as little as ten working days after the receipt of your order.

The fastest turnaround times and the best customer service in the industry—that is, and has always been, the PSI guarantee.

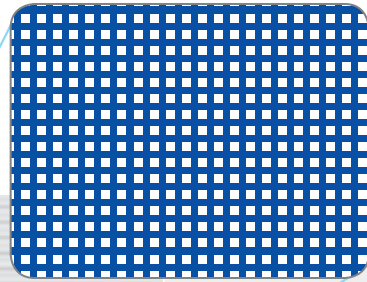
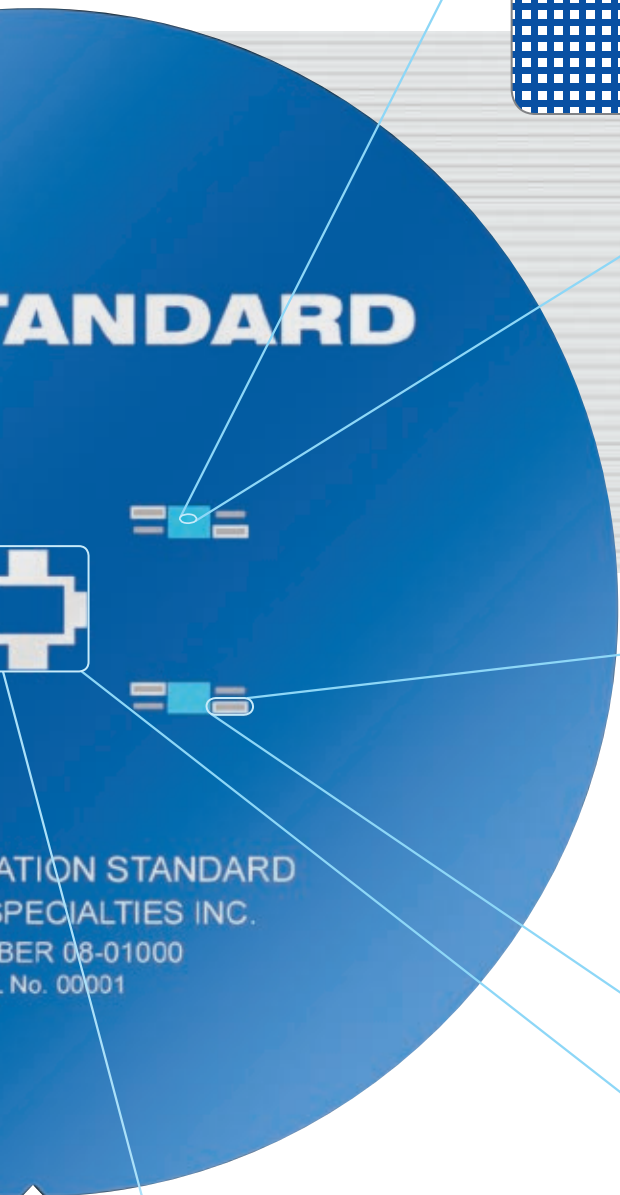
Lower Cost of Ownership

Every traceable standard needs annual recertification and recalibration for it to remain certified and viable.

We offer recertification services for our standards at a lower cost. You can also send standards for recertification at any time, on your schedule, not ours.

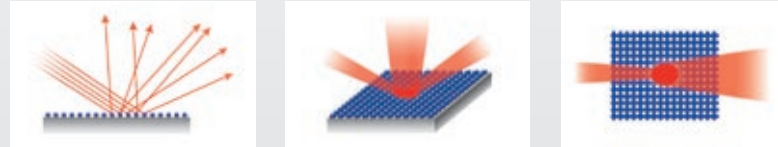
This and other benefits—like increased yield, ISO compliance, and fab standardization—translate into a lower cost of ownership over the life of the standard.

Diagnostic Features

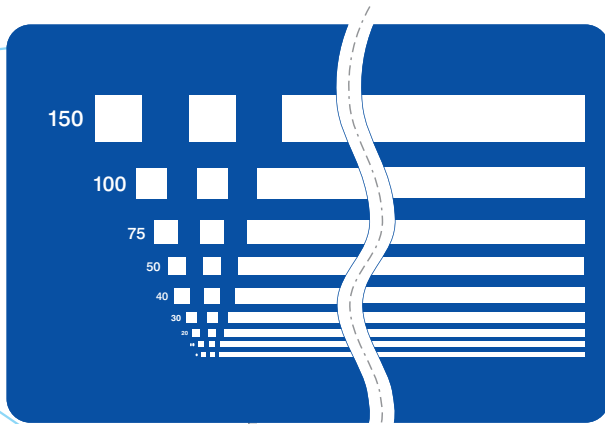


Roughness grid

The etched grid area in this diagnostic feature provides a controlled means by which the end user is able to view the actual measurement location, or to align the tool's "electronic spot" with the true position of the measurement beam. The feature enables the camera or the viewer to locate the measurement beam and approximate its size and focus.



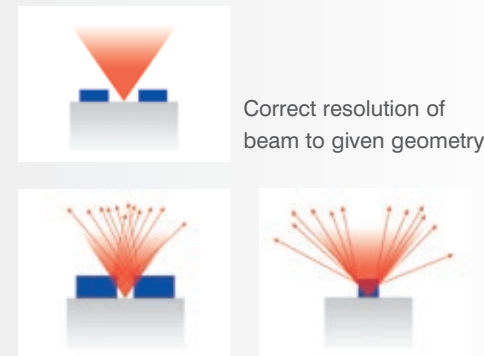
This area also enables setting up or verifying the correct stage height. The tightest scatter of the incident beam can be found while the stage is moved in the Z direction (up and down), which can indicate optimum beam focus.



Spot size feature

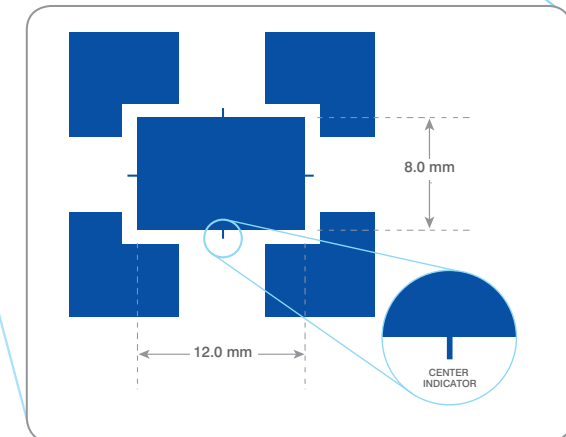
These diagnostic features consist of an array of boxes, spaces, and lines, providing a means to characterize and monitor beam spot size, stage repeatability and stage motion. The series of boxes is designed to facilitate and interpret the beam size

resolution of optical measurement systems. The features consist of separate positive and negative structures (negative shown above), to mimic various features that will be encountered during actual chip manufacturing.



Correct resolution of beam to given geometry

When the beam is larger than the geometry (in the x or y direction) scattering of the beam occurs at the edges, thus compromising the accuracy of the measurement or increasing measurement noise, i.e., goodness of fit or fit error.



Calibration area

The 8 mm x 12 mm center area has been calibrated and certified for absolute values, traceable to the National Institute of Standards and Technology, USA. Four small fiducial marks, immediately adjacent to the actual calibrated area, are designed to indicate the exact physical center of the calibrated area.



New Diagnostic Features

After years of research and customer input, Process Specialties has designed and incorporated new diagnostic features into its thin film calibration standards.

These features increase the usefulness of the standards for calibrating and monitoring optical thin film metrology tools.

Using these new features, the tool user can check beam focus and alignment, monitor and adjust stage height, and verify the actual beam size resolution of the instrument.

In addition, the features can also be used to characterize stage movement and repeatability.

With these new and innovative diagnostic features, PSI Standards are distinctively different than other standards in the industry today.

Calibration Standards



Available Thin Film Standards

Process Specialties offers its thin film calibration standards in 150 mm, 200 mm, and 300 mm sizes. PSI Standards are designed for the calibration, standardization and monitoring of all optical thin film metrology 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.

SiO₂ Silicon Dioxide Standards

Model Number	Nominal Thickness	Thickness Range	MAX Non-Uniformity within Calibrated Area
*0XX-00030	3 nm (30 Å)	2.5 – 3.5 nm	0.1 nm (1 Å)
0XX-00100	10 nm (100 Å)	9.0 – 11.0 nm	0.15 nm (1.5 Å)
0XX-00250	25 nm (250 Å)	23.5 – 26.5 nm	0.15 nm (1.5 Å)
0XX-00500	50 nm (500 Å)	47.5 – 52.5 nm	0.2 nm (2.0 Å)
0XX-01000	100 nm (1000 Å)	99.0 – 103.5 nm	0.2 nm (2.0 Å)
0XX-02000	200 nm (2000 Å)	195.0 – 205.0 nm	0.3 nm (3.0 Å)
0XX-03900	390 nm (3900 Å)	380.0 – 400.0 nm	0.3 nm (3.0 Å)
0XX-06700	670 nm (6700 Å)	660.0 – 680.0 nm	0.4 nm (4.0 Å)
0XX-10500	1050 nm (10500 Å)	1030.0 – 1060.0 nm	0.5 nm (5.0 Å)

*0XX = 06 for 150 mm, 08 for 200 mm, 012 for 300 mm

Si₃N₄ Silicon Nitride Standards

Model Number	Nominal Thickness	Thickness Range	MAX Non-Uniformity within Calibrated Area
*NXX-00100	10 nm (100 Å)	8.5 – 11.5 nm	0.15 nm (1.5 Å)
NXX-00400	40 nm (400 Å)	38.5 – 41.5 nm	0.2 nm (2.0 Å)
NXX-00950	95 nm (950 Å)	92.5 – 97.5 nm	0.3 nm (3.0 Å)
NXX-02000	200 nm (2000 Å)	195.0 – 205.0 nm	0.3 nm (3.0 Å)

*NXX = N6 for 150 mm, N8 for 200 mm, N12 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 nearly 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 new line of NIST traceable calibration standards, PSI Standards. Come experience the highest quality standards and the best customer service in the industry!

Contact Us



International representation

**PSI Standards
Worldwide**



Standards

Calibration Standards for the Semiconductor Industry

Corporate HQ

Process Specialties Inc.

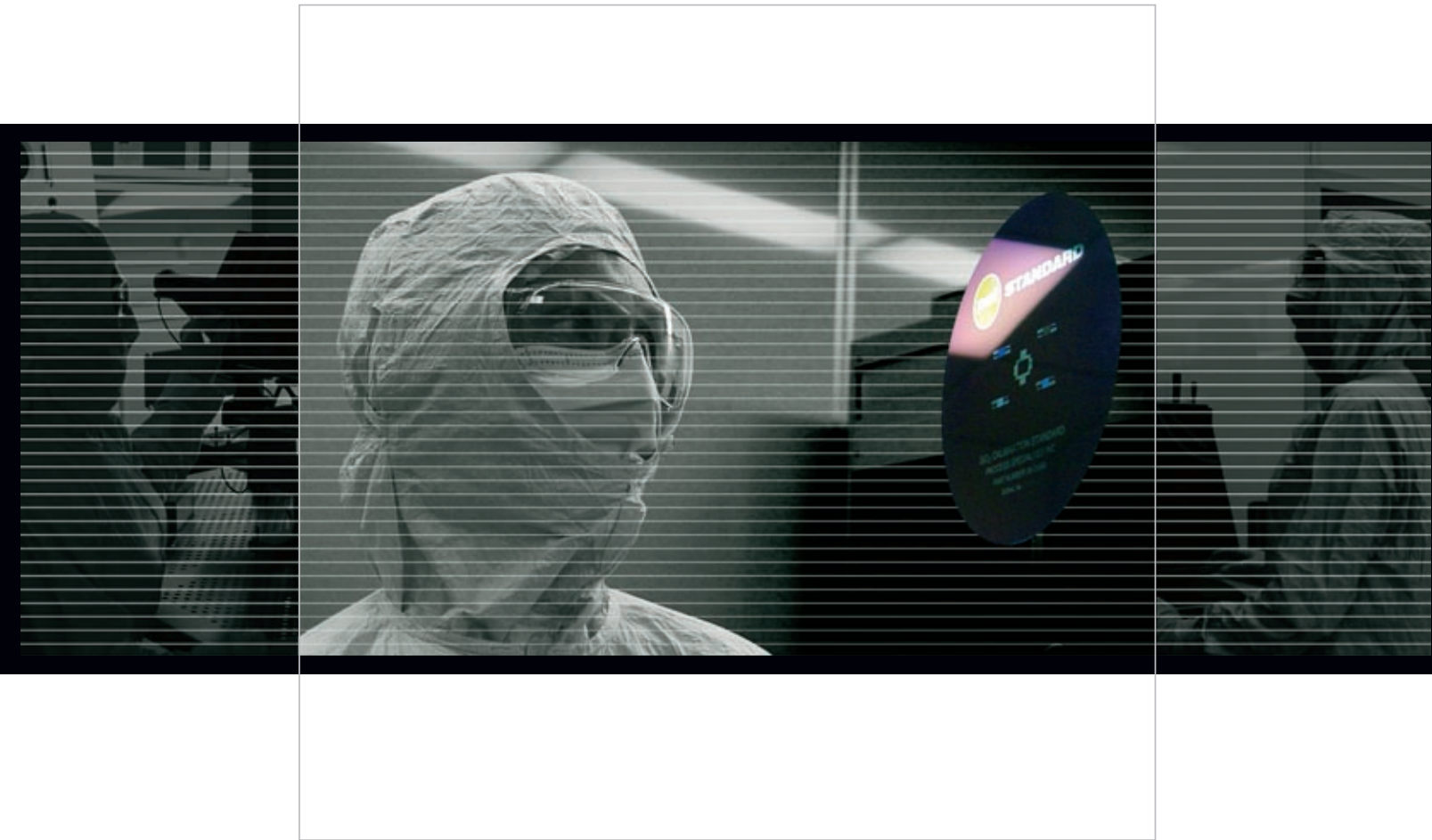
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