

CORNING



Tropel® FlatMaster® MSP-300 Glass Wafer Analysis System Fast and Precise Flatness and Thickness Variation Measurements of 300 mm Glass Wafers

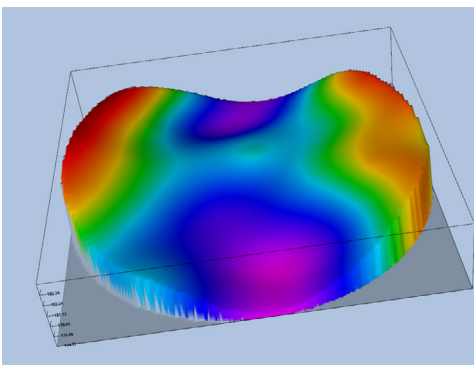
The ability to measure flatness, thickness, and thickness variation of 300 mm glass wafers is critical for successful integration of 3DIC assemblies. Traditional contact probes or conventional interferometry systems are too slow or do not have the necessary accuracy for larger fields of view.

The Tropel® FlatMaster® MSP-300 (Multi-Surface Profile) is a frequency stepping interferometer that provides fast and accurate metrology for 300 mm glass wafers. In seconds, over three million data points are collected with sub-micron accuracy enabling total thickness and flatness characterization over the entire surface.

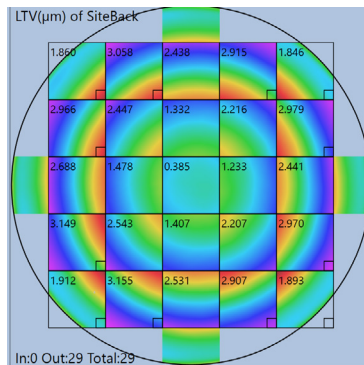
Measurement Parameters

Wafer	Site
GF3R (TIR)	SBIR (LTV)
GF3D (FPD)	SBID (LDOF)
GFLR (NTV)	SF3R (LTIR)
GFLD (NTD)	SF3D (LFPD)
GBIR (TTV)	SFLR (LTIR)
Bow, Warp, SORI	SFQR (LTIR)
	SFQD (LFPD)

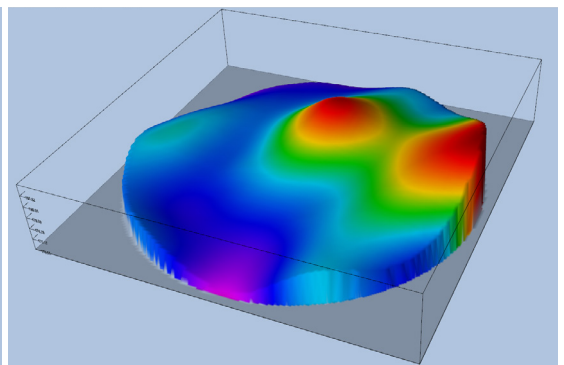
List of common SEMI standard parameters available.
Contact Corning for additional measurement parameters.



Full surface 3D Total thickness Variation (GBIR/TTV) measurement of a 300 mm glass wafer with less than 2 μm total thickness variation.



Stepper simulation plot analyzing site flatness (SFQR/LTIR). Other stepper simulation parameters are available and site layouts can be customized for any configuration.



Full front surface 3D measurement of the 300 mm glass wafer enabling Bow/Warp, SORI, and other free state wafer parameters. The combination of front surface and TTV measurements provide complete characterization of the substrate.

Tropel® FlatMaster® MSP-300 Glass Wafer System Specifications

Performance

Measurement Method	Frequency Stepping Interferometry
Field of view	< 305 nm
Z-Resolution	10 nm
Lateral resolution	0.15 mm
Measurement range (Z-Axis)	300 mm
Measurement time	< 60 seconds typical
Measured data points	3.1 million per measurement
Maximum Slope	Slope given by 0.5 mm of pure Bow error over 300 mm wafer

Materials and Surfaces

Materials	Glass and other transparent materials - see industrial specifications for other materials
Surfaces	Wire sawn, ground, lapped, polished, etched, and super-finished

Accuracy and Repeatability

	Accuracy	Repeatability
Bow/Warp/SORI	0.5 μm^*	0.2 μm
Thickness >2mm	0.25 μm^{**}	0.02 μm
Thickness <2mm	0.075 μm^{**}	0.01 μm
TTV	0.05 μm^{**}	0.01 μm

* on less than 10 μm Bow

** requires knowledge of index of refraction

Environmental and Facility

Temperature	15 °C to 30°C (59 °F to 77 °F)
Rate of temperature change	\leq 0.5 °C per hour
Vibration Isolation	Passive isolation included
Humidity	5% to 95% relative humidity, non-condensing
Power	100-240 VAC, 50/60 Hz, 4 Amp
Air/Vacuum	None required
System Dimensions (W x D x H)	160 cm x 103 cm x 150 cm (63 in x 40 in x 59 in)
System Weight	390 kg (860 lb)

This product is covered by one or more U.S. patents.
All specifications are subject to change.
Tropel® is a registered trademark of Corning Incorporated.
FlatMaster® is a registered trademark of Corning Incorporated.
OpenGL® is a registered trademark of SGI.
Excel® is a registered trademark of Microsoft Corporation.
Windows® is a registered trademark of Microsoft Corporation

For more information about the FlatMaster® MSP-300 Wafer system or any other of our Tropel® Metrology Instruments, please contact:
Corning Tropel Corporation
60 O'Connor Road | Fairport, New York 14450
Tel: +1-585-388-3500 | Fax: +1-585-388-3414
E-mail: metrology_info@corning.com
Website: www.corning.com/metrology



TROPEL®
METROLOGY INSTRUMENTS

CORNING

© 2019 Corning Incorporated. All Rights Reserved.