For further information:
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NANOSENSORS™
The World Leader in Scanning Probes

Datasheet Flatness Standard

Specifications:

Smooth plane with a maximum peak to valley (p-v) distance of 10 nm on a 100 by 100 μm^2 area

Order Code:

FLAT

Features:

FindMe pattern for easy localisation of active area

Applications:

Analysis and correction of scanner-bow of SPM's

Description:

The flatness standard consits of a superflat plane and is intended to be used to analyze and correct the scanner bow of the piezo-scanner used in most Scanning Force Microscopes. The standard consists of a quartz substrate with a chromium layer.

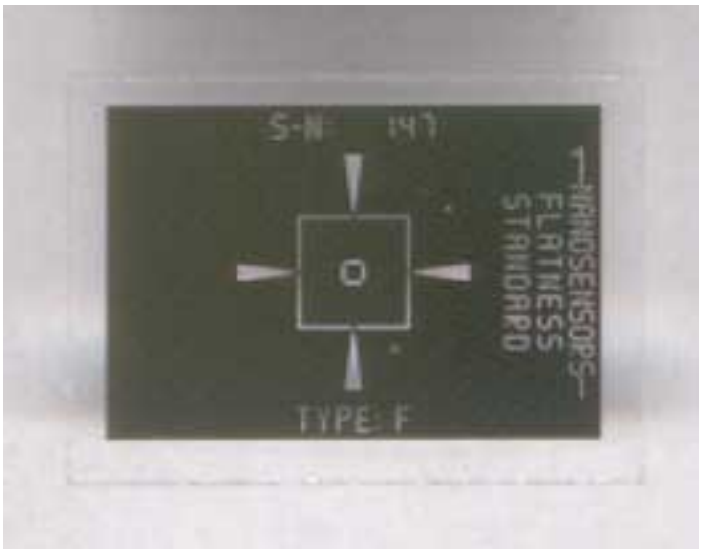

Fig.1: Photograph of the flatness standard

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Detailed Specifications:

- Chip size: 5 x 7mm^2
- Thickness of the chip approx. 2.3 mm
- Active area: 200 x 200 µm^2
- FindMe structure 1200 x 1200 µm^2

Calibration / optional certification by national authorities

The standards is available either with a NANO*SENSORS*™ calibration certificat (traceable to PTB) or a calibration certificat of the PTB itself. Standards including the latter option are accompanied by a so called "*Kalibrierschein*" of the german "Physikalisch-Technische Bundesanstalt (PTB)" which is the highest technical authority of the Federal Republic of Germany. This PTB certificat ensures the traceability of this standard to the international "Meter Convention".

For recalibration and for standards without a PTB certificate the PTB offers an optional calibration service. This service is available via negotiation of a direct contract between the purchaser of a standard and the PTB. NANO*SENSORS*™ Customer Service can provide further details or a direct contact upon request.

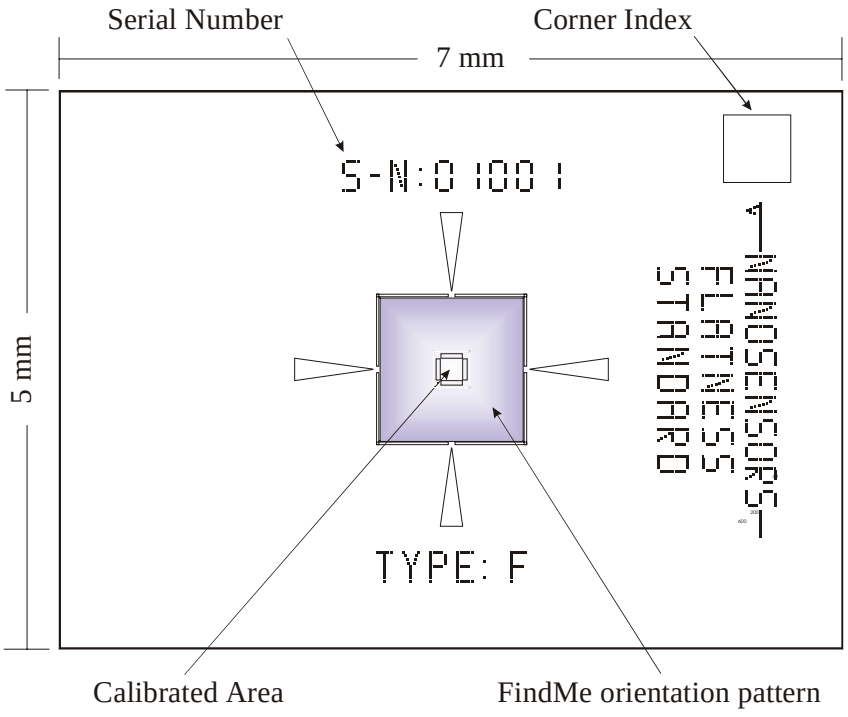

Fig.2: Sketch of the flatness standards overall layout. For a detailed description of the layout see the next page.

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Layout explanation:

The standard basically consists of an ultraflat, polished quartz substrate with a chromium layer. All patterns are etched into this chromium layer. This makes all structures easily visible with an optical microscope.

The active area is an homogeneous square area of chromium located in the center of the chip. This area is surrounded by a ´Find Me Structure™´ which aids in rapidly finding the center of the structure by making it possible to calculate angle and distance from a given point to the center.

For the following description, please refer to Fig. 2:

In one of the chips corners there is an orientation mark which defines the upper right corner. Below this, the NANO*SENSORS*™ logo and type of standard are printed. Above the central area the serial number of the standard is printed. The serial number is visible with a slight magnification. Opposite of the serial number the type-code (F for flat) is mentioned.

Four arrows are pointing to the central area of the chip. The FindMe pattern comprises pairs of square etch pits, a small one (2 µm edge-length) and a large one (4 µm edge-length) which can be imaged with an SPM.

By forming an arrow from the center of the large etch pit to the center of the small etch pit the direction and the length (multiplied by a factor D) of the arrow gives the direction and the distance to the center of the FindMe pattern.

The active area of FindMe is 1200 x 1200 μm^2 and the factor D is 40. The scanwidth of the SPM scanner has to be 20 µm to be sure to image at least one pair of holes.

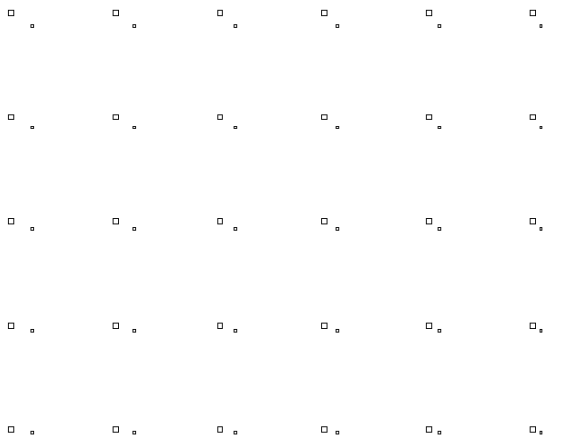

Fig.3: Sketch of the FindMe pattern showing some of the pairs of holes pointing to the center area (in the lower right corner of the image).

Datasheet Flatness Standard

Shipping and handling information

The standard has **not** been mounted on any supporting device to completely avoid any stress due to differing temperature coefficients. Therefore especially the sides and edges are very destructable. Please make sure to handle the standard only with plastic tweezers or plastic coated tweezers and do not apply too much pressure or other mechanical stress!

The Standard comes in a special GelPack® container which is a suitable packing methode for shipping and storage. The soft elastomeric gel retains the standard solely by adhesion. The adhesion force has been selected to keep the standard secured.

For easy removal grab the standard by the long sides and gently try to rotate it. This will imply a torsional force to the gel which will help to free the standard.

For our cutomers convenience a pair of tweezers, suitable for the use with all our standards have been attatched. Please use them according to the above explanation.

Cleaning

Please try to avoid the nescessity for cleaning the standard by proper handling and storage. If cleaning is nescessary use the following methodes:

1) Blow with dry, clean air to remove larger paricles or dust
2) Rinse the standard with filtered and deionized water.
3) For organic contamination you may use isopropanol (analytic-grade) or acetone (analytic-grade).
4) If none of the above methodes is successful, please contact NANO*SENSORS*™ Customer Service to arrange a cleaning service.

- This datasheet is preliminary and may be changed without notice -