

# Large Area Pillar Standard Stamp

Ideal for R&D and Process Optimization



## Introduction

The pillar stamp is a large patterned area stamp made by electron beam lithography. The very high quality stamp consists of 4 x 1 cm<sup>2</sup> fields with square pillar arrays (rounded corners).

The diameter of the pillars ranges from 125 nm to 275 nm. The height of the pillars can be specified by the customer within 100 - 300 nm.

## How the Pillar Standard Stamp works

The pillar standard stamp is applicable for a wide variety of applications. The stamp is ideal for R&D and process optimization within large area nanoimprint lithography.

## Large Area Pillar Applications

- Seed patterns for nanowire growth
- Active and passive optical elements
- Life science
- Surface Enhanced Raman Spectroscopy (SERS)
- Filters

## Quality Control

Each pillar standard stamp is inspected by SEM in several places around the stamp surface. From these images the average pillar diameter and pitch is determined. The defect density is not measured but less than 0.1% of the active area of the stamp is expected to contain defects.

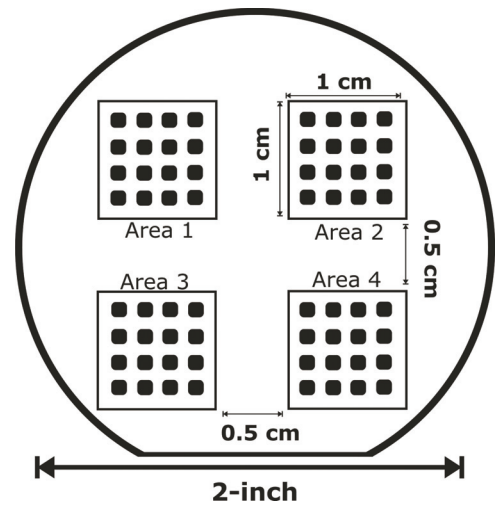
The etch depth of the pillar standard stamp is determined by AFM.

## Specifications

|                            | Large Area Pillar Standard Stamp         |
|----------------------------|--|
| Stamp size                 | 2 inch                                   |
| Stamp material             | Silicon                                  |
| Stamp structures           | Pillars                                  |
| Stamp thickness            | 525 μm                                   |
| Structure sizes            | 125, 175, 225, 275 nm                    |
| Protrusion height          | 100 - 300 nm (optional)                  |
| Protrusion size tolerances | ±15%                                     |
| Defect density             | <0.1% (area and missing/clogged pillars) |

Anti-sticking layer (ASL) and dicing are optional

Stamp outline (not to scale)



**Area 1:**  
Protrusions  
Side length: 275 nm  
Pitch: 500 nm

**Area 2:**  
Protrusions  
Side length: 225 nm  
Pitch: 400 nm

**Area 3:**  
Protrusions  
Side length: 175 nm  
Pitch: 300 nm

**Area 4:**  
Protrusions  
Side length: 125 nm  
Pitch: 200 nm

SEM Image

