

Microlens Array Standard Stamp



Introduction

Micro lens arrays control the light output of lighting elements. Unlike most other micro lens arrays (MLA) NILT's MLA have no dead area between the lenses – the lenses are arranged in a closely packed triangular pattern with 3D intersections between the single lenses. Customer specified MLAs can be made with a variety of lens diameters and lens heights, and even with elliptical light control. The standard MLA has specifically been designed for R&D work as well as product and process development.

How the Microlens Array Stamp works

The Microlens Standard Stamp features a large active area, up to 100 mm x 100 mm (stamp size 120 mm x 120 mm) with closely packed microlens array structures. The features are concave so that imprinting/embossing into a polymer film forms a microlens array in a low cost and feasible manner.

MLAs are flat optical elements that can be used to control the directionality of light sources. The shape of the MLA directs the light in a controlled and efficient way in order to achieve a homogenization effect.

Microlens Array Applications

- Homogenization of light sources
- Control of angular distribution in lighting systems
- Out coupling of light from LEDs / OLEDs / Lasers
- Coupling of solar radiation into photovoltaics
- Optical film

Users of Microlens Array Standard Stamps

- Film manufacturers – for process and product development
- R&D Institutes/departments – research activities in micro lens structures
- Equipment manufacturers for hot-embossing, roll-2-roll, injection molding – as a reference to demonstrate the capabilities and homogeneity of their production processes

Quality Control

Prior to shipment the quality of the MLA stamp is controlled. The result of the inspection is summarized in a quality control sheet where the identified defects are marked.

Specifications

Structure type	Microlens Array - Type B	Microlens Array - Type D
Stamp material	Nickel	Nickel
Structure geometry	Hexagonal / Honeycomb	Hexagonal / Honeycomb
Lens diameter	9 μm	10 μm
Average lens height	5.5 μm	5.5 μm
Stamp thickness	100 μm - 300 μm	100 μm - 300 μm
Stamp size	70 mm x 70 mm	120 mm x 120 mm
Active area	50 mm x 50 mm	100 mm x 100 mm

Anti-sticking layer (ASL) and dicing are optional

SEM Images

