FS-2400 and FS-2500

Optically Clear Working Stamp Resins for Photo NIL Applications

ADVANTAGES FEATURES:

- Fluorine free UV curable working stamps
- High Tg and high elastic modulus
- **Excellent Chemical Resistance** (high resistace to etching from imprint resins): minimize height gain for multiple imprints
- Excellent mechanical, and thermal stability
- **NO ANTI-STICK Layer is needed**
- Optically clear
- Solvent Free – ready to use
- Long shelf life at room temperature

APPLICATIONS: Working Stamp fabrication

PRODUCT DESCRIPTION: UV-curable acrylate material for radical polymerization

GENERAL USAGE INFORMATION:

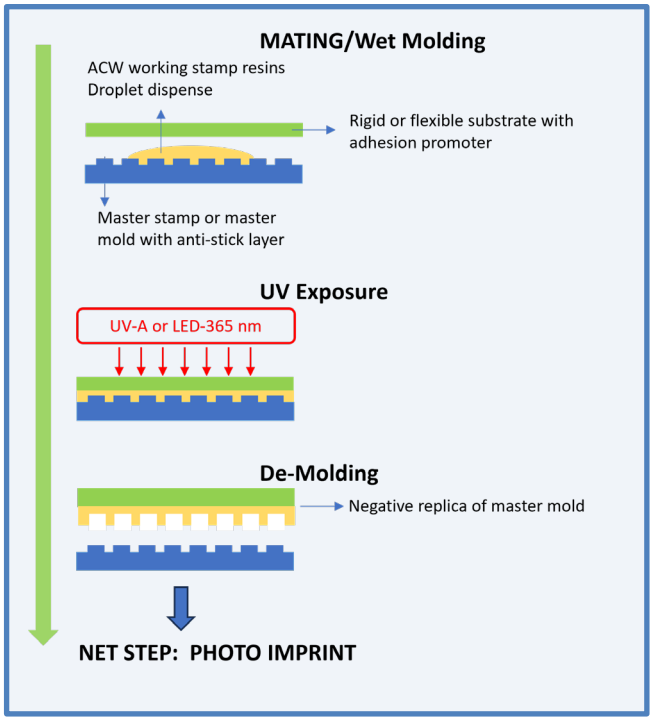
Storage: room temperature storage (15-30°C) in the original container is required.

SAFETY AND HANDLING

The uncured adhesive can be cleaned with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), acetone, or xylene. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, **gloves and safety goggles**. Read Safety Data Sheet before handling.

TDS updated: V1-112023

WORKING STAMP PROCESS FLOW:



APPLICATION NOTES:

Master Stamp or Master Mold preparation:

To protect the master Stamp/Mold surface the use of a release agent or antistick agent is recommended. The common anti-stick or release agent is perfluorooctyltrichlorosilane (CAS # 78560-45-9).

Substrate conditions:

To obtain the optimal performances for FS-2400 and FS-2500, plastic or glass substrates should be primed or should have adhesion promotor layer.

Dispense process: droplet dispense method for capillary flow, or casting method, or spin coating method are suitable for film forming

Suggested spin conditions for spin coating method for 10 micron layer thickness:

Speed: 3,000 to 3,500 rpm
Time: 25 to 35 seconds
Acceleration: 800 to 1,000 rpm/sec

A droplet dispense / Casting method can avoid excess use of working stamp resin

Layer thickness: 5 to 200 micron

UV CURING CONDITIONS:

*Metal halide / Mercury UV: UV-A (320-400 nm), intensity: 50-1,000 mW/cm^2

Suggested curing conditions: 200 mW/ cm^2 x 50 sec
Atmosphere: cure between two substrates or in an inert atmosphere (oxygen-free)

*or LED-365 nm, UV light intensity: 100 to 1,000 mW/ cm^2

Suggested curing conditions: 200 mW/ cm^2 x 100 sec
Atmosphere: cure between two substrates or in an inert atmosphere (oxygen-free)

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FS-2400 and FS-2500 (continue)

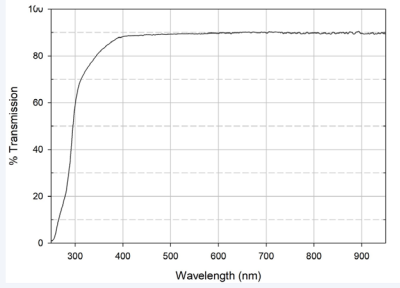
Processing environment: process at temperature between 20 – 30 °C at relative humidity of 40-60% and process under yellow light.

TYPICAL PROPETIES:

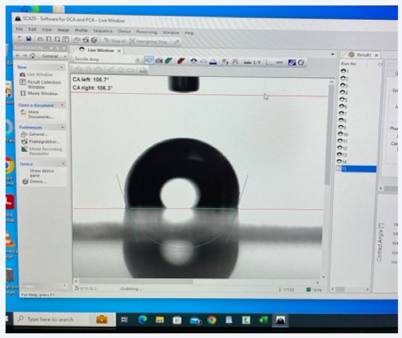
Before cure (liquid)	**FS-2400**	**FS-2500**
Viscosity (cps, 25 °C)	600 - 700	850 - 950
Density (g/mL)	1.1	1.1
Shelf life (15 - 25 °C)	6 months	6 months
Working life (20 - 30 °C)	3 months	3 months
After curing - cured film	**FS-2400**	**FS-2500**
Volume shrinkage (%)	3-5	2-3
Tg (DMA, °C)	155	113
Young's Modulus (Gpa)	2.5	1.7
Elongation (%)	3	6
Contact angle of water in air (°)	107	107
% Transmission (400 to 900 nm)	>90	>90
Refractive index @ 589 nm	1.504	1.504

FS-2400

50 micron free standing film
No correction for surface reflections

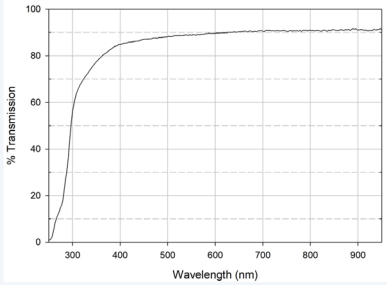


Water contact angle: 107°



FS-2500

50 micron free standing film
No correction for surface reflections



Water contact angle: 107°