



WS-101 and WS-102

Epoxy Working Stamp Resins for Photo Imprint Applications

ADVANTAGES FEATURES:

- Fluorine-free UV curable epoxy working stamps
- High Tg
- **Excellent Chemical Resistance** (high resistance to etching from imprint resins): minimizes height gain for multiple imprints
- Excellent mechanical, and thermal stability
- **ANTI-STICK Layer IS NOT needed for Working Stamp**
- Solvent Free – ready to use
- Long shelf life at room temperature

APPLICATIONS: Working Stamp fabrication

PRODUCT DESCRIPTION: UV-curable epoxy working stamp resin.

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

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 trichloro(1H,1H,2H,2H-perfluorooctyl)silane (CAS # 78560-45-9).

Substrate conditions:

To obtain the optimal performance for WS-101 and WS-102, plastic or glass substrates should be primed or should have an 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: 2,000 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: 200-1,000 mW/cm²

Suggested curing conditions: 250 mW/ cm² x 200 sec

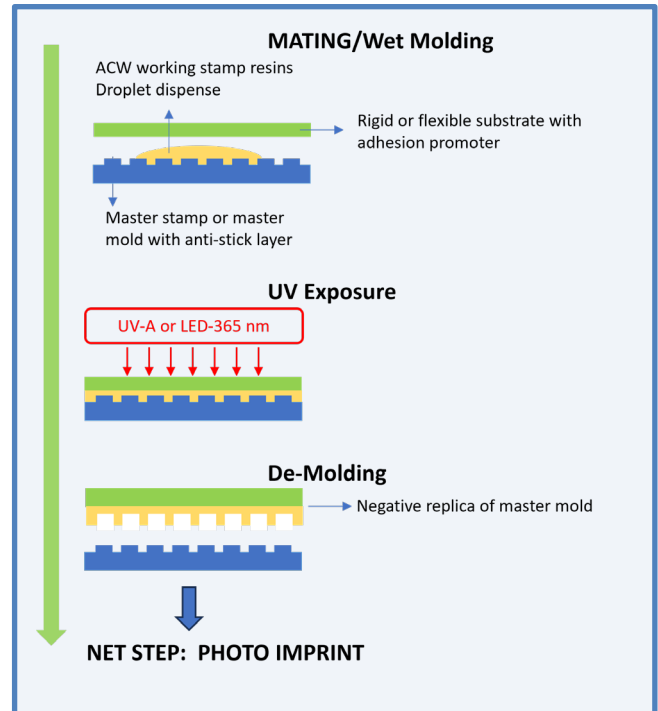
Atmosphere: cure between two substrates or in an inert atmosphere (oxygen-free)

*or LED-365 nm, UV light intensity: 200 to 1,000 mW/ cm²

Suggested curing conditions: 250 mW/ cm² x 200 to 250 sec

Atmosphere: cure between two substrates or in an inert atmosphere (oxygen-free)

WORKING STAMP PROCESS FLOW:



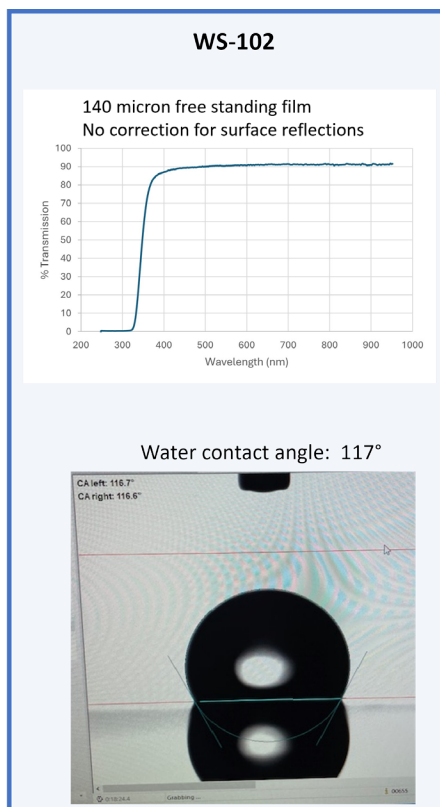
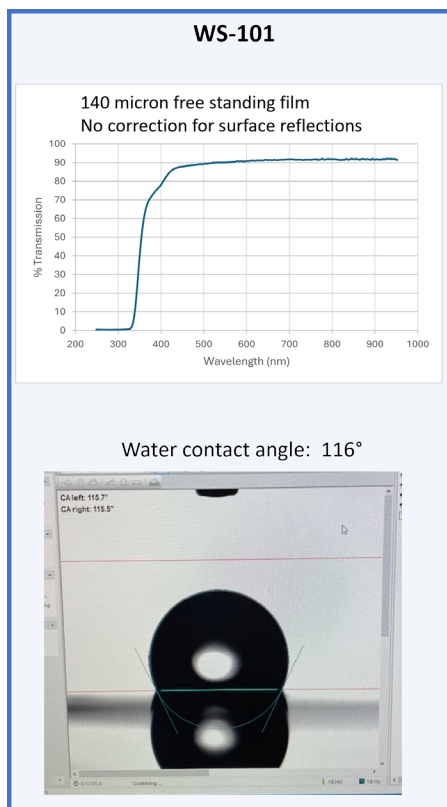


WS-101 and WS-102 (continued)

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

TYPICAL PROPERTIES:

Before cure (liquid)	WS-101	WS-102
Viscosity (cps, 25 °C)	900 – 1,000	650 - 800
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	WS-101	WS-102
Volume shrinkage (%)	2-3	2-3
Tg (DMA, °C)	116	108
Young's Modulus (Gpa)	2.0	1.6
Elongation (%)	5	10
Contact angle of water on working stamp (°)	116	117
% Transmission (400 to 900 nm)	>90	>90
Refractive index @ 589 nm	1.58	1.58



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