



Lighthouse Project Update

UV conformal coating (UR101 series)

Dennis Li Oct. 9th, 2018



UR101 Series Basic Formulation

Oligomer (double bond and isocyanate) : the most important part

Monomer(double bond) : viscosity, adhesion, odor, curing speed

Photo initiator: curing speed

Additives: process performance

1 Product Parameter

Basic properties

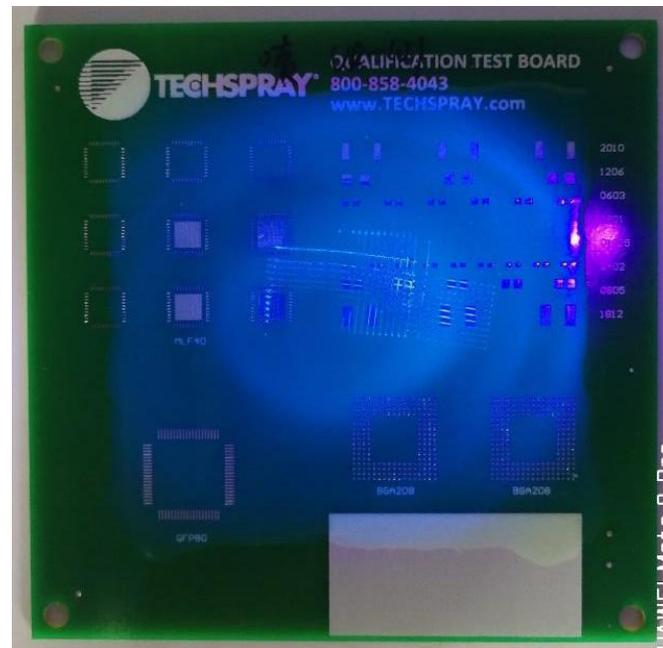
Item	UR-101 HV	UR-101 MV	UR-101 LV	Humiseal UV40
Viscosity 25°C	648cps	132cps	78cps	650cps
Solid content	100%	100%	100%	95%
State	faint yellow, transparent			
Density 20°C	1.1301g/cm ³	1.1215g/cm ³	1.1165g/cm ³	1.1g/cm ³
Specific gravity 20°C	1.1312	1.1249	1.1176	

Electrical properties

Item	UR-101 HV	UR-101MV	UR-101 LV	Humiseal UV40
Volume Resistance Ω·cm	3.2*10 ¹⁴	5.84*10 ¹⁵	7.3*10 ¹³	8*10 ¹⁴
Surface Resistance	1.17*10 ¹⁴	3.14*10 ¹⁵	1.02*10 ¹³	
Dielectrical Constant 1MHz	2.66	2.82	2.27	2.5
Withstand Voltage V/mm	16250	19700	19850	>1500

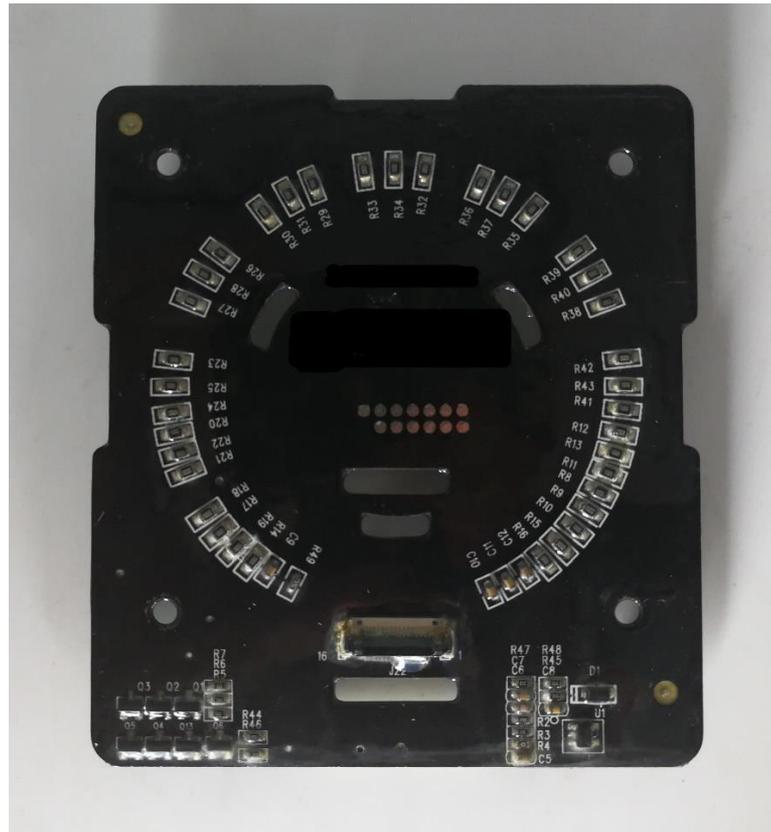
2 Test Items (UR-101 MV)

Adhesion Use cross-cut tester and 3M 610 adhesive tape to test the performance, the result is 5B, no shedding.



2 Test Items (UR-101 MV)

Salt spray resistance The salt concentration is 5%, test time is 800h.
No shedding and no bubble.



2 Test Items (UR-101 MV)

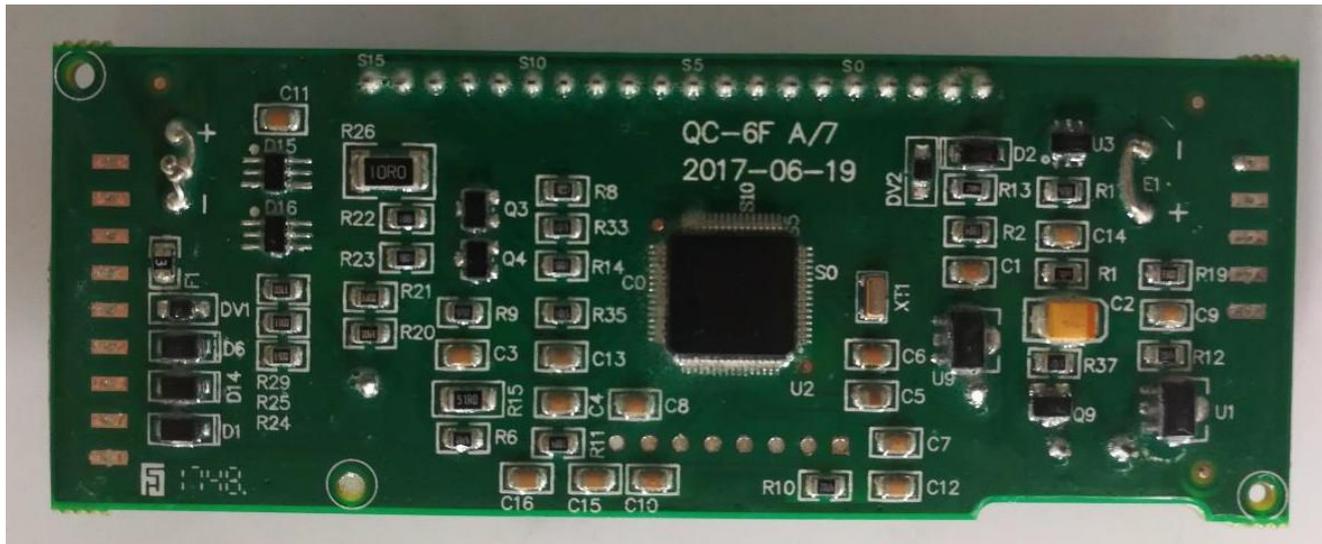
High temperature and humidity Put the PCBs in the oven, the temperature is 85, the humidity is 85, last for 240h. No shedding and no bubble



2 Test Items (UR-101 MV)

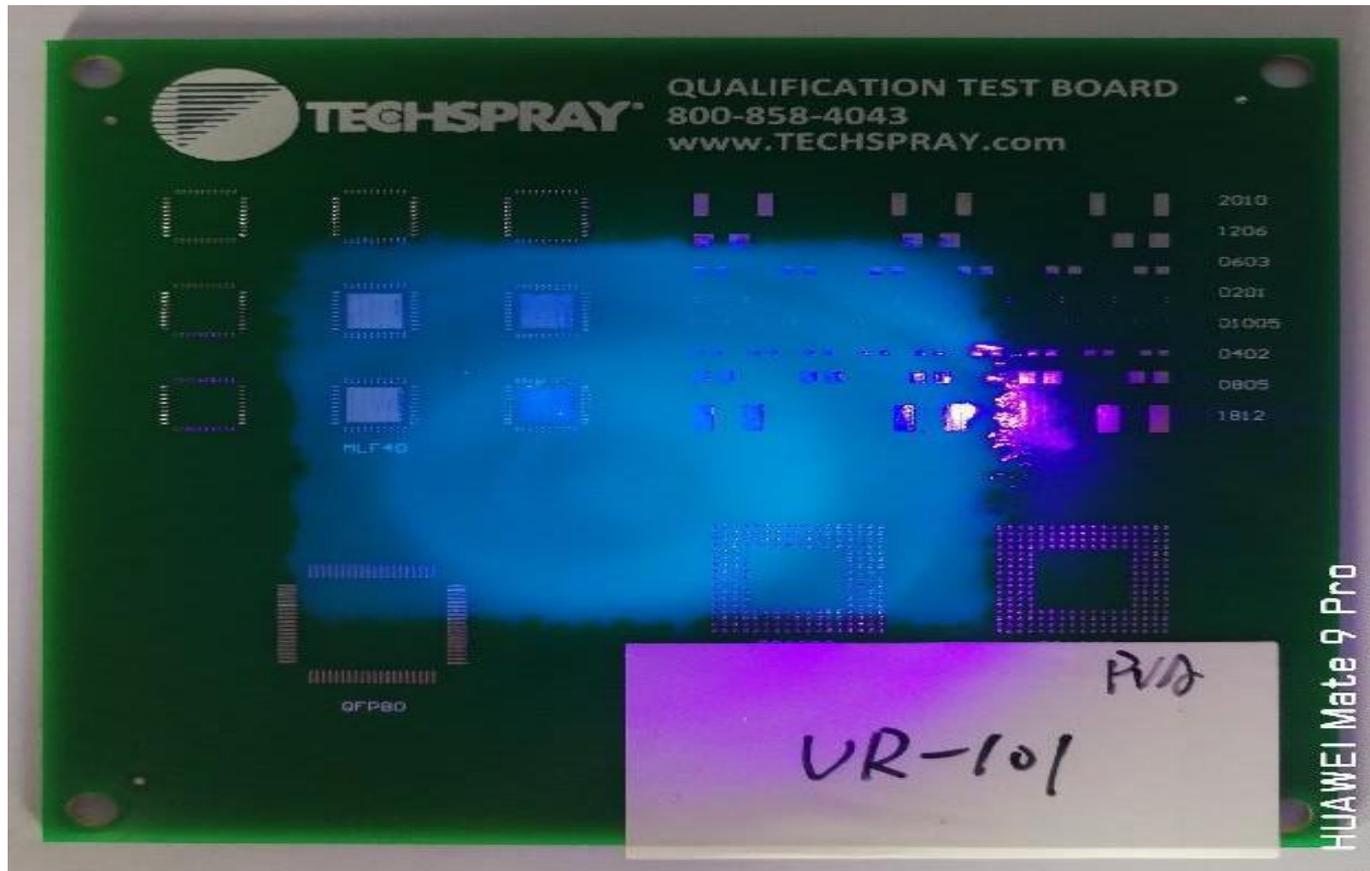
Thermal shock 125°C for 30 minutes, -40°C for 30 minutes, that's one cycle.

Test 50 cycles. No shedding and no bubble.



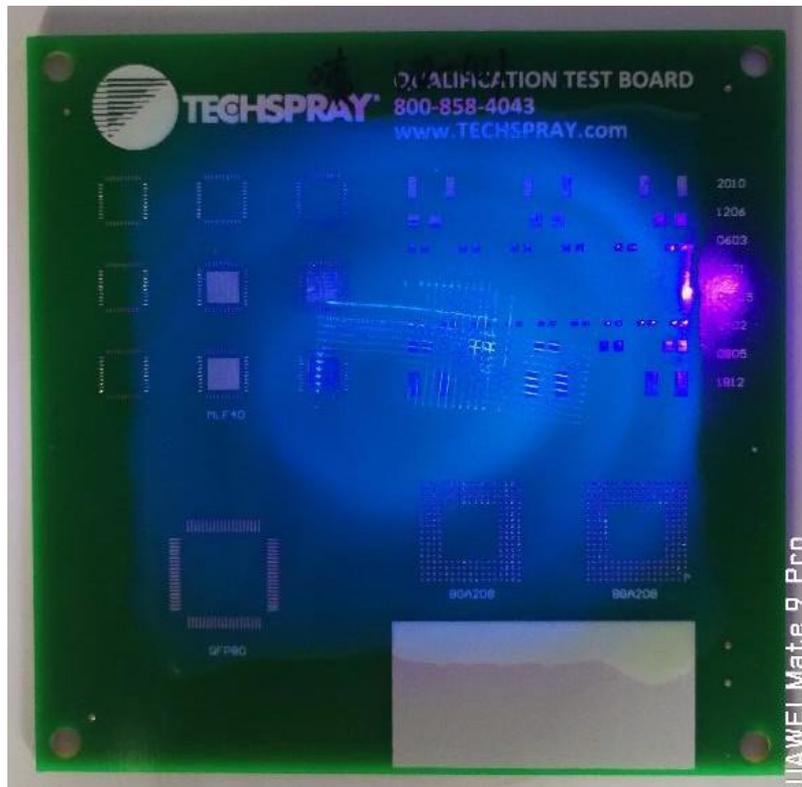
3 Application Test

3.1 Test the process performance by PVA 650 equipment.
The leveling is good, no bubble and boundaries clear.



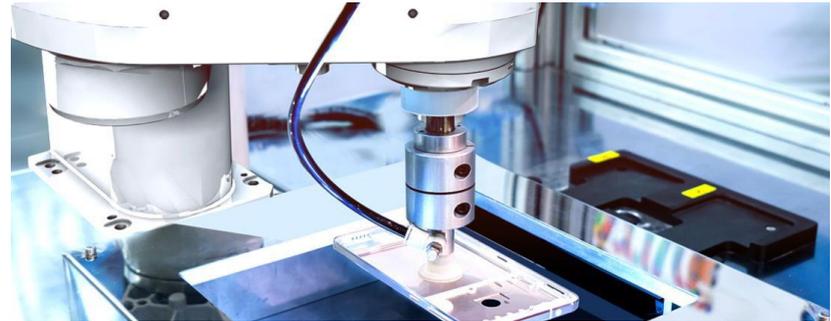
3 Application Test

3.2 Test the process performance by **Lenor** equipment.
The leveling is good, no bubble and boundaries clear.



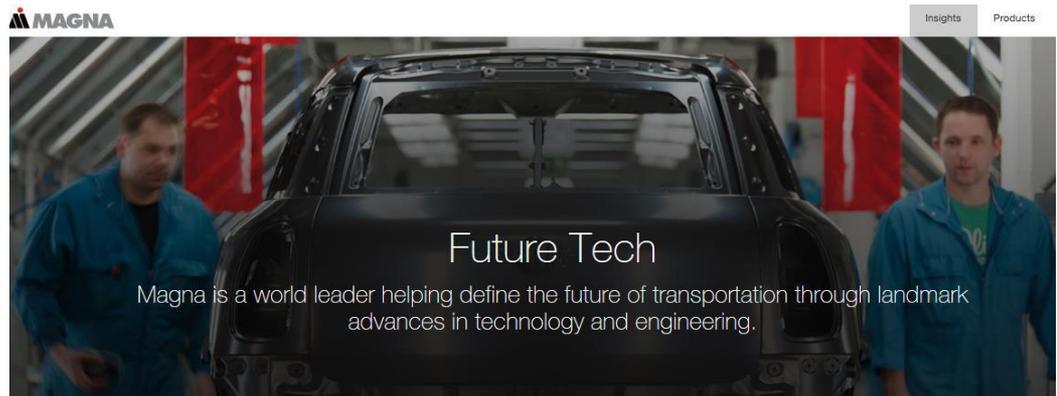
3 Application Test

3.3 Test the process in **Suzhou Inovance**, the thickness can reach 75µm,



the leveling is good.

3.4 Test the process in **Magna**. UV40 can't be tack-free by its lamp as its low energy, but UR-101 can do it. Customer recognized. That proved the conclusion of our lab.



4 Benefits and features

4.1 Low curing energy, better cure performance

Item	Chemtronics UR-101	Humiseal UV40
1000mj	tack-free	NG
1500mj	tack-free	NG
2000mj	tack-free	tack-free

4.2 Excellent salt spray resistance

4.3 Excellent electrical properties

5. Summary



Achievement

- Researched a series of products including LV, MV and HV which can match different process
- We tested in several customers(Inovance, Magna etc.) and by different equipment, the results are all good.
- The process key point had been fixed.

Current Status

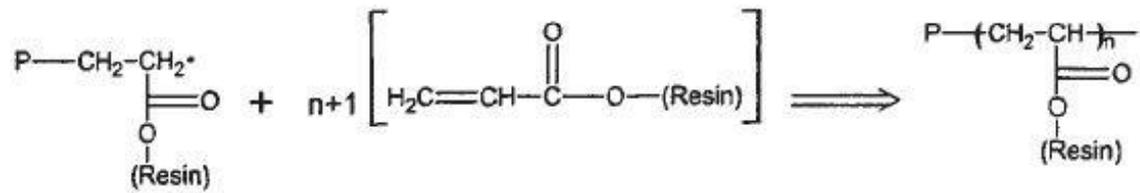
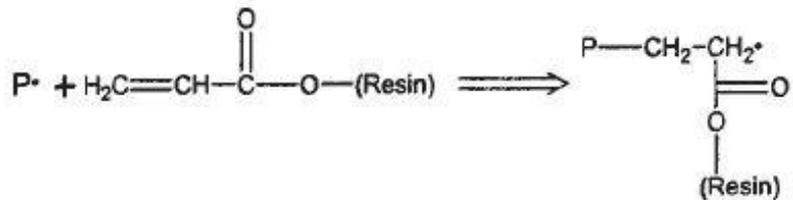
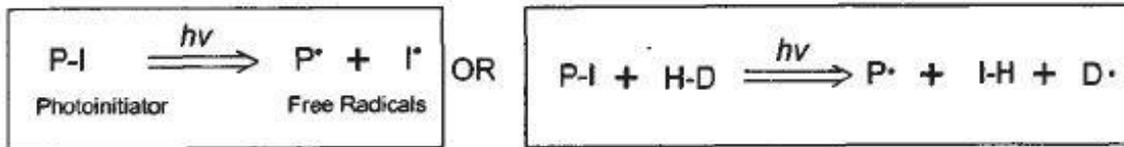
- ◆ For the commercial order, the recent performance is good.
- ◆ We have got the very positive forecast.

Plan

- ✓ Search more suppliers to reduce the cost.
- ✓ Research special products for specific customer.

6.Curing Mechanism

- **Components:** Oligomer(double bond and isocyanate), Monomer(double bond), Photo initiator, Additives
- **1.UV cured**



2. Moisture Cured



Thank you

Q&A

