



Efficiency in Smart Card Manufacturing

Panacol Vitralit® and Structalit®

Hönle UV Curing Systems

UVALINE 1200, LED Powerline

A Perfect Match for Larger Volumes

Smart Card Encapsulants

- Low ionic content
- High processing efficiency
- Outstanding mechanical properties
- Variety of different encapsulating solutions

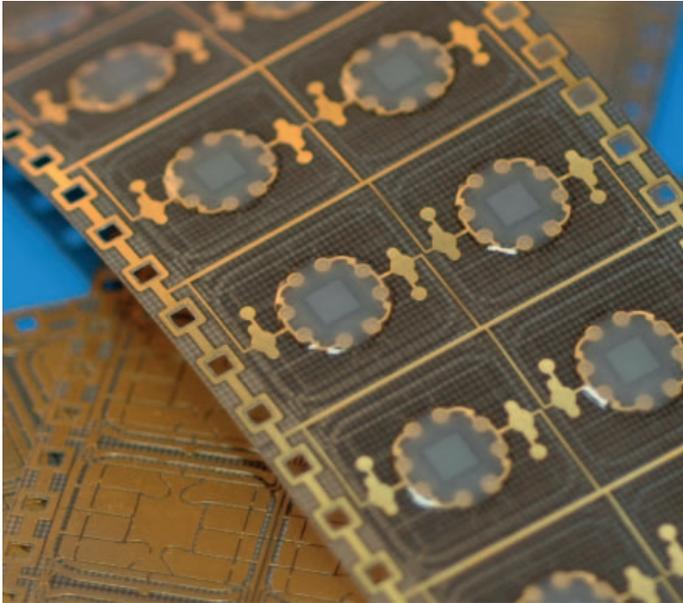
UV Curing Systems

- Different wavelengths available
- High UV intensity
- Low thermal load to the substrates
- Retrofitting of existing machines
- Excellent price/performance ratio

Encapsulants for High Throughput Solutions

As a global supplier of special adhesives, Panacol offers a range of UV and heat curing adhesives for Smart Card encapsulation.

We have developed these materials to maximize efficiency in production throughput with maximum reliability.



Vitralit® 1650

- UV curing one component epoxy resin
- High flexibility, low T_g
- Low ionic content
- Good environmental resistance

Vitralit® 1680

- UV and heat curing one component epoxy resin
- High T_g , low ionic content
- Low water absorption, good acid resistance
- Low coefficient of thermal expansion (α_1)

Vitralit® 1688

- UV curing one component epoxy resin
- Low water absorption, good chemical resistance
- Outstanding mechanical properties
- Low warpage, low coefficient of thermal expansion

Vitralit® 1671

- One component frame material with good edge stability
- UV and heat curing at low temperature
- Low ionic content, low water absorption
- Good thermal conductivity

Modules/Cards encapsulated with Vitralit® 1688 passed the following qualifications:

Vitralit 1688		
Test	Test Conditions	Test Results
Temperature Cycling (TC), MIL-STD 883/1010	-40°C ~ +125°C	200 x / 0.5 h
Temperature and humidity and bias (THB)	85°C / 85% r.h., 5.5 V d.c.	5.5 V 168 h
Temperature storage	1000 h @+125°C	passed
Pressure cooker	+121°C, 100% r.h., 2 bar, 24 h	passed
Bending test	ISO 7816-1 and ISO / IEC 10373-1 / 58	> 1000 cycles
Torsion test	ISO / IEC 10373-1	> 1000 cycles
3-wheels-test	ISO / IEC 10373-3/ Annex A and more	> 100 cycles / 15 N
Line pressure test		very good
Spot pressure test		very good
Wrapping test		very good
Warpage test based on module after curing		very good

Vitralit® UV Curing Frame & Fill Encapsulants

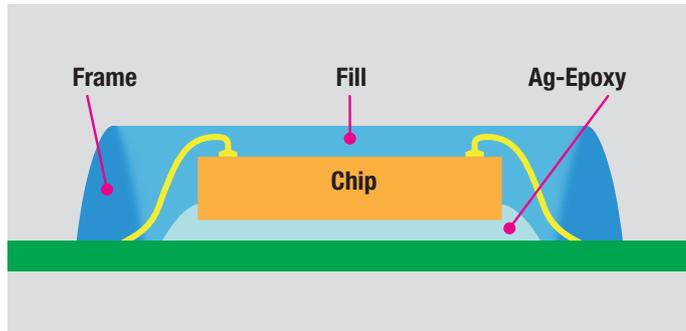
Advantages

- Short cycle times, 10 - 60 sec
- Low ionic content
- UV curable, 320 - 405nm wavelength
- Good self-leveling characteristics
- Frame and fill adhesives create a homogeneous composition

Structalit® Heat Curing Frame & Fill Encapsulants

Advantages

- Fast processing time and excellent dispensability
- High T_g level
- Low water absorption and good chemical resistance
- Fast curing time at moderate temperatures, 120°C-150°C
- Frame and fill adhesives create a homogeneous composition

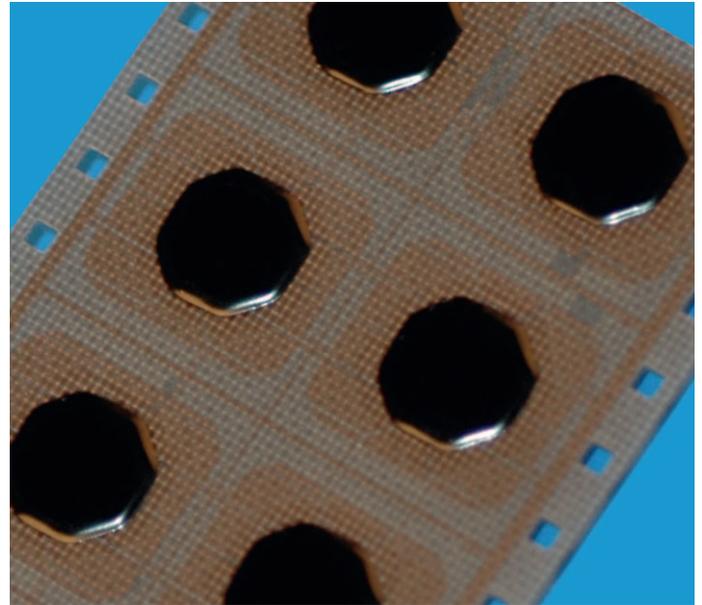


Structalit® 5071

- One component heat curing epoxy resin for frame application
- Low water absorption, good chemical resistance
- Excellent thermal shock resistance
- Extremely high T_g

Structalit® 5088

- One component heat curing epoxy resin for fill application
- High processing efficiency
- Outstanding mechanical properties, when cured same performance as mold materials
- Low coefficient of thermal expansion (α_1)



	UV Curing				Heat Curing	
	Frame	Fill / Glob Top	Fill	Fill	Frame	Fill
Product name	Vitralit® 1671	Vitralit® 1650	Vitralit® 1680	Vitralit® 1688	Structalit® 5071	Structalit® 5088
Typical applications	Industry standard, frame material, use in combination with all fill materials	Industry standard, Glob Top material, compatible with automated dispensing equipment	Industry standard, fill and Glob Top material, ideal in combination with Vi 1671	Most recent development of fill and Glob Top material, quickly becoming the industry standard, ideal in combination with Vi 1671	High viscosity frame material, excellent chemical resistance, ideal in combination with St 5088	Medium viscosity fill material, excellent chemical resistance, ideal in combination with St 5071
Curing	UV and heat curing	UV curing	UV curing	UV curing	Heat curing	Heat curing
Curing with LED 365nm	10 sec possible	10 sec possible	10 sec possible	10 sec possible		
Color	Light grey, translucent	Light grey, translucent	Light grey, translucent	Light grey, translucent	Black	Black
Viscosity [mPas]	250,000 – 300,000	6,000 – 9,000	6,000 – 9,000	3,000 – 4,000	300,000 – 400,000	45,000 – 55,000
Shore hardness [D]	80 – 90	70 – 80	70 – 80	70 – 80	80 – 90	75 – 90
Elasticity	Hard	Slightly elastic	Slightly elastic	Slightly elastic	Hard	Hard
Characteristics	High processing efficiency	High processing efficiency, well established Glob Top	High processing efficiency, excellent mechanical properties	Outstanding mechanical properties, good flow characteristics, fast processing due to fast curing possibility	Like dispensable mold materials	Like dispensable mold materials

Dr. Hönle AG is one of the world's leading suppliers of industrial UV technology. Innovative Hönle UV/UV-LED curing systems have been applied in various manufacturing processes where they achieve excellent results worldwide – particularly in adhesive applications.

Hönle and Panacol, both members of the Hönle Group, attach great importance to joint research and development. They have combined their knowledge and extensive experience in chemistry and UV technology which has lead to comprehensive high-tech solutions. This has been applied to the specific needs associated with adhesive applications, frequently used in electronics manufacturing.

Hönle UV Technology for Smart Card Applications

The Vitralit® adhesives from Panacol are perfect for chip encapsulation in Smart Card manufacturing. The matching UV equipment to cure these high-tech sealing compounds are the UVALINE 1200 along with the LED Powerline from Hönle:



UVALINE 1200

UVALINE 1200

The UVALINE 1200 is a compact, all-purpose and high intensity UV irradiator. It comes with three 450W gas discharge lamps and a 480 x 40 mm irradiation window. The reflector geometry guarantees maximum UVA intensity.

The cooling of UVALINE 1200 is achieved using three integrated, speed-controlled fans. The shutter function with limit stop monitoring has a pneumatic drive.

The ballast box has an interface for the production machine, thus making the UVALINE 1200 ideal for integration into fully-automated production lines.

LED Powerline

The LED Powerline is a high-performance array with all the advantages of LED technology: Typical LED lamp life > 10.000 hours and does not require heating up or cooling phases. The LED Powerline is available in wavelengths of 365/375/385/395/405nm.

This variety allows adjustment of the wavelength to the appropriate application. The LED Powerline is available in different lengths - in 40 mm steps up to a length > 1 m.



LED Powerline

	Engineered Adhesives	UV-adhesives	Conductive adhesives	Potting	Curing				



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