

Product Description

Panacol Vitralit® adhesives are one-component, solvent-free radiation-curing adhesives. The advantages are very short curing time, good adhesion to a variety of substrates, and easy handling. Vitralit® products are used in electronics, medical applications, optics and for fixing parts in general.

Vitralit® UD 8050 is a one component UV/visible light and humidity curing isocyanate acrylate adhesive. The base material is transparent and slightly yellow. Customized versions with various colors and fluorescent tracer are possible and make process control easier.

Vitralit® UD 8050 is specially designed as an encapsulant for local circuit board protection. Its easy dispensability and fast curing properties make it suitable especially for applications in consumer electronics, where a high UPH value is required. Thanks to the humidity curing mechanism, Vitralit® 8050 can also be cured in shadowed areas. UV curing provides initial properties and the humidity post curing leads to an increasing performance over time.

Curing Properties

UV-A	VIS	Secondary heat cure	Secondary humidity cure
✓	✓	-	✓

✓ suitable - not suitable

The product cures within seconds with radiation in the UV-A - (320 nm - 390 nm) and visible range (405nm). For rapid and high quality crosslinking we recommend the UV devices manufactured by Dr. Hoenle AG, which complement our adhesive technology. Humidity may only be used as a secondary cure for shadowed areas after the product has been cured with UV.

In shadowed areas, it can be cured through environmental humidity (20 % - 80 % RH recommended). Post cure by humidity leads to an increasing bonding strength over time. Final bonding strength is achieved after approximately one week.

Curing with UV and LED devices from Dr. Hönle AG		
Curing unit	Intensity [mW/cm ²]	Curing time * [sec]
LED Spot 100, 405 nm	250	3
LED Spot 100, 365 nm	200	2
UVA Lamp, Fe-doped	60	5

* Curing time for material with a thickness of 0.5 mm. For thicker adhesive layer more time is necessary.

To obtain full cure at least one substrate must be transparent to recommended wavelength for cure. The curing speed will depend on the intensity of light, light source, the exposure time, and the light transmittance of the substrate.

Please note that UV cure only provides initial bonding strength and the humidity post cure leads to an increasing bonding strength and Shore hardness over time. The technical values were determined after 8 days of post-curing with moisture.

Technical Data

Resin
Appearance

isocyanate acrylate
transparent, slightly yellow

Technical Datasheet

Vitralit® UD 8050



Uncured material

Viscosity [mPas] (Kinexus Rheometer, 5s ⁻¹ , 25°C) <i>PE-Norm 064</i>	8 000 - 11 000
Viscosity [mPas] (Kinexus Rheometer, 50s ⁻¹ , 25°C) <i>PE-Norm 064</i>	1 500 - 3 000
Density [g/cm ³] <i>PE-Norm 004</i>	1,1
Flash point [°C] <i>PE-Norm 050</i>	>100
Work life time [d] at room temperature with vacuum packaging	14
Work life time [d] at room temperature	3

Cured material

Temperature resistance [°C]	-40 - 120
Shrinkage [%] <i>PE-Norm 031</i>	<2
Water absorption [mass %] <i>PE-Norm 016</i>	<4

	Shore Hardness D	Bonding Strength*
12h after UV cure**	10 - 25	15% of final strength
+ 4 days humidity cure***	45 - 70	80% of final strength
+ 8 days humidity cure***	55 - 70	135-150N

*Ceramic resistance die 1206 (3.2mm x 1.6mm). The ceramic die which has no light transmission is bonded to PCB with adhesive, UV only cures the adhesive on edge and fixes the die. The adhesive under the die is then cured with humidity over time.

**UV cure: UVA lamp, Fe-doped, 60 mW/cm², 30 s.

*** Humidity cure: 25 °C, 50 % RH.

Glass transition temperature DSC [°C] <i>PE-Norm 009</i>	59
Coefficient of thermal expansion [ppm/K] below T _g <i>PE-Norm 017</i>	56
Coefficient of thermal expansion [ppm/K] above T _g <i>PE-Norm 017</i>	260

Dielectric strength [kV/mm]	27
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Technical Datasheet

Vitralit® UD 8050



Young's modulus [MPa] <i>PE-Norm 056</i>	1 246
Tensile strength [MPa] <i>PE-Norm 014</i>	38
Elongation at break [%] <i>PE-Norm 014</i>	6

Transport/Storage/Shelf Life

Trading unit	Transport	Storage	Shelf-life*
Cartridge	0°C - 10°C	0°C - 10°C	At delivery min. 3 months, max. 6 months
Other packages			

***Store in original, unopened containers!**

Instructions for Use

Surface preparation

The surfaces to be bonded should be free of dust, oil, grease or other dirt in order to obtain an optimal and reproducible bond.

For cleaning we recommend the cleaner IP® Panacol. Substrates with low surface energy (e.g. polyethylene, polypropylene) must be pretreated in order to achieve sufficient adhesion.

Application

Our products are supplied ready to use. Depending on packaging they can be applied by hand directly from the container or semi or fully automatically. With automated application from the cartridge the adhesive is conveyed by a compressed air-operated displacement plunger via a valve in the needle. When metering low viscosity materials from bottles the adhesive is transported by a diaphragm valve. If help is required, please contact our application engineering department.

Adhesive and substrate may not be cold and must be warmed up to room temperature prior to processing.

After application, bonding of the parts should be done quickly. Vitralit® adhesives cure slowly in daylight. Therefore, we recommend expose the material to as little light as possible and the use of opaque hose lines and dispensing needles.

For safety information refer to our safety data sheet.

Disclaimer

The product is free of heavy metals, PFOS and Phthalates and is conform to the EU-Directive 2017/2102/EU "RoHS III".

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Contact

Panacol-Elosol GmbH
Daimlerstr. 8
61449 Steinbach
Germany
Phone.: +49 6171 6202-0
Mail: info@panacol.de
www.panacol.com

Panacol-USA, Inc.
142 Industrial Lane
Torrington CT 06790
USA
Phone: +1 860-738-7449
Mail: info@panacol-usa.com
www.panacol-usa.com

Panacol-Korea Co., Ltd.
#707, Kranz Techno, 388 Dunchon-daero
Junwon-gu, Seongnam
Gyeonggi-do, 13403 KOREA
Phone: +82 31 749 1701
Mail: info@panacol-korea.com
www.panacol-korea.com

Eleco Panacol – EFD
125, av Louis Roche
Z.A. des Basses Noëls
92238 Gennevilliers Cdx FRANCE
Tél.: +33 (0)1 47 92 41 80
Mail: eleco@eleco-panacol.fr
www.eleco-panacol.fr