

Technical Datasheet

Vitralit® UD 5138



Product Description

Modified acrylate | 1 K | solvent-free | UV / Visible light curing | Secondary heat cure

- ▶ Bonding, potting and sealing of plastics as well as glass and metal
- ▶ Protection of sensitive components
- ▶ Very good adhesion to FR4
- ▶ High strength
- ▶ Highly filled
- ▶ Low CTE
- ▶ Low shrinkage
- ▶ Impact resistant
- ▶ Dry surface
- ▶ Resistant in industrial soldering processes

Curing Properties

| UV-A | LED 365nm | LED 405nm | Secondary heat cure |
|------|-----------|-----------|---------------------|
| ✓ | ✓ | ✓ | ✓ |

✓ suitable – not suitable

If applicable, heat may only be used as a secondary cure for shadowed areas after the product has been cured with UV.

UV-curing (Hoenle Discharge lamp, 320-390nm)

| Intensity [mW/cm ²]* | Layer thickness [mm] | Time [sec] |
|----------------------------------|----------------------|------------|
| 60 | 0.5 | 5 |

*measured by Hoenle UV-Meter 3.0 / UV-A F0

LED-curing (Hoenle LED Spot 100, 365nm)

| Intensity [mW/cm ² ** | Layer thickness [mm] | Time [sec] |
|----------------------------------|----------------------|------------|
| 300 | 0.5 | 3 |

LED-curing (Hoenle LED Spot 100, 405nm)

| Intensity [mW/cm ² ** | Layer thickness [mm] | Time [sec] |
|----------------------------------|----------------------|------------|
| 500 | 0.5 | 1 |

**measured by Hoenle UV-Meter 3.0 / LED F2

| Secondary heat cure | [min] |
|---------------------|-------|
| Time at 100°C | 30 |
| Time at 120°C | 15 |
| Time at 150°C | 5 |

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To obtain full cure at least one substrate must be transparent to the recommended wavelength. The curing speed depends on the wavelength spectrum of the light source, the intensity of light, the distance to the light source, the component geometry and the amount of adhesive. The final strength is reached after 24 hours.

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| | |
|-------------------------------------|-----------------|
| Resin | Acrylate hybrid |
| Appearance | Pink |
| Fluorescence | Rose |
| Filler | Plastic |
| Filler - weight [%] | approx. 25 |
| Particle size D95 [μm] | <5 |

Uncured Material

| | |
|---------------------------------------------------------------------------------------|-----------------|
| Viscosity [mPas] (Kinexus Rheometer, 25 °C, 10s ⁻¹) <i>PE-Norm 064</i> | 22,000 – 30,000 |
| Thixotropic index [1/10] <i>PE-Norm 064</i> | 3.0 – 4.5 |
| Density [g/cm ³] <i>PE-Norm 004</i> | 1.0 – 1.1 |
| Flash point [°C] <i>PE-Norm 050</i> | >100 |
| Working life [days] <i>@ room temperature</i> | 10 |

Cured Material

| | |
|--------------------------------------------|-----------|
| Hardness shore D <i>PE-Norm 006</i> | 50 – 70 |
| Temperature resistance [°C] | -40 – 150 |
| Shrinkage [%] <i>PE-Norm 031</i> | <2 |
| Water absorption [%] <i>PE-Norm 016</i> | <6 |

| | |
|-------------------------------------------------------------------------|-----------|
| Glass transition temperature - DSC [°C] <i>PE-Norm 009</i> | 45 – 55 |
| Coefficient of thermal expansion [ppm/K] below Tg <i>PE-Norm 017</i> | <70 |
| Coefficient of thermal expansion [ppm/K] above Tg <i>PE-Norm 017</i> | 300 – 320 |

| | |
|----------------------------------------------------------------------------------------------------------------------------|-------------|
| Young's modulus – Tensile test [MPa] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 056</i> | 900 – 1,400 |
| Tensile strength [MPa] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 014</i> | 9 – 15 |

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|---------------------------------------------------------------------------------------------------------------------------|-------|
| Elongation at break [%] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 014</i> | 1 – 5 |
| Lap shear strength (PC/Al) [MPa] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 013</i> | 2 – 4 |
| Lap shear strength (PC/steel) [MPa] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 013</i> | 3 – 6 |
| Lap shear strength (PC/FR4) [MPa] <i>300mW/cm², 10sec, 405nm LED + 120°C, 30min</i> <i>PE-Norm 013</i> | 2 – 4 |

Transport/Storage/Shelf Life

| Package type | Transport | Storage | Shelf life* |
|-------------------|------------|------------|--------------------------------|
| Syringe/Cartridge | 0°C – 10°C | 0°C – 10°C | At delivery |
| Other packages | | | min. 3 months max. 6 months |

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

Instructions for use

Surface preparation

The surfaces to be bonded should be free of dust, oil, grease, mold release, or other contaminants in order to obtain an optimal and reproducible bond. For cleaning we recommend the cleaner IP® from Panacol, or a solution of Isopropyl Alcohol at 90% or higher concentration. 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 the packaging, our adhesives may be dispensed by hand directly from the package, or they can be applied using dispensing systems and automation that is compatible with light-curable adhesive chemistry. Vitralit® adhesives can begin to cure slowly in daylight and with longer term exposure under indoor lighting. We therefore recommend that adhesive exposure to ambient light must be kept to a minimum. Fluid lines and dispense tips must be 100% light blocking. For assistance with dispensing options, please contact our Application Engineering department. Adhesive and substrate should not be cold for proper bonding. They must be allowed to warm to room temperature prior to processing. After dispensing the adhesive, bonding of the parts should be done promptly. It is recommended that curing stations be equipped with air exhaust systems to evacuate vapors and heat generated during the curing process. After curing, the adhesive must be allowed to cool to ambient temperature before testing the product's performance. For safety information refer to our Material Safety Data Sheet (MSDS).

Storage

This is light sensitive material. Containers must remain covered when not in use. Minimize exposure of uncured material to daylight, artificial light, and UV light during storage and handling. Store uncured product in its original, closed container in a dry location. Any material removed from the original container must not be returned to the container as it could be contaminated. Panacol cannot assume responsibility for products that were improperly stored, contaminated, or repackaged into other containers.

Handling and Clean-up

For safe handling information, consult this product's Material Safety Data Sheet (MSDS) prior to use. Uncured material may be wiped away from surfaces with organic solvents. Do not use solvents to remove material from eyes or skin!

Disclaimer

The product is free of heavy metals, PFOS and Phthalates and is conform to the current EU-Directive RoHS.

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Contact

Panacol-Elosol GmbH
Stierstädter Straße 4
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