

Product Description

Panacol Vitralit® adhesives are one-component, solvent-free radiation-curing adhesives. The advantages are very short curing times, 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® MID-004-HC is a medium viscosity, solvent-free, LED light curable adhesive that forms resilient, high strength bonds between many plastics and dissimilar materials including polyimide, PET, metals, and glass.

Bonds prepared with Vitralit® MID-004-HC are clear, tack-free, and highly resistant to moisture and aging. This adhesive's flexibility makes it ideal for applications requiring high peel strength and resistance to thermal cycling. Vitralit® MID-004-HC cures rapidly with broad spectrum UV lamps (320-450 nm), as well as monochromatic LED lamps. Optimal LED curing is achieved using LED systems with outputs of 365nm or 405nm. Additionally, this adhesive contains a thermal catalyst for secondary curing with heat. This provides the ability to fully cure the adhesive in locations that are shadowed from the primary light curing energy. Vitralit® MID-004-HC has been formulated to pass USP Class VI biocompatibility testing. It is compatible with common sterilization methods including gamma irradiation, EtO, and limited autoclaving. Vitralit® MID-004-HC fluoresces in a brilliant orange color when exposed to low intensity UV light, ("blacklight"). It is easily detectable by vision systems or through manual inspection.

Curing Properties

UV-A	VIS	Secondary heat cure	Activator curing
✓	✓	✓	-

✓ suitable - not suitable

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

UV-curing (Hoenle Bleupoint 4 Spot, 320-450nm)		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
2000	0,05	1

VIS-curing (Hoenle Bluepoint LED ECO, 405 nm)		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
2000	0,05	1

Secondary heat cure	[min]
Time at 110°C	60
Time at 120°C	30
Time at 150°C	15

To obtain full cure at least one substrate must be transparent to the recommended wavelength. The curing speed will depend on the intensity of light, light source, the exposure time, and the light transmittance of the substrate. Increased mechanical properties are achieved after 12 hours.

Technical Data

Resin	urethane acrylate/monomer blend
Appearance	transparent, liquid
Fluorescence	orange

Uncured material

Viscosity [mPas] (Kinexus Rheometer, 25°C, 1s ⁻¹) <i>PE-Norm 064</i>	6 000 - 9 000
Viscosity [mPas] (Kinexus Rheometer, 25°C, 10s ⁻¹) <i>PE-Norm 064</i>	3 000 - 5 000
Density [g/cm ³] <i>PE-Norm 004</i>	1,0
Flash point [°C] <i>PE-Norm 050</i>	>93
Refractive index [nD20] <i>PE-Norm 018</i>	1,4752

Cured material

Hardness shore A <i>PE-Norm 006</i>	50 - 70
Temperature resistance [°C]	-40 - 140
Shrinkage [%] <i>PE-Norm 031</i>	<3
Water absorption [mass %] <i>PE-Norm 016</i>	<5

Glass transition temperature DSC [°C] <i>PE-Norm 009</i>	20 - 40
Coefficient of thermal expansion [ppm/K] below Tg <i>PE-Norm 017</i>	46
Coefficient of thermal expansion [ppm/K] above Tg <i>PE-Norm 017</i>	297

Young's modulus E [MPa] <i>PE-Norm 022</i>	41
Tensile strength [MPa] <i>PE-Norm 014</i>	3
Elongation at break [%] <i>PE-Norm 014</i>	293

Transport/Storage/Shelf Life

Trading unit	Transport	Storage	Shelf-life*
Cartridge	at room temperature max. 25°C	at room temperature max. 25°C	at delivery min. 6 months max. 12 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 to 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".

THE VALUES NOTED IN THIS TECHNICAL DATA SHEET ARE TYPICAL PROPERTIES AND ARE NOT MEANT TO BE USED AS PRODUCT SPECIFICATIONS.

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Technical Datasheet

Vitralit® MID-004-HC



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