

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® UV 4050 is a low viscosity, transparent and modified acrylate adhesive with good bonding to a wide range of materials including plastics, metals and glass. Vitralit® UV 4050 is suitable for transparent plastics with low UV transmission such as PC. Vitralit® UV 4050 has met the requirements for ISO 10993-5 and is suitable for use in the assembly of disposable medical devices. The fluorescent capabilities for adhesive bond verification improves the process quality. Low viscosity makes Vitralit® UV 4050 ideal for needle bonding and other medical applications where wicking of the adhesives into the pre-assembled parts is required. It is compatible with sterilization including autoclaving, gamma irradiation and EtO.

Suitability on various substrates

PMMA	*	PP	o	glass	*	FR4	*
PC	✓	ABS	✓	steel	*	PA	*
brass	*	PVC	✓	Al	*	V2A	

✓excellent o suitable * pretreatment necessary/recommended

Curing Properties

UV-A	VIS	Thermal curing	Activator curing
✓	✓	-	-

✓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.

Bluepoint LED/LED-spot		
Wavelength [nm]	365	405
Suitability	++	+++

+ application-related ++ well-suited +++ ideal - not suitable

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.

UV-curing		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
30	0,05	20

VIS-curing		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
100	0,5	10

Technical Data

Resin acrylate
 Appearance transparent, slightly yellow

Uncured material

Viskosität [mPas] (Brookfield LVT, 25°C, 2/30rpm) <i>PE-Norm 001</i>	140 - 500
Density [g/cm ³] <i>PE-Norm 004</i>	1,05
Flash point [°C] <i>PE-Norm 050</i>	>100
Refractive index [nD20] <i>PE-Norm 018</i>	1,48

Cured material

Hardness shore D <i>PE-Norm 006</i>	60 - 70
Temperature resistance [°C] <i>PE-Norm 065</i>	-40 - 135
Shrinkage [%] <i>PE-Norm 031</i>	<3
Water absorption [mass %] <i>PE-Norm 016</i>	<7

Glass transition temperature DSC [°C] <i>PE-Norm 009</i>	35 - 45
Coefficient of linear expansion [ppm/K] below Tg <i>PE-Norm 017</i>	91,0
Coefficient of linear expansion [ppm/K] above Tg <i>PE-Norm 017</i>	340,0

Young's modulus [MPa] <i>PE-Norm 056</i>	450,0
Tensile strength [MPa] <i>PE-Norm 014</i>	13,8
Elongation at break [%] <i>PE-Norm 014</i>	35,1

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.

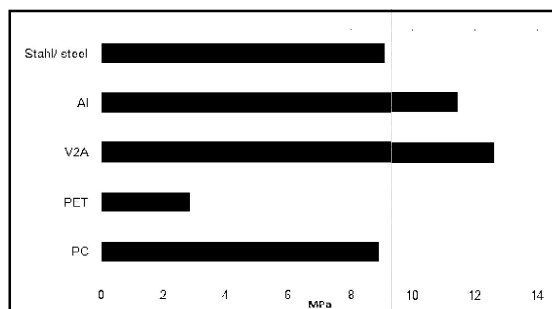
Note

The product is free of heavy metals, PFOS and Phthalates and is conform to the EU-Directive 2011/65/EU "RoHS II" .

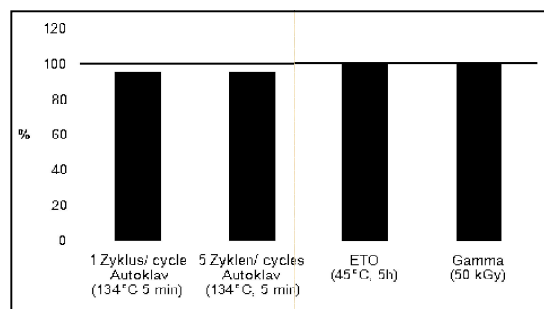
Our data sheets have been compiled to the best of our knowledge. The enclosed information describes characteristic properties, with no declaration of commitment. We recommend trials in order to confirm that our products satisfy the particular application requirements. For any additional technical support, please contact our application engineering department. For warranty claims, please refer to our standard terms and conditions.

Appendix

Lap shear strength [MPa]



Sterilization



Sterilization

The diagram above shows the pull out force of glass needles after sterilization expressed as % of initial strength. The needles were cured with 365 nm Blueprint LED at 880 mW/cm².

Vitralit® UV 4050 shows good bond strength retention after sterilization by autolaving, EtO and gamma irradiation. Generally the resistance depends on the substrate material, the curing parameters and the process of sterilization. It remains the user's obligation to determine the effect of sterilization on the specific product.