Technical Datasheet
Vitralit® 5140

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® 5140 is an LED curable material that adheres to a variety of substrates including many plastics, metal, ceramic and glass. The cured Vitralit® 5140 is extremely flexible, demonstrates outstanding elongation and memory. Bonds prepared using Vitralit® 5140 are clear and highly resistant to moisture and yellowing. The high adhesion and low durometer of Vitralit® 5140 makes it ideally suited for applications involving thermal cycling. Vitralit® 5140 cures extremely rapidly with broad spectrum UV and visible light, 320-450 nm. High intensity is not required. Vitralit® 5140 also cures rapidly with monochromatic LED systems possessing output of 365nm or 405nm. LED systems produce cooler curing temperatures and are better suited for heat sensitive substrates. Vitralit® 5140 has passed the biocompatibility testing required for USP Class VI approval, and is compatible with commonly used sterilization methods including, gamma irradiation, ethylene oxide, and limited autoclave.

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 (405 nm). For rapid and high quality crosslinking we recommend the UV devices manufactured by Dr. Hoenle AG, which complement our adhesive technology.

UV-curing (Hoenle Discharge Lamp, 320-450nm)		
Intensity [mW/cm²]	Layer thickness [mm]	Time [sec]
35	1	5

VIS-curing (Hoenle LED Spot 100, 405nm)		
Intensity [mW/cm²]	Layer thickness [mm]	Time [sec]
1000	1	5

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	acrylate
Appearance	transparent

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Uncured material

Viscosity [mPas] (Brookfield LV, 25°C, Sp 2, 30rpm) *PE-Norm 001*	250 - 500
Density [g/cm³] *PE-Norm 004*	1,1
Flash point [°C] *PE-Norm 050*	>93
Refractive index [nD20] *PE-Norm 018*	1,47

Cured material

Hardness shore A *PE-Norm 006*	45 - 65
Temperature resistance [°C]	-55 - 125
Shrinkage [%] *PE-Norm 031*	<4
Water absorption [mass %] *PE-Norm 016*	<2

Glass transition temperature DSC [°C] *PE-Norm 009*	1 - 10
Coefficient of thermal expansion [ppm/K] below Tg *PE-Norm 017*	116
Coefficient of thermal expansion [ppm/K] above Tg *PE-Norm 017*	625

Tensile strength [MPa] *PE-Norm 014*	1
Elongation at break [%] *PE-Norm 014*	336
Lap shear strength (PC/PC) [MPa] *PE-Norm 013*	3
Lap shear strength (PC/ABS) [MPa] *PE-Norm 013*	3
Lap shear strength (glass/PC) [MPa] *PE-Norm 013*	3

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!

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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".

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