

Technical Datasheet

Vitralit® 4731 VT



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® 4731 VT is a UV / Visible light curable material that is very flexible after it is cured (hardened). Vitralit® 4731 VT adheres to many plastics and dissimilar materials including glass, stainless steel, and ceramic. The “VT” viscosity designation means when in its liquid state, Vitralit® 4731 VT will demonstrate very little movement after dispensing. (Several other viscosity variations are available for this product family, including a non-migrating gel.) When properly cured, Vitralit® 4731 VT is clear, and resistant to yellowing. Vitralit® 4731 VT will cure to a tack-free surface. Vitralit® 4731 VT is extremely moisture resistant, with excellent resistance to the stresses imparted by thermal cycling. Vitralit® 4731 VT cures rapidly with low intensity UV lamps, as well as monochromatic LED systems. Recommended LED wavelengths are 365 and 405 nm. Vitralit® 4731, (viscosity 900-1500 cP), has passed USP Class VI biocompatibility requirements. Vitralit® 4731 VT is the same composition as Vitralit® 4731 with additional bio-inert filler added to increase viscosity. Vitralit® 4731 VT 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 - 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.

UV-curing (Hoenle Bluepoint 4 Spot, 320-450nm)		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
60	0,05	2

VIS-curing (Hoenle Bluepoint LED Spot, 405nm)		
Intensity [mW/cm ²]	Layer thickness [mm]	Time [sec]
100	0,05	10

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
Appearance

acrylate
transparent

Technical Datasheet

Vitralit® 4731 VT



Uncured material

Viscosity [mPas] [cP] (Brookfield LVT, 25°C, Sp 4/6 rpm) <i>PE-Norm 001</i>	22 000 - 28 000
Density [g/cm ³] <i>PE-Norm 004</i>	1,15
Flash point [°C] <i>PE-Norm 050</i>	>93
Refractive index [nD20] <i>PE-Norm 018</i>	1,473

Cured material

Hardness shore D <i>PE-Norm 006</i>	30 - 50
Temperature resistance [°C]	-40 - 120
Shrinkage [%] <i>PE-Norm 031</i>	<3
Water absorption [mass %] <i>PE-Norm 016</i>	<1

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>	67
Coefficient of thermal expansion [ppm/K] above Tg <i>PE-Norm 017</i>	414

Young's modulus [MPa] <i>DMA-measurement</i>	43
Tensile strength [MPa] <i>PE-Norm 014</i>	3
Elongation at break [%] <i>PE-Norm 014</i>	263
Lap shear strength (glass/PC) [MPa] <i>PE-Norm 013</i>	4
Lap shear strength (Al/PC) [MPa] <i>PE-Norm 013</i>	3
Lap shear strength (Al/glass) [MPa] <i>PE-Norm 013</i>	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. 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 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

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