

Technical Datasheet

Vitralit® 4731



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 is a UV / Visible light curable material that is very flexible after cure. Vitralit® 4731 adheres to polyimide, PVC, ABS, and other plastics as well as dissimilar materials including glass, stainless steel, and epoxy boards. When properly cured, Vitralit® 4731 is clear, tack-free, and highly resistant to moisture and yellowing. Vitralit® 4731 demonstrates high tolerance to thermal cycling and is an excellent adhesive for strain relief. Vitralit® 4731 cures rapidly with broad spectrum UV lamps (320-450nm), as well as monochromatic LED systems. Recommended LED wavelengths for optimal curing are 365nm and 405nm. Vitralit® 4731 has passed the testing required for USP Class VI biocompatibility and ISO 10993-5 approval. Vitralit® 4731 is compatible with typical sterilization methods including gamma, 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 Discharge Lamp, 320-450nm) | | |
|--|----------------------|------------|
| Intensity [mW/cm ²] | Layer thickness [mm] | Time [sec] |
| 60 | 0,05 | 2 |

| VIS-curing (Hoenle LED Spot 100, 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.

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Resin
Appearance

acrylate
transparent, slightly yellow

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Uncured material

| | |
|--|-------------|
| Viscosity [mPas] [cP] (Brookfield LVT, 25°C, Sp 3, 30rpm) <i>PE-Norm 001</i> | 900 - 1 500 |
| Density [g/cm³] <i>PE-Norm 004</i> | 1,06 |
| Flash point [°C] <i>PE-Norm 050</i> | >93 |
| Refractive index [nD20] <i>PE-Norm 018</i> | 1,471 |

Cured material

| | |
|---|-----------|
| Hardness shore D <i>PE-Norm 006</i> | 20 - 40 |
| Temperature resistance [°C] | -40 - 120 |
| Shrinkage [%] <i>PE-Norm 031</i> | <3 |
| Water absorption [mass %] <i>PE-Norm 016</i> | <4 |

| | |
|---|---------|
| Glass transition temperature DSC [°C] <i>PE-Norm 009</i> | 20 - 30 |
| Coefficient of thermal expansion [ppm/K] below Tg <i>PE-Norm 017</i> | 13 |
| Coefficient of thermal expansion [ppm/K] above Tg <i>PE-Norm 017</i> | 540 |

| | |
|---|-----|
| Young's modulus E [MPa] <i>PE-Norm 022</i> | 33 |
| Tensile strength [MPa] <i>PE-Norm 014</i> | 2 |
| Elongation at break [%] <i>PE-Norm 014</i> | 329 |

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 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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