

Technical Datasheet

Vitralit® 1605



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® 1605 is a UV-curable epoxy resin. As a special feature Vitralit® 1605 has a thermal initiator, which enables subsequent curing of shadow areas. Vitralit® 1605 is characterized by a very low shrinkage, a low coefficient of thermal expansion, a very high glass transition temperature and excellent chemical resistance. Vitralit® 1605 has met the requirements for ISO 10993-5 and is suitable for use in the assembly of disposable medical devices. It is compatible with different kinds of sterilization processes.

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). 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 Discharge lamp, 320-450nm) | | |
|--|----------------------|------------|
| Intensity [mW/cm ²] | Layer thickness [mm] | Time [sec] |
| 60 | 0,5 | 60 |

| Secondary heat cure | [min] |
|---------------------|-------|
| Time at 105°C | 30 |

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 24 hours.

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| | |
|------------|-------------|
| Resin | epoxy |
| Appearance | transparent |

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Uncured material

| | |
|---|-----------|
| Viscosity [mPas] (Brookfield LV, 25°C, Sp 2 ,30 rpm) <i>PE-Norm 001</i> | 200 - 400 |
| Density [g/cm ³] <i>PE-Norm 004</i> | 1,1 |
| Flash point [°C] <i>PE-Norm 050</i> | > 100 |
| Refractive index [nD20] <i>PE-Norm 018</i> | 1,5218 |

Cured material

| | |
|---|-----------|
| Hardness shore D <i>PE-Norm 006</i> | 80 - 90 |
| Temperature resistance [°C] | -40 - 180 |
| Shrinkage [%] <i>PE-Norm 031</i> | <2 |
| Water absorption [mass %] <i>PE-Norm 016</i> | <1 |

| | |
|---|-----|
| Glass transition temperature DSC [°C] <i>PE-Norm 009</i> | 150 |
| Coefficient of thermal expansion [ppm/K] below Tg <i>PE-Norm 017</i> | 75 |
| Coefficient of thermal expansion [ppm/K] above Tg <i>PE-Norm 017</i> | 175 |

| | |
|--|-----|
| Thermal conductivity [W/m*K] <i>PE-Norm 062</i> | 0,2 |
| Dielectric constant [10kHz] | 3 |
| Dielectric strength [kV/mm] | 17 |

| | |
|--|-------|
| Young's modulus E [MPa] <i>PE-Norm 056</i> | 3 132 |
| Tensile strength [MPa] <i>PE-Norm 014</i> | 17 |
| Elongation at break [%] <i>PE-Norm 014</i> | 1 |
| Lap shear strength (glass/steel) [MPa] <i>PE-Norm 013</i> | 9 |
| Lap shear strength (glass/glass) [MPa] <i>PE-Norm 013</i> | 3 |

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Transport/Storage/Shelf Life

| Trading unit | Transport | Storage | Shelf-life* |
|----------------|------------|------------|---|
| Cartridge | 0°C - 10°C | 0°C - 10°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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