Technical Datasheet
Vitralit® 7041 T

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® 7041 T is a shear thinning UV and/or light cure adhesive. Vitralit® 7041 T appears transparent in thin layers. In thick layers it is translucent.

Vitralit® 7041 T is a high viscosity instant adhesive with gap filling ability. The shear thinning behavior provides clean, fast and automated dispensing processes. The product is specially designed for plastic bonding applications in medical devices. It provides a very good bonding to a wide range of materials like PC, ABS, PET, glass and metals. Vitralit® 7041 T is suitable for transparent plastic materials with low UV transmission such as PC.

Vitralit® 7041 T has met the requirements for USP Class VI, ISO 10993-4 and ISO 10993-5. Therefore it is suitable for use in the assembly of disposable medical devices. It is compatible with sterilization by autoclaving, gamma irradiation and EtO. Vitralit® 7041 T is also available with fluorescent capabilities improving the process quality.

Suitability on various substrates

PMMA	✓	PVC	✓	glass	✓	PA	*
PC	✓	Al	*	steel	*		

✓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.

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UV-curing		
Intensity [mW/cm²]	Layer thickness [mm]	Time [sec]
35	2	5

VIS-curing		
Intensity [mW/cm²]	Layer thickness [mm]	Time [sec]
1000	2	1

Technical Data

Resin — acrylate
Appearance — transparent, slightly yellow

Uncured material

Viscosity [mPas] (Brookfield LVT, 25°C, sp 4/30 rpm) *PE-Norm 001*	2 000 - 4 000
Viscosity [mPas] (Brookfield LVT, 25°C, sp 4/6 rpm) *PE-Norm 001*	10 000 - 20 000
Density [g/cm³] *PE-Norm 004*	1,05
Flash point [°C] *PE-Norm 050*	>100
Refractive index [nD20] *PE-Norm 018*	1,47

Cured material

Hardness shore D *PE-Norm 006*	65 - 80
Temperature resistance [°C] *PE-Norm 065*	-40 - 120
Shrinkage [%] *PE-Norm 031*	<3
Water absorption [mass %] *PE-Norm 016*	<6

Glass transition temperature DSC [°C] *PE-Norm 009*	37 - 47
Coefficient of linear expansion [ppm/K] below Tg *PE-Norm 017*	109,0
Coefficient of linear expansion [ppm/K] above Tg *PE-Norm 017*	441,0

Young's modulus [MPa] *PE-Norm 056*	580,0
Tensile strength [MPa] *PE-Norm 014*	14,5
Elongation at break [%] PE-Norm 014	157,6

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.

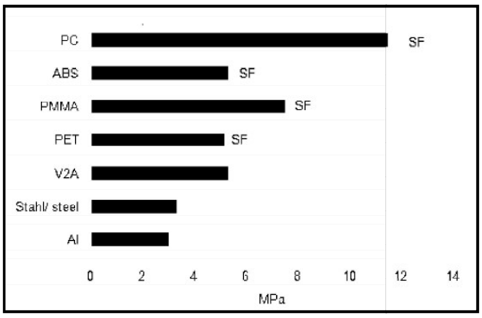
Appendix

Environmental Resistance

The table below shows the tensile shear strength of PC/PC bonding after chemical and environmental exposure expressed as % of the initial value. The specimens were cured using hand lamp with intensity of 30 mW/cm².

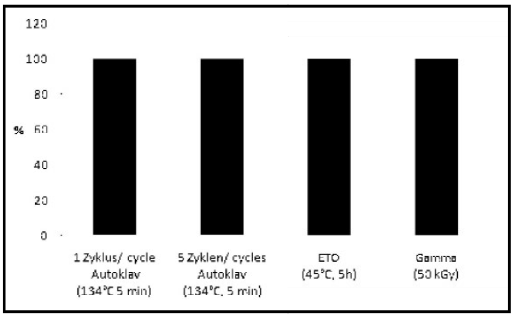
% of initial strength					
Method	24 h	170 h	340 h	500 h	680 h
Isopropanol 21 °C	96	-	-	-	-
40 °C 95 % RH	-	75	83	79	95
Water, 21 °C	-	78	-	-	-

Lap shear strength [MPa]



SF = Substrate Failure

Sterilization



Sterilization

The chart above shows the tensile shear strength of PC/PC bonding after sterilization expressed as % of the initial value. The specimens were cured using hand lamp with intensity of 30 mW/cm².

Vitralit® 7041 T 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 procduct.