



UV-curing 3D printing resin for stereolithography (SLA/DLP)

Increase of stiffness and heat distortion temperature

Basis Polyester urethane methacrylate and aliphatic difunctional urethane acrylate

RRS 2209		Control	Aktifit Q		
		without filler	10 %	15 %	20 %
Bomar XR-741MS	(1)	80	80	80	80
Miramer PU 2560	(2)	20	20	20	20
Speedcure TPO-L	(3)	0.6	0.6	0.6	0.6
Isobornyl methacrylate		0.6	0.6	0.6	0.6
Benzophenone-6		0.1	0.1	0.1	0.1
AKTIFIT Q	(4)	---	10	15	20
Total parts by weight		101.3	111.3	116.3	121.3

Mixing

- with dual asymmetric centrifuge („Speedmixer“)
- charge both resins and heat up to 90 °C
- add premix of Speedcure TPO-L, Isobornyl methacrylate und Benzophenone-6
- add filler
- disperse 20 min
- degas under vacuum

3D printing

- Blueprinter BP7 (TU Wien), bottom-up-principle, laser wavelength 375 nm
- layer thickness 100 µm
- print temperature 80 °C
- remove component, clean with isopropanol @ 90 °C and drying
- Postprocessing: continuous irradiation with UV light for 16.7 min under a nitrogen atmosphere

Suppliers

- (1) Dymax
- (2) Miwon
- (3) Lambson (Sartomer)
- (4) HOFFMANN MINERAL



	Vergleich ohne Füllstoff	Aktifit Q		
		10 %	15 %	20 %

Properties			Vergleich ohne Füllstoff	10 %	15 %	20 %
Viscosity	@ 60 °C	Pa·s	16.9	17.2	16.7	22.1
	@ 80 °C	Pa·s	2.49	2.74	2.86	3.49
	@ 100 °C	Pa·s	0.63	0.73	0.82	0.91
Storage modulus @ 23 °C (DMA)		MPa	2013	2188	2399	2498
Glass transition temperature (DMA, max. tan δ)		°C	110	118	118	118
Tensile modulus	DIN EN ISO 527	MPa	1013	1017	1085	1190
Tensile strength	DIN EN ISO 527	MPa	46.4	44.2	46.9	49.1
Tensile strain at break	DIN EN ISO 527	%	27	26	23	19
Impact strength Charpy	DIN EN ISO 179-1; 1eU	kJ/m ²	23	23	19	22

More information on this topic:

[Neuburg Siliceous Earth in 3D Printing SLA/DLP Process \(UV-curing\)](#)

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