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Kisling

TECHNICAL DATASHEET – provisional

7600 + 7921
(Resin + Hardener)

Description
7600 + 7921 is an epoxy encapsulant with a high glass transition temperature of ~ 95 °C. The product is characterised by a low viscosity at processing temperature despite a thermal conductivity of 0.8 W/(m•K). The system is typically used in electronic applications, such as transformers, capacitors, relays, etc.
Passes the UL94 V-0 test for layer thicknesses ≥ 4 mm.

Advantages
- Thermal conductivity of approximately ~ 0.8 W/(m•K)
- Low viscosity reduces air gaps / inclusions
- Self-levelling
- Solvent-free, good chemical resistance
- High Tg of approx. 95°C
- Cold curing possible

Physical properties (liquid product)

Chemical base			Epoxy resin
Curing System			2-component-system
Mixing ratio by weight			100 : 8.9 (resin : hardener)
Mixing ratio by volume			100 : 16.5 (resin : hardener)
Shelf life			12 month at 2 – 30 °C
Colour	Resin	7600	Black
	Hardener	7921	Transparent
	Mixture		Black
Density	Resin	7600	~ 1.73 g/ml
	Hardener	7921	~ 0.93 g/ml
	Mixture		~ 1.62 g/ml
Viscosity at 25°C (DIN EN ISO 3219)	Resin (Plate/Plate, 10 s^{-1})	7600	15’000 – 18’000 mPa•s
	Hardener (Cone 75, 3000 s^{-1})	7921	8 – 12 mPa•s

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Viscosity mixture	at 25 °C	2'000 – 4'000 mPa•s
(DIN EN ISO 3219;	at 40 °C	800 – 2'000 mPa•s
Plate/Plate, 10 s^{-1})	at 50 °C	600 – 800 mPa•s
	at 60 °C	400 – 600 mPa•s

Curing properties

Pot life (doubling of viscosity)

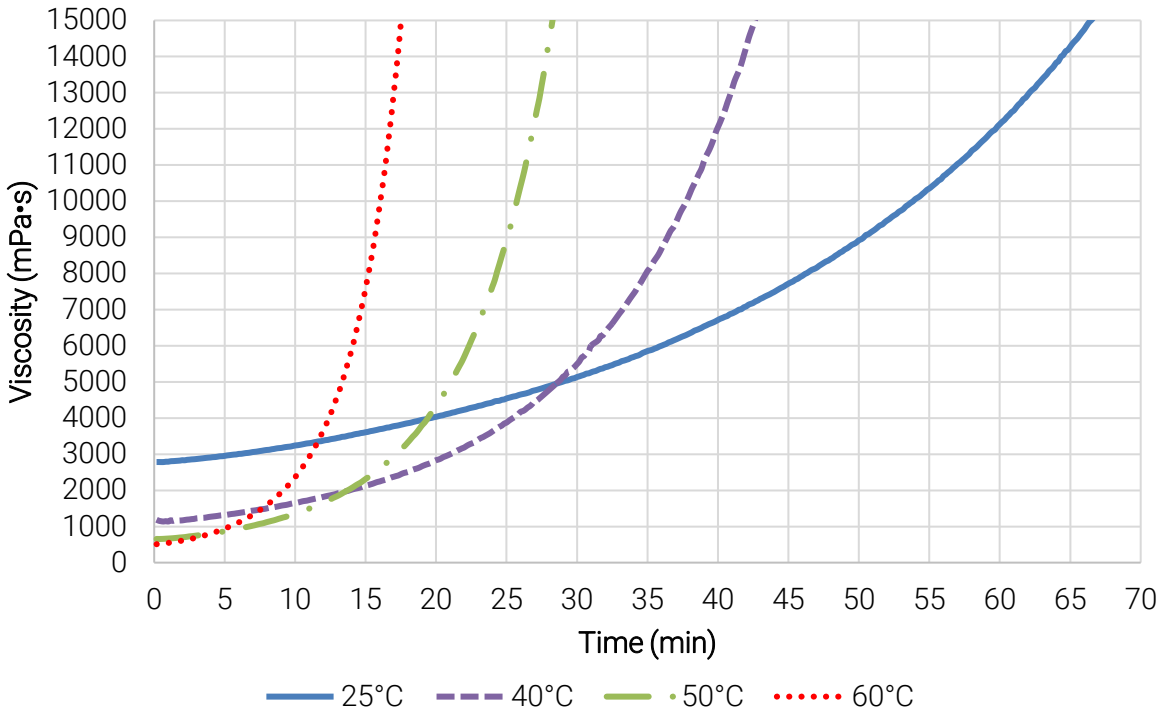
(DIN EN ISO 3219;	at 25 °C	~ 33 minutes
Plate/Plate, 10 s^{-1})	at 40 °C	~ 16 minutes
	at 50 °C	~ 10 minutes
	at 60 °C	~ 6 minutes

Pot life (time to reach viscosity of 15'000 mPa•s)

(DIN EN ISO 3219;	at 25 °C	~ 66 minutes
Plate/Plate, 10 s^{-1})	at 40 °C	~ 43 minutes
	at 50 °C	~ 28 minutes
	at 60 °C	~ 18 minutes

Gel time (30 gram) at 23 °C	~ 187 minutes
Gel time (30 gram) at 40 °C	~ 75 minutes
Volume shrinkage DIN EN ISO 2811-2	~ 1.8 %

Viscosity during curing at different temperatures



Physical properties (cured product)

Thermal range		-40 °C up to +155 °C
Density acc. to DIN EN ISO 2811-2:2011-06		~ 1.64 g/cm^3

Curing cycle to achieve the following values (>95% max. Tg):
Curing for 2h at 40°C + post-curing for 6h at 80°C

Glass transition point (DIN 65467; DSC method; cured at 16h, 40°C + 24h, 120°C)		~ 95 °C
Coefficient of expansion TMA acc. ISO 11539-2:2014	< Tg > Tg	~ 49 ppm/K ~ 113 ppm/K
Thermal conductivity (Transient hot-bridge method)		~ 0.8 W/mK
Shore D hardness DIN EN ISO 868:2003-10		~ 90
Tensile strength DIN EN ISO 527-2		~ 33 N/mm^2
Elongation at break DIN EN ISO 527-2		~ 1.4 %
E-Modulus (bending) DIN EN ISO 178		~ 6'000 N/mm^2
Comparative tracking index CTI		600
Dielectric strength		~ 39 kV/mm
Dielectric constant (ε) at 50 Hz, 23 °C		~ 4.5
Dissipation factor (tan δ) at 50 Hz, 23 °C		~ 0.046

Material preparation

Due to a sedimentation tendency of the filled resin (component A), careful stirring or homogenisation of the material is always necessary before removing it from the original container. This step is especially important if only one part of the material is taken out of the container. To facilitate stirring and removal, it is recommended to heat the material in the original container to approx. 25°-45°C.
In the dosing system tank, the material should be stirred from time to time to avoid sedimentation and thus errors in the mixing ratio during dosing.
The hardener (component B) is unfilled and does not need to be stirred or homogenised before filling the tank.

Recommendation for processing parameters and curing cycle

Before dosing and mixing the two components, the resin (component A) should be degassed and homogenised in the tank at approx. 40°C and a vacuum of 1-5mbar. The hardener (component B) should be degassed and homogenised in the tank at 25°-30°C and also at a vacuum of 1-5mbar. The degassing process as well as the homogenisation can be improved considerably by using an agitator.

The following table represents a recommendation of the processing parameters in the process:

Process	Mixing temperature of the potting compound	Parts temperature	Curing cycle
Atmospheric or vacuum potting	25° – 60°C	25° – 60°C	2h @ 40°C + 6h @ 80°C

It is recommended to determine the degree of curing of the potting compound with relevant test methods (e.g. DSC measurement), as different curing cycles as well as the component volume can have an influence on the final properties.

Precautions

For your own safety, please refer to the information of the concerned MSDS.

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