BONDING +
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ENCAPSULATION

Kisling

TECHNICAL DATASHEET – provisional

7600 + 7920
(Resin + Hardener)

Description
7600 + 7920 is an epoxy encapsulant with long open time. 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 e-motors and 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)
- Long open time / pot life
- Low viscosity reduces air gaps / inclusions
- Self-levelling
- Solvent-free, good chemical resistance
- Cold curing possible

Physical properties (liquid product)

Chemical base			Epoxy resin
Curing System			2-component-system
Mixing ratio by weight			100 : 11.8 (resin : hardener)
Mixing ratio by volume			100 : 21.5 (resin : hardener)
Shelf life			12 month at 2 – 30 °C
Colour	Resin	7600	Black
	Hardener	7920	Transparent
	Mixture		Black
Density	Resin	7600	~ 1.73 g/ml
	Hardener	7920	~ 0.95 g/ml
	Mixture		~ 1.62 g/ml
Viscosity Resin (DIN EN ISO 3219; Plate/Plate, 10 s^{-1})	at 25°C	7600	15'000 – 18'000 mPa•s
	at 50°C	7600	~ 2'500 mPa•s
Viscosity Hardener (Cone 75, 3000 s^{-1})	at 25°C	7920	8 – 12 mPa•s

Viscosity mixture	at 25 °C	~ 2'000 mPa•s
(DIN EN ISO 3219;	at 40 °C	~ 650 mPa•s
Plate/Plate, shear rate 10 s^{-1})	at 50 °C	~ 450 mPa•s
	at 60 °C	~ 300 mPa•s

Curing properties

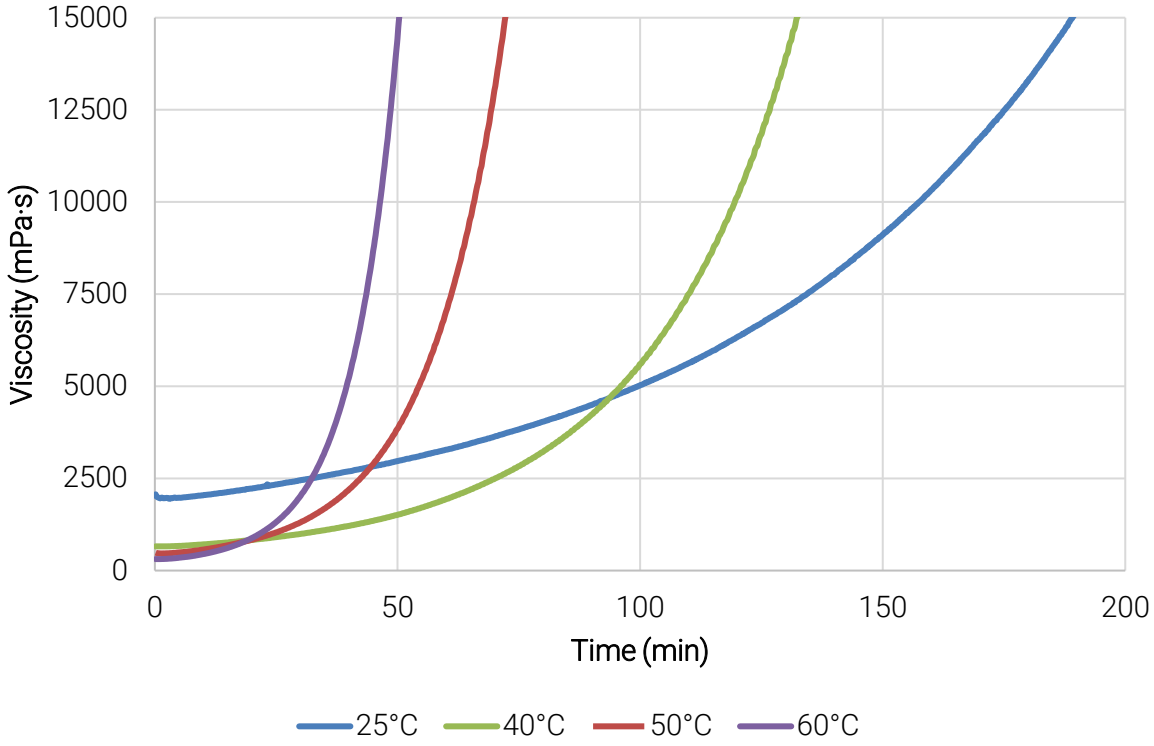
Pot life (doubling of viscosity)

(DIN EN ISO 3219;	at 25 °C	~ 67 minutes
Plate/Plate, shear rate 10 s^{-1})	at 40 °C	~ 44 minutes
	at 50 °C	~ 23 minutes
	at 60 °C	~ 15 minutes

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

(DIN EN ISO 3219;	at 25 °C	~ 189 minutes
Plate/Plate, shear rate 10 s^{-1})	at 40 °C	~ 133 minutes
	at 50 °C	~ 72 minutes
	at 60 °C	~ 51 minutes

Viscosity during curing at different temperatures (DIN EN ISO 3219; Plate/Plate, shear rate 10 s^{-1})



Geltime (30g)	at 25 °C	~ 555 minutes
DIN EN ISO 2535	at 40 °C	~ 240 minutes

Exotherm T_{max} (500ml)	at 25 °C	~ 55 °C
Exotherm T_{max} (500ml)	at 50 °C	~ 140 °C

Volume shrinkage acc. to DIN EN ISO 3521 ~ 3.4 %

Physical properties (cured product)

Thermal range -40 °C up to +155 °C

Glass transition point ~ 75 °C
(DIN 65467; DSC method; cured at 40°C for 16h + 24h 120°C)

Curing cycle to achieve the following values (>95% max. Tg):
Curing for 3h at 80°C + post-curing for 3h at 120°C

Coefficient of expansion TMA	< Tg	~ 42 ppm/K
acc. to ISO 11539-2:2014	> Tg	~ 113 ppm/K

Thermal conductivity (Transient hot-bridge method) ~ 0.8 W/(m•K)

Shore D hardness DIN EN ISO 868:2003-10 ~ 89

Tensile strength DIN EN ISO 527-2 ~ 37 N/mm^2
Elongation at break DIN EN ISO 527-2 ~ 1.5 %
E-Modulus (bending) DIN EN ISO 178 ~ 7'300 N/mm^2

Dielectric constant (ε) at 50 Hz, 23 °C ~ 3.8
Dissipation factor (tan δ) at 50 Hz, 23 °C ~ 0.015
Dielectric strength ~ 34 kV/mm
Comparative tracking index CTI 600

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	3h at 80°C and 3h at 120°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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