ELANTAS

Technical Data Sheet

Elan-tron®

MC 41 + WH 441 100:100

Elevated temperature cure, filled, flame retardant epoxy resin system for encapsulation

January 2018

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Application:
Encapsulation of semiconductors and components operating up to 150°C-160°C with peak temperature upto 180°C.

Processing:
Manual casting. Under vacuum casting with automatic mixing/dispensing devices suitable to handle abrasive fillers. Hot curing.

Description:
Two component filled epoxy system on both components. Self-extinguishing. The system is free from halogens, phosphorus and antimony. Very good electrical characteristics. Good thermal resistance.

Instructions:
In pre-filled products it is good practice to check and carefully rehomogenize the material if some settlement is present. Add the appropriate quantity of hardener to the resin, mix carefully. Avoid air trapping. For some applications it can be useful to pre-heat the components and/or carry out a deration step under vacuum of the mixture before casting.

Curing / Post-curing:
For hot curing systems it is advisable to follow the indications reported in the present data sheet verifying the correctness for the components under development.
During the curing process it is advisable to avoid thermal variations higher than 10°C/hour.

Storage:
Epoxy resins can be stored for a year and anhydride based hardeners for six months in the original sealed containers stored in a cool and dry place. After that period or if the material has been stored in anomalous conditions, pre-filled resins can be settled down and their use is possible, only if they are accurately re-homogenized with the help, if necessary, of a mechanical mixer. The hardeners are moisture sensitive therefore it is good practice to close the vessel immediately after each use.

Handling precautions:
Refer to the data sheet and comply with regulations relating to industrial health and waste disposal.

Properties of Elan-tron MC 41 as supplied:

Colour & Appearance [*]	DBI 1001 [**]		Black, filled liquid
Viscosity at 25°C by (Brookfield) [*]	DBI 3005[**]	mPa.s	50,000 – 70,000
Density at 25°C	DBI 3047A[**]	g/ml	1.69 – 1.73
Storage stability [*]	When stored in original sealed container at R.T.	months	6
[*] These properties form our sales specification [**] DBI are our internal test methods and are available on request			

Properties of Elan-tron WH 441 as supplied:

Colour & Appearance [*]	DBI 1001 [**]		Off white, filled liquid
Viscosity at 25°C by (Brookfield) [*]	DBI 3005[**]	mPa.s	14,000 – 20,000
Density at 25°C	DBI 3047A[**]	g/ml	1.77 – 1.81
Storage stability [*]	When stored in original sealed container at R.T.	months	6

Mixing Proportion & Pot Life:

			Elan-tron MC 41 : WH 441
Mixing Ratio (Resin : Hardener)		Parts by weight	100 : 100
Initial viscosity of mixture at 25°C at 60°C	DBI 3005 [**]	mPa.s	 43,000 - 63,000 5,500 - 8,500
Pot life at 25°C at 80°C	DBI 1019 [**]	h min	 More than 7 70 – 80

Recommended Curing Cycle:

4 hours at 80°C + 4 hours at 140°C.
The curing time is after the component or mould attains specified temperature. Time required to heat up molds/components etc. should be added in the above suggested curing time.

Typical Properties of cured film:

Specimen Curing - 4 h at 80°C + 4 h at 140°C

			Elan-tron MC 41 : WH 441
Density at 25 °C	-	g/ml	1.73 – 1.77
Flexural strength	ISO 178	MPa	50 - 60
Flexural Elastic Modulus	ASTM D 790	MN / m^2	7500 – 8000
Tensile strength	ISO 527	MPa	27 - 33
Elongation at break	ISO 527	%	0.5 - 1.0
Strain at break	ASTM D 790	%	0.8 - 1.3
Hardness	ISO 868	Shore D	89 - 93
Glass transition (Tg)	ASTM E 1356	°C	160 - 165
Flammability	UL 94 V0	mm	6.4
Thermal conductivity	-	W/m.K	0.83 - 0.93
Water absorption (24 h at RT)	ISO 62	%	0.01 – 0.04
Water absorption (2 h at 100°C)	ISO 62	%	0.15 – 0.20
Linear thermal expansion (Tg -10°C)	ASTM 831	20 – 25	*10^ - 6 /°C*
Linear thermal expansion (Tg +10°C)	ASTM 831	85 – 105	*10^ - 6 /°C*

Dielectric Properties:

Specimen Curing - 4 h at 80°C + 4 h at 140°C

Dielectric strength IEC 60243 with 2 mm specimen	at RT	kV/mm	20 - 22
Volume resistivity at 500 V DC as per IEC 60455-2	at RT	ohm.cm	3 – 5 x 10^{15}
Dielectric constant at 30 V/1 kHz as per IEC 60455-2	at RT at 140°C	-	2.8 - 3.1 3.2 - 3.5
Dielectric loss factor 30 V/1 kHz as per IEC 60455-2	at RT at 140°C	-	3 - 5 x 10^-3 16 - 21 x 10^-3

Packaging:

Elan-tron MC 41 : 25 kg packing
Elan-tron WH 441 : 25 kg packing

Safe Handling:

Elan-tron MC 41 has hardly any effect on skin & mucous membrane. Elan-tron WH 441 is caustic and will affect skin. For detailed information on safe handling, please refer material safety data sheets of Elan-tron MC 41 & Elan-tron WH 441.

Disclaimer

This information is intended only for general guidance in the application of our product. It has been obtained by careful investigation and represents the present state of our knowledge and experience. Because of the large number of possible methods of application and processing we are not able to assume responsibility in any one particular case for either the technical results or the patent rights situation applicable to the country under consideration

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