ELANTAS
Electrical Insulation

PRODUCT INFORMATION

Elan-tron®

MC 115 HT/WH 115 HT

(ET 115 HT/DT 115 HT)

100:100

Application:

Medium voltage indoor transformers, switch-disconnectors, complex and large parts with metallic inserts. Impregnation of electrical motors and transformers.

Processing:

Manual casting. Automatic casting with mixing/dispensing devices. Hot curing. Suitable for fast curing APG (Automated Pressure Gelation) processing.

Description:

Two component epoxy system based on a bisphenol A/F modified resin and a pre-accelerated anhydride filled on both components with non-abrasive inert materials. Good processing and impregnation for both conventional casting and APG technique. Very good electrical and mechanical properties. High thermal shock resistance. Excellent thermo-mechanical and electrical properties according to IEC 60216. The system is RoHS conform (European directive 2002/95/EC).

Instructions:

In pre-filled products it is good practice to check and carefully rehomogenize the material if some settling is present. For the preparation of the casting mix, the two prefilled components must be admitted in the mixer and mixed under vacuum (suggested 0,5 mbar) for about 30 minutes at temperature of maximum 45°C, before casting.

Curing / Post-curing:

For hot curing systems it is advisable to follow the indications reported in the present data sheet verifiyng 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 and their hardeners can be stored for one year in the original sealed containers stored in a cool, dry place. The hardeners are moisture sensitive therefore it is good practice to close the vessel immediately after each use. Long storage may cause filler settling mix the components before use.

Handling precautions:

Refer to the safety data sheet and comply with regulations relating to industrial health and waste disposal.

SYSTEM SPECIFICATIONS

Property	Conditions	Method	Resin MC 115 HT	Hardener WH 115 HT	UM
Viscosity at:	25°C	IO-10-50 (EN13702-2)	120.000÷180.000	25.000÷50.000	mPas
Density at:	25°C	IO-10-51 (ASTM D 1475)	1,76÷1,80	1,80÷1,84	g/ml
Gelation time	100°C 100 ml	IO-10-52b (UNI 8701)	-	65÷80	min

TYPICAL SYSTEM CHARACTERISTICS

Property	Conditions	Method	Value	UM
Mixing ratio by weight		for 100 g resin	100:100	g
Mixing ratio by volume		for 100 ml resin	100:100	ml
Resin Colour			Brown	
Hardener Colour			Neutral	
Viscosity resin	40°C 60°C 80°C	IO-10-50 (EN13702-2) IO-10-50 (EN13702-2) IO-10-50 (EN13702-2)	22.000÷33.000 5.000÷7.500 2.500÷3.500	mPas mPas mPas
Viscosity hardener	40°C 60°C	IO-10-50 (EN13702-2) IO-10-50 (EN13702-2)	18.000÷22.000 4.500÷6.500	mPas mPas
Initial mixture viscosity at:	25°C 40°C 50°C 60°C 80°C	IO-10-50 (EN13702-2) IO-10-50 (EN13702-2) IO-10-50 (EN13702-2) IO-10-50 (EN13702-2) IO-10-50 (EN13702-2)	100.000÷130.000 20.000÷30.000 8.000÷11.000 4.000÷6.000 1.500÷2.000	mPas mPas mPas mPas mPas
Pot life (doubled initial viscosity)	80°C	IO-10-50 (EN13702-2) (*)	80÷90	min
Suggested curing cycles		(**)	3-5 h 80°C + 10-12 h 140°C (traditional casting)10-30 min 140°C-160°C + 4 h 140°C (APG)	

TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 4 h 80°C + 12 h 140°C

Property	Conditions	Method	Value	UM
Surface			Bright	
Density	25°C	IO-10-54 (ASTM D 792)	1,80÷1,84	g/ml
Hardness	25°C	IO-10-58 (ASTM D 2240)	91÷95	Shore D/15
Glass transition (Tg)		IO-10-69 (ASTM D 3418)	105÷110	°C
Water absorption (24h RT)		IO-10-70 (ASTM D 570)	0,03÷0,05	%
Water absorption (2h 100°C)		IO-10-70 (ASTM D 570)	0,20÷0,25	%
Linear thermal expansion (Tg -10°C)		IO-10-71 (ASTM E 831)	36÷44	10^-6/°C
Linear thermal expansion (Tg +10°C)		IO-10-71 (ASTM E 831)	130÷150	10^-6/°C
Flammability		IO-10-68 (UL 94 HB)	1,5	mm
Max recommended operating temperature		IEC 60085 (***)	200	°C
Thermal conductivity		IO-10-87 (ASTM C518)	0,55÷0,65	W/(m°K)
Dielectric constant at: 25°C 40°C 60°C 80°C 100°C	 25°C 40°C 60°C 80°C 100°C	 IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150)	 3,5÷3,9 3,6÷4,0 3,7÷4,0 3,8÷4,2 4,2÷4,6	
Loss factor at: 25°C 40°C 60°C 80°C 100°C	 25°C 40°C 60°C 80°C 100°C	 IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150) IO-10-59 (ASTM D 150)	 6÷7 8÷10 13÷17 22÷28 40÷50	 x 10^-3 x 10^-3 x 10^-3 x 10^-3 x 10^-3
Volume resistivity at: 25°C 40°C 60°C 80°C 100°C	 25°C 40°C 60°C 80°C 100°C	 IO-10-60 (ASTM D 257) IO-10-60 (ASTM D 257) IO-10-60 (ASTM D 257) IO-10-60 (ASTM D 257) IO-10-60 (ASTM D 257)	 6 x 10^15÷9 x 10^15 6 x 10^15÷8 x 10^15 4 x 10^15÷5 x 10^15 1 x 10^15÷2 x 10^15 1 x 10^14÷2 x 10^14	 Ohm x cm Ohm x cm Ohm x cm Ohm x cm Ohm x cm
Dielectric strength	25°C	IO-10-61 (ASTM D 149)	18÷21	kV/mm
Flexural strength		IO-10-66 (ASTM D 790)	110÷120	MN/m²
Strain at break		IO-10-66 (ASTM D 790)	1,0÷1,4	%
Flexural elastic modulus		IO-10-66 (ASTM D 790)	11.000÷12.000	MN/m²
Tensile strength		IO-10-63 (ASTM D 638)	65÷75	MN/m²
Elongation at break		IO-10-63 (ASTM D 638)	1,8÷2,2	%
Compressive strength		IO-10-72 (ASTM D 695)	140÷150	MN/m²

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Legenda:
IO-00-00 = Elantas Europe's test method. The correspondent international method is indicated whenever possible.
nd = not determined na = not applicable RT = TA = laboratory room temperature (23±2°C)
Conversion units: 1 mPas = 1 cPs 1MN/m2 = 10 kg/cm2 = 1 MPa

(*) for larger quantities pot life is shorter and exothermic peak increases
(**) the brackets mean optionality
(***) The maximum operating temperature is given on the basis of laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

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