HUNTSMAN

Enriching lives through innovation

Advanced Materials

Araldite® CW 1302	**100**	**pbw**
Aradur® HY 1300	**11**	**pbw**

Optimally filled casting system for processing and curing at room temperature or slightly higher temperatures.

Application

Transformers, filters, capacitors, etc.

Electrical devices working in potentially explosive environment

Processing Methods

Casting / vacuum casting.

Key Properties

Good thermal conductivity.

Low water absorption.

Excellent thermal endurance.

Flammability UL 94 V-0 (3.0 mm).

UL 1446 System Temp Class 180(H).

Product Data (Guideline Values)

Araldite® CW 1302

Modified, solvent free epoxy resin with inorganic filler.

Viscosity at 25°C	ISO 3219	Pa*s	20.0 – 27.0*
Specific Gravity at 25°C	ISO 2811	g/cm³	1.76
Appearance	Visual		Beige-grey, viscous liquid*

Araldite® CW 1302 Blue

Modified, solvent free epoxy resin with inorganic filler.

Viscosity at 25°C	ISO 2555	Pa*s	25 – 65*
Specific Gravity at 25°C	ISO 2811	g/cm³	1.76
Appearance	Visual		Blue, viscous liquid*

Aradur® HY 1300

Formulated, medium viscosity polyamine hardener.

Viscosity at 25°C	ISO 12058	mPa*s	150 – 190*
Specific Gravity at 20°C	ISO 2811	g/cm³	0.990 – 1.005*
Appearance	Visual		Clear, yellowish liquid*

*Specified range

Processing Data (Guideline Values)

Mix Ratio

		Parts by weight	Parts by volume
CW 1302	Resin	100	100
HY 1300	Hardener	11	19

Gel Time, Viscosity and Curing

Mix Viscosity at 40°C	CW 1302 /HY 1300	Rheomat	mPa*s	3500
Gel time at 25°C		Gelnorm	min	80
Gel time at 40°C		ISO 9396	min	50 – 75*
Gel time at 60°C		ISO 9396	min	25 – 35*
Pot life at 40°C (Time to reach 15000 mPa*s)		Rheoma t	min	37
Standard Cure Cycle		24 hours at RT + 6 hours at 60°C		
Minimum Curing Cycle		48 hours at 25°C		

*Specified range

Processing and Storage (Guideline Values)

Preparation

CW 1302 contains fillers, which tend to settle over time. It is therefore recommended to carefully homogenize the complete contents of the container before use.
In the storage vessels of the production equipment, the pre-filled products should be stirred up from time to time to avoid sedimentation and irregular metering.

Mixing

The casting mix is best prepared by heating the resin up to 40 – 50 °C before stirring in the hardener.
Brief degassing of the mix under 5 – 10 mbar vacuum improves the mixture homogeneity and enhances the dielectric properties of the castings.

Curing

To determine whether cross-linking has been carried to completion and the final properties are optimal, it is necessary to carry out relevant measurements on the actual object or to measure the glass transition temperature. Different gel and cure cycles in the customer's manufacturing process could lead to a different degree of cross-linking and thus a different glass transition temperature.

Storage Conditions

Store the components in a dry place according to the storage conditions stated on the label in tightly sealed original containers. Under these conditions, the shelf life will correspond to the expiry date stated on the label. After this date, the product may be processed only after reanalysis. Partly emptied containers should be tightly closed immediately after use.
For information on waste disposal and hazardous products of decomposition in the event of a fire, refer to the Material Safety Data Sheets (MSDS) for these particular products.

Mechanical and Physical Properties (Guideline Values)

Determined on standard test specimen at 23℃. Cured for 24h/RT + 6h/60℃.

Glass transition temperature	ISO 6721	℃		75
Modulus in Torsion G' at RT	ISO 6721	MPa		3400
Temperature Index	IEC 60216	℃		181
System Temp Class	UL 1446		File E206297	180 (H)
Tensile modulus	ISO 527	MPa		7700
Tensile strength	ISO 527	MPa		35
Elongation at break	ISO 527	%		0.7
Flexural Modulus	ISO 178	MPa		8500
Flexural Strength	ISO 178	MPa		65
Thermal linear coefficient	ISO 11359-2			
Alpha 1		ppm/K		42
Alpha 2				105
Thermal conductivity	ISO 8894-1	W/mK		0.88
Hardness	DIN 53505	Shore D		88
Flammability	UL 94		File E96722*	V-0 (3.0 mm) HB (1.5 mm)
Water absorption	ISO 62			
1 day at 23℃		% by wt.		0.04
30 min at 100℃				0.22

* Blue version is not listed in E96722

Electrical Properties (Guideline Values)

Determined on standard test specimen at 23℃. Cured for 24h/RT + 6h/60℃.

Dielectric strength (2 mm specimen)	IEC 60243-1	kV/mm		27
Dielectric Strength (3.68 mm, 4.0 kV, 140℃	EN 50028	sec	passed	> 300
Dielectric loss factor (tan δ, 50Hz, 25℃)	IEC 60250	%		5.3
Dielectric constant (εr, 50Hz, 25℃)	IEC 60250			4.9
Volume resistivity (ρ, 25℃)	IEC 60093	Ω cm		10^{14}
Tracking resistance CTI	IEC 60112	grade		> 600
Electrolytic corrosion	IEC 60426	grade		A-1.2

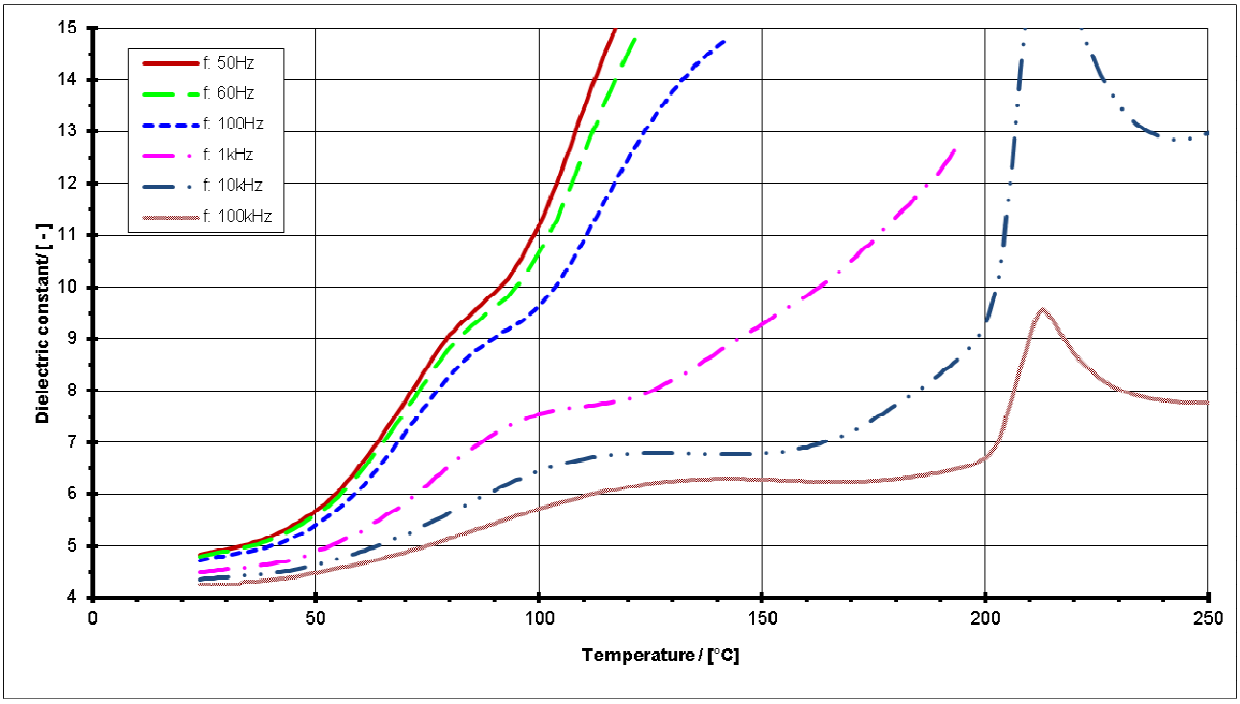

Fig. 5.1: Dielectric constant ε_R vs temperature (IEC 60250)

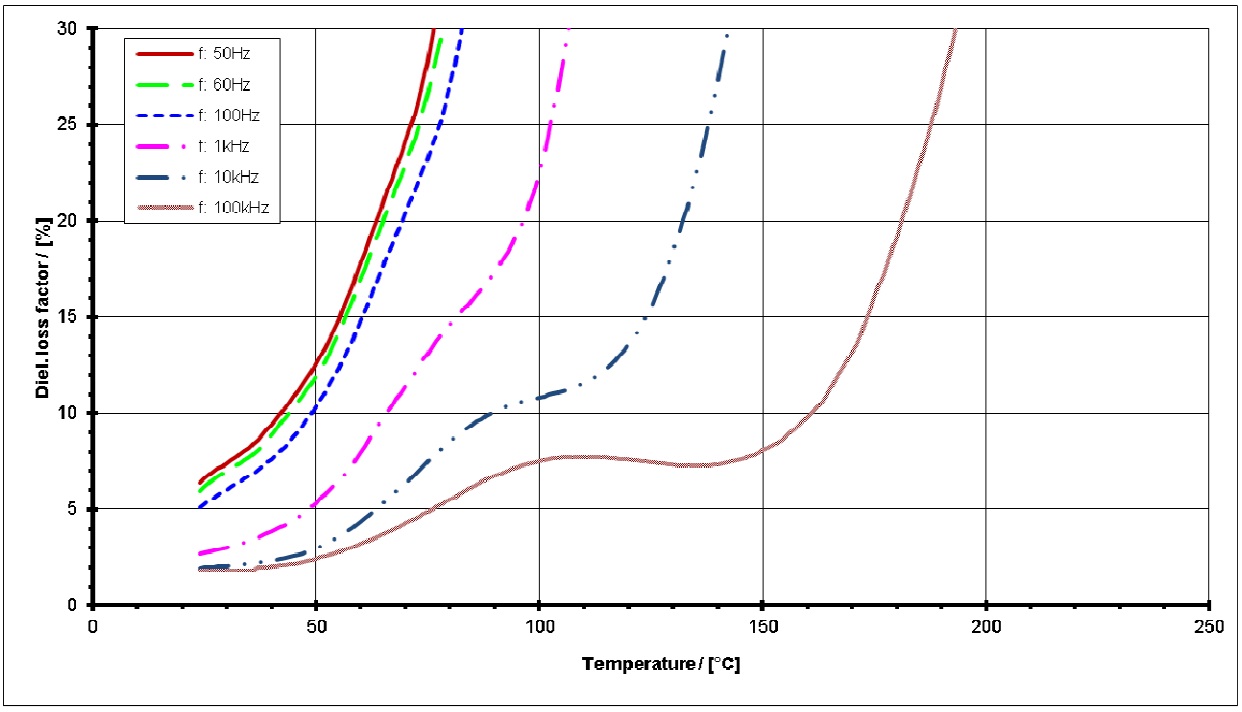

Fig. 5.2: Dielectric loss factor tan δ vs temperature (IEC 60250)

Thermal endurance profile
(IEC 60216)

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Date : 10.11.2004

Material :	**CW 1302 GB/HY 1300 GB (100/11)**
Investigated property :	Flexural strength (ISO 178)
Selected end point :	50 % of initial value (69.3 MPa)
T I g :	**181**
H I C g :	**5**
Statistical test variables :	CHI²= 46.44
	F= 81.98
- - - - - - - :	Lower 95% confidence curve T C : 180 °C
Comments:	

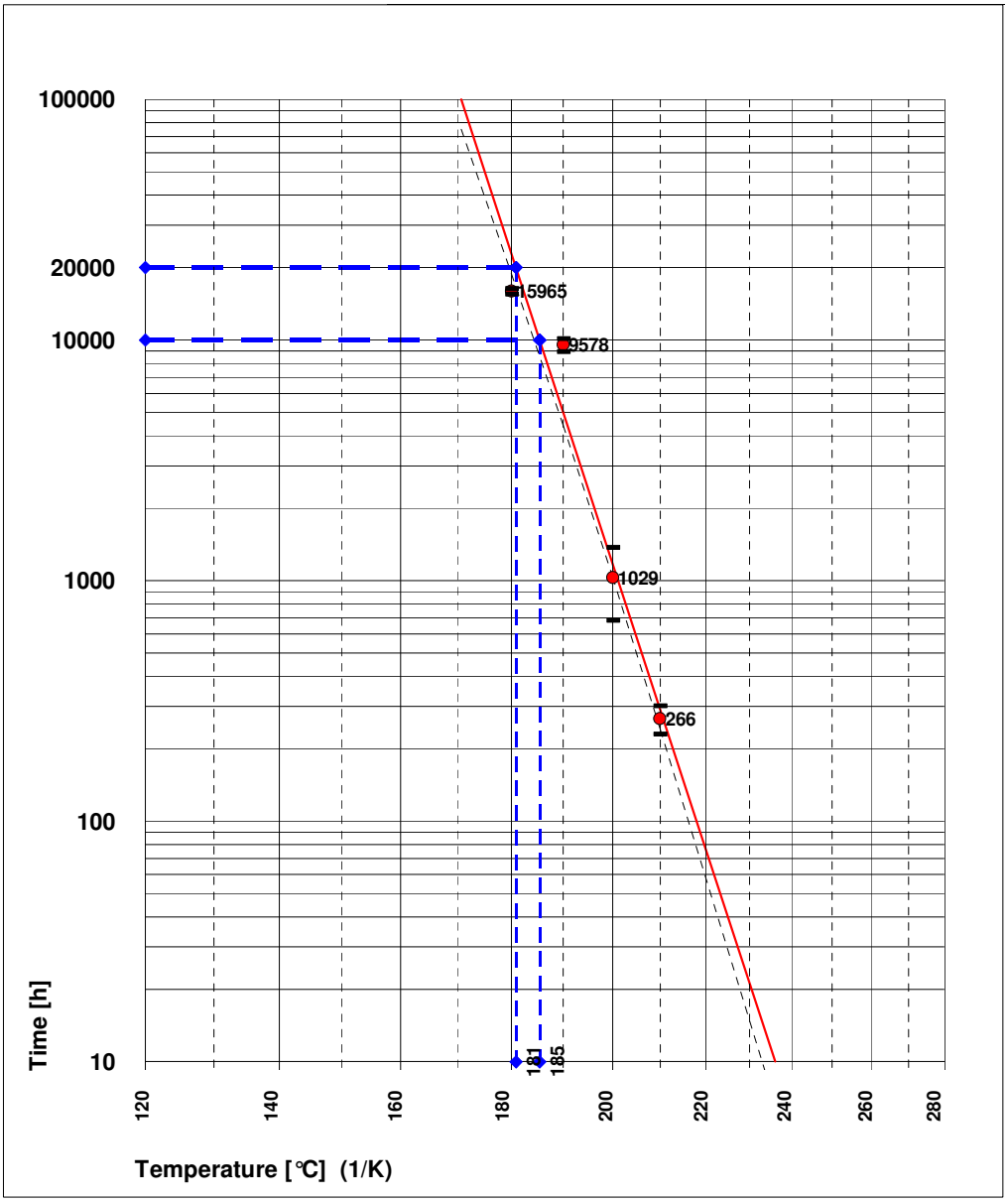

Fig. 6.1: Thermal endurance profile (IEC 60216)

Legal Notice

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