HUNTSMAN

Technical Datasheet

Araldite® Impregnating Resin System

Araldite®	**MY 740**	**Resin**	**100**	**pbw**
Aradur®	**HY 906**	**Hardener**	**95**	**pbw**
Accelerator	**DY 070**	**Accelerator**	**1.2**	**pbw**

Hot-curing, low-viscosity impregnating resin system

Application

Manufacture of electrical laminates (tubes, rods, etc.)
Impregnation of high voltage bushings, coils etc.

Processing methods

Filament winding
Pultrusion
Wet laminating
Trickle impregnation

Key Properties

Good mechanical and dielectric properties
Good aging resistance

Product Data (Guideline Values)

Araldite® MY 740

Unmodified, medium-viscosity, solvent-free epoxy resin

Viscosity	at 25°C	ISO 12058	mPa·s	10'000 - 14'500
Epoxy content		ISO 3001	equiv/kg	5.25 - 5.55
Density	at 25°C	ISO 1675	g/cm³	1.15 - 1.20
Flash point		ISO 1523	°C	> 200
Vapour pressure	at 25°C	Knudsen	Pa	< 0.01
	at 60°C		Pa	< 0.5

Aradur® HY 906

Liquid, dicarboxylic anhydride

Viscosity	at 25°C	ISO 12058	mPa·s	175 - 350
Density	at 25°C	ISO 1675	g/cm³	1.20 - 1.25
Flash point		ISO 1523	°C	> 135
Vapour pressure	at 50°C	Knudsen	Pa	< 20

Accelerator DY 070

Liquid, heterocyclic amine

Viscosity	at 25°C	ISO 2555	mPa·s	< 50
Density	at 25°C	ISO 1675	g/cm³	0.95 - 1.05
Flash point		ISO 1523	°C	92
Vapour pressure	at 20°C	Knudsen	Pa	15

Remarks and Storage Conditions

Provided that the products described above are stored in a dry place in their original, properly closed containers between 2 - 40°C. 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 on re-analysis. Partly emptied containers should be closed immediately after use.

Aradur HY 906 is sensitive to moisture, storage containers should be ventilated with dry air only.

For information on waste disposal and hazardous products of decomposition in the event of fire, refer to the Material Safety Data Sheets (MSDS) for these particular products.

Processing (Guideline Values)

Filament Winding

To get good fiber wetting and reproducible building parts a temperature of 35-45°C is recommended for the impregnation bath. The mandrel temperature shall be 60-120°C during winding. The gelling shall take place on the rotating mandrel at 90-120°C.

Pultrusion

To guarantee a good wetting of the fibres, the viscosity shall not exceed 2000 mPa·s. The temperature of the impregnation bath, has to be adapted correspondingly. Under these circumstances a pot life of least 90 min is achievable. These can also be influenced or adapted by the amount of the accelerator.

Adding of accelerator

The accelerator is always to be added to the hardener.

Processing Data (Guideline Values)

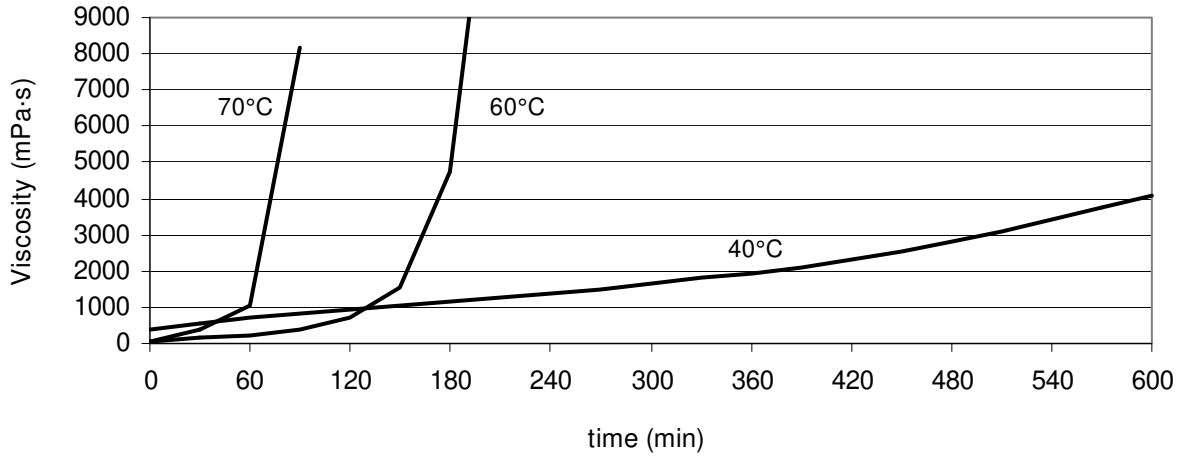


Figure 1: **Viscosity increase at 40, 60 and 70 °C**
(measurements with Rheomat 115A, Shear rate D = 10 s^{-1})

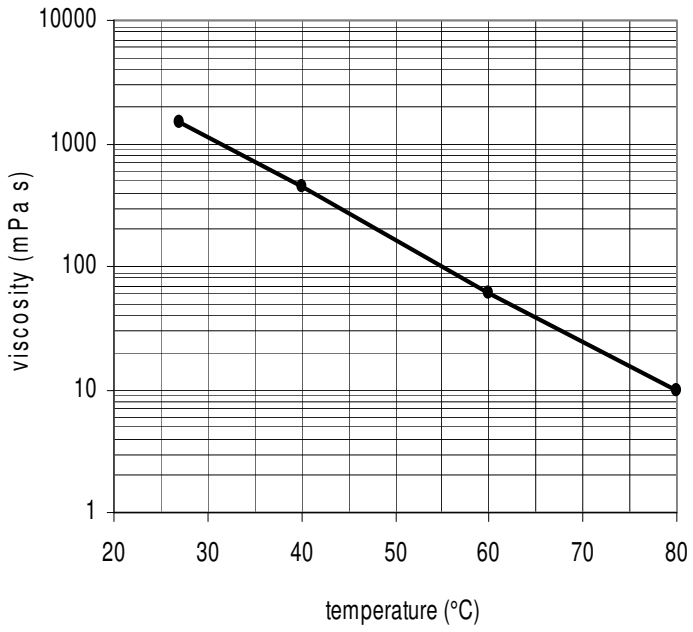


Figure 2: **Initial viscosity as a function of temperature**
(measurements with Rheomat 115, D = 10 s^{-1})

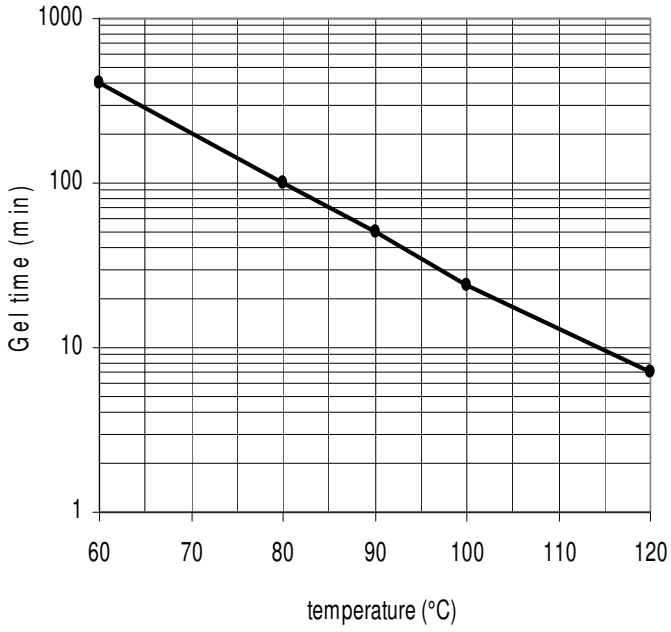


Figure 3**: Gel time as a function of temperature**
(measured with Gelnorm Instrument, ISO 9396)

Mechanical and Physical Properties (Guideline Values)

Determined on standard test specimens at 23°C. Cured for 30 min/110°C + 30 min/170°C + 30 min/200°C

Tensile strength	ISO 527	MPa	75 - 85
Elongation at break	ISO 527	%	3.5 - 4.5
E modulus from tensile test	ISO 527	MPa	3'000 - 4'000
Flexural strength at 23°C	ISO 178	MPa	140 - 150
Surface strain at 23°C	ISO 178	%	5.5 - 6.5
E modulus from flexural test	ISO 178	MPa	2'500 - 3'500
Bend Notch Test	CG 216-0/89		
Critical stress intensity factor (K_{1C})		$MPa \cdot m^{1/2}$	0.5 - 0.7
Specific energy at break (G_{1C})		J/m^2	70 - 100
Glass transition temperature (DSC)	ISO 11357-2	°C	165 - 175
Coefficient of linear thermal expansion (< Tg)	ISO 11359-2		
Mean value for temperature range: 20-60°C		10^{-6} / K	65 - 70
Thermal conductivity similar to	ISO 8894-1	W/mK	0.15 - 0.20
Water absorption (specimen: 50×50×4 mm)	ISO 62		
10 days at 23°C		% by wt.	0.50 - 0.60
60 min at 100°C		% by wt.	0.20 - 0.25
Decomposition temperature (heating rate: 10K/min)	DTA	°C	350

Electrical Properties (Guideline Values)

Determined on standard test specimens at 23°C. Cured for 30 min/110°C + 30 min/170°C + 30 min/200°C

Breakdown strength	IEC 60243-1	kV/mm	22 - 26
HV arc resistance	IEC 61621	s	70 - 80
Tracking resistance	IEC 60112		
with test solution A		CTI	> 600-0.0
with test solution B		CTI	> 600M-0.1

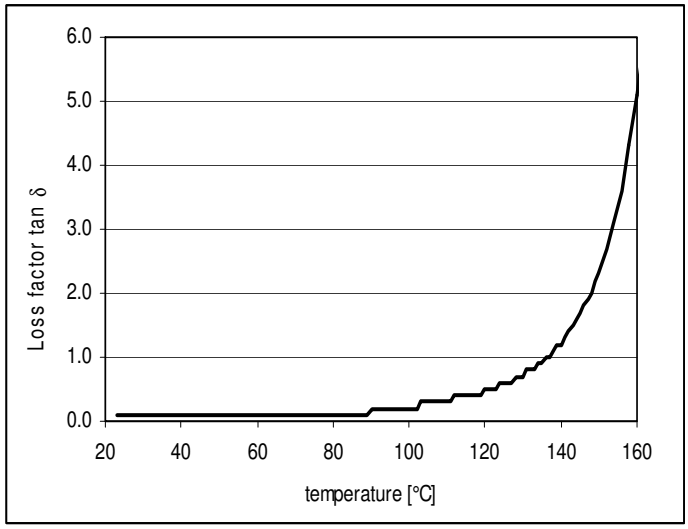


Figure 4: **Loss factor (tan δ) at 50 Hz (IEC 60250)**

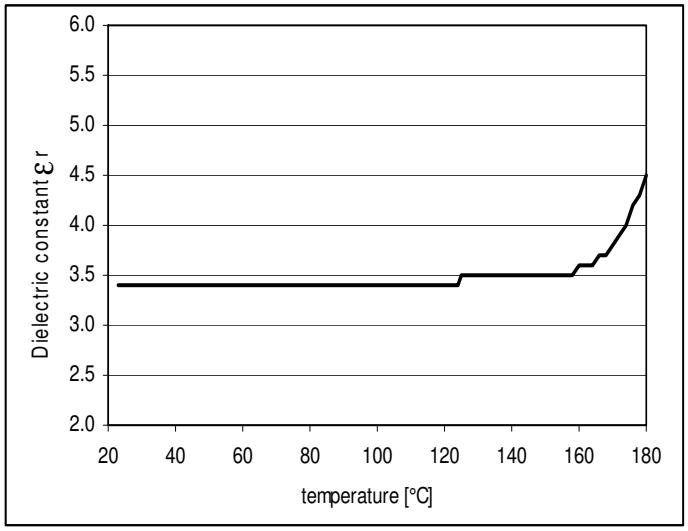


Figure 5: **Rel. permittivity (ε_r) at 50 Hz (IEC 60250)**

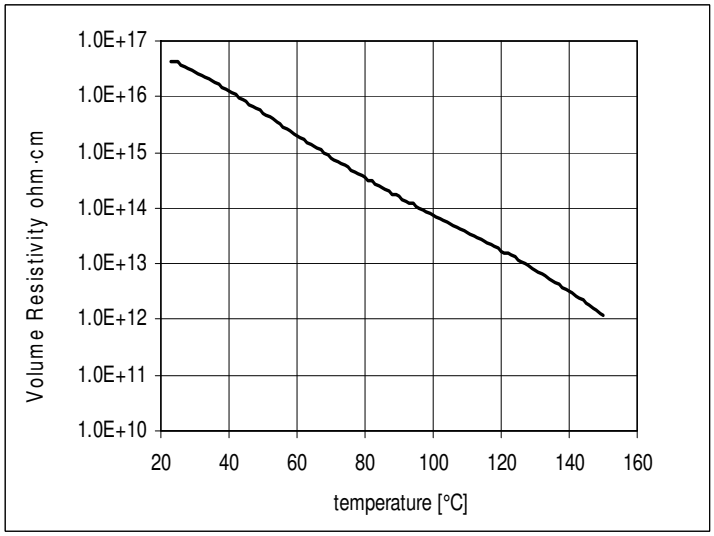


Figure 6: **Volume resistivity at 50 Hz (IEC 60093)**

Industrial hygiene

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding Safety Data Sheets and the brochure "Hygienic precautions for handling plastics products".

Handling Precautions

Safety precautions at workplace:	
protective clothing	yes
gloves	essential
arm protectors	recommended when skin contact likely
goggles/safety glasses	yes
respirator/dust mask	recommended
Skin protection	
before starting work	Apply barrier cream to exposed skin
after washing	Apply barrier or nourishing cream
Cleaning of contaminated skin	Dab off with absorbent paper, wash with warm water and alkali-free soap, then dry with disposable towels. Do not use solvents
Clean shop requirements	Cover workbenches, etc. with light coloured paper. Use disposable beakers, etc.
Disposal of spillage	Soak up with sawdust or cotton waste and deposit in plastic-lined bin
Ventilation:	
of workshop	Renew air 3 to 5 times an hour
of workplace	Exhaust fans. Operatives should avoid inhaling vapours.

First Aid

Contamination of the **eyes** by resin, hardener or casting mix should be treated immediately by flushing with clean, running water for 10 to 15 minutes. A doctor should then be consulted.
Material smeared or splashed on the **skin** should be dabbed off, and the contaminated area then washed and treated with a cleansing cream (see above). A doctor should be consulted in the event of severe irritation or burns. Contaminated clothing should be changed immediately.
Anyone taken ill after **inhaling** vapours should be moved out of doors immediately. In all cases of doubt call for medical assistance.

Note

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APPROVED TO ISO 9000 ff

All recommendations for use of our products, whether given by us in writing, verbally, or to be implied from results of tests carried out by us are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefore. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.