



TECHNICAL BULLETIN

PRODUCT INFORMATION

ULTIFIL 2114TC#

2 PART EPOXIDE

CLASS H

HIGH THERMAL CONDUCTIVITY

AVAILABLE IN VARIOUS COLOURS

EXCELLENT THERMAL SHOCK RESISTANCE

FLAME RETARDANT UL94 HB (File No. E174454)



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Ultifil 2114-TC# is a highly filled, two-component epoxide resin system available in various colours dependant on quantity. As standard the material is black in colour. The system is designed to give very high thermal conductivity and excellent electrical characteristics at high temperatures whilst achieving a low mixed viscosity for easy processing. The cured material is recognised for UL94 HB flame retardancy. The resin has excellent electrical properties together with superior thermal shock resistance and durability enabling it to be used at Class H temperatures.

APPLICATION

Encapsulation, sealing and potting of electronic and electrical components.

Filling of motor end windings for thermal dissipation.

SPECIFICATION

PROPERTIES OF THE BASE -

Viscosity @ 25°C	poise	100 - 220
Density	g/ml	1.81 - 1.84
Appearance		Black as standard but available in various colours

PROPERTIES OF THE HARDENER -

Viscosity @ 25°C	poise	0.5
Density	g/ml	0.97
Appearance		Clear

NOTE: Due to the introduction of improvements from time to time the right is reserved to supply products that may differ slightly from those illustrated or described in this publication.

Email: aev@aev.co.uk
www.aev.co.uk

AEV Limited,
Marion Street, Birkenhead,
Wirral. U.K CH41 6LT
Tel: ++ 44 (0) 151 647 3322
Fax: ++ 44 (0) 151 647 3377

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PROPERTIES OF THE MIXTURE -

Mix ratio base: hardener	10:1 PBW
	5.5:1 PBV
Viscosity @ 25°C poise	20 - 30
Specific gravity g/ml	1.66 – 1.70
Usable life 500 grams mass	180 minutes at room temperature

WORKSHOP PRACTICE

Most problems occur with 2 part systems due to the failure to mix correctly. The following procedure is recommended: -

Stir the base component prior to mixing to ensure any settled filler is included. The stirring process should scrape the bottom and the sides of the container and be sufficient to ensure there are no dead areas of unmixed material but should also be a relatively slow process stirring in a horizontal circular motion so that minimal air is included into the mix. If time permits this initial stir is made easier if the base component only is heated to 30-40°C and stirred some hour before the 2 components are mixed. Use of still warm base component will reduce the usable life of the mixture. The base and hardener can be measured out by weight, volume or by using all of the pre-weighed kit, but it should be noted the usable life of the mixture decreases as the weight of the mixture increases. Ensure the base and hardener are mixed thoroughly using the scraping minimal air inclusion method described previously. This mixing process can take up to 4-5 minutes, and it is recommended that, if the usable life allows, extra time is spent mixing at this stage where failure to mix is most frequent.

When curing the material in larger quantities there is the risk of a heat generating reaction this can lead to components reaching high temperatures and undesirable internal stresses within the system. The extent of the heat generated depends, the temperature, the heat sink of the system and the quantity of the resin.

CURE SCHEDULE

500 grams mass	Hard	24 hrs	at room temp.
	Full	48 hrs	at room temp.
Elevated temperature cure (recommended)		8 hrs	at 60°C
		5 hrs	at 80°C

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PROPERTIES OF CURED COMPOUND -

Shore D hardness	DIN 53505	85
Thermal class	ASTM D2304	180°C (20k Hrs)
Elongation at Break	ISO 527	1 %
Tensile strength	ISO 527	65 N/mm ²
Coefficient of linear thermal expansion	DIN 53752	58x10 ⁻⁶ K ⁻¹
Thermal Conductivity	ISO 8894-1	1.0 W/M/K
Dielectric strength	IEC 243-1	190 kV/cm.
Dielectric constant	IEC 250	5.2 50Hz
Dissipation factor	IEC 250	10% 50Hz
Volume resistivity	IEC 93	>10 ¹³ ohm/cm
Water absorption	ISO 62	0.15 % @
Flame Retardancy File No.E174454	UL94	HB
Tracking index	IEC112	>600 V

STORAGE

24 months shelf life, stored between 10°C and 30°C.

Filled epoxide systems can have a tendency to settle.

Ensure the base is stirred before mixing

PACKAGING

25kg, 5 kg, 1 kg kits

25kg base and hardener

HEALTH & SAFETY

See relevant Material Safety Data Sheet.

Note: Unless otherwise indicated, the figures above are average values and should not be treated at face value for specification purposes. The Company reserves the right to improve products, and any change in specification will result in a re-issue of the information sheet. Customers should satisfy themselves that the product is suitable for their requirements whether after such modification or otherwise. Please check that you have the latest issue of the information sheet.

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