SolvaLite® 716FR

SolvaLite® 716FR is a 150°C (302°F) rapid curing, flame retardant epoxy prepreg resin system. It has been developed to meet the UL 94V V-0 self-extinguishing classification over a broad range of product formats and thicknesses, and pass the UL 2596 battery enclosure test at 2mm thickness.

SolvaLite® 716FR prepregs are specifically designed to meet the requirements of high throughput, fire retardant, lightweight automotive structural applications. The range of product forms and properties available are well-suited for electronic vehicle battery enclosure structural components.

Features and Benefits

- UL 94 V-0 self-extinguishing classification demonstrated at a range of part thicknesses
- UL 2596 pass at 2.0mm demonstrated
- 30 days outlife at 21°C (70°F)
- DMA E' onset Tg of 145°C (293°F) following 8 min at 150°C (302°F) cure
- Wide range of product forms available for optimising cost-performance ratio
- Compatible with Syensqo Double Diaphragm Forming Technology™
- Rapid press cure capable (<10 min at 150°C) with a Tg that allows for hot demoulding.
- Available in a wide range of fibres and fabric weaves

RECOMMENDED PRESS CURE CYCLE

Pressure	21-41 bar (300-600 psi)
Ramp Rate	Load blank straight into heated tool, applying full pressure after 35 seconds 'dwell'
Recommended Cure Cycle	8 minutes at 150°C (including low pressure dwell)
Cool down	Parts may be removed from a hot compression mould tool without cooling

RECOMMENDED AUTOCLAVE CURE CYCLE

Vacuum bag pressure	Minimum of 980mbar (29"Hg)
Autoclave pressure	6.2bar (90Psi) *
Ramp rate	1-3°C (1.8-5.4°F)/ minute
Recommended cure cycle	30 minutes @ 150°C dwell
Cool down	Maximum of 3°C (5.4°F)/ minute to 60°C

*If producing sandwich panels, apply the maximum pressure allowable for the core being used. Contact Syensqo technical support for guidance

Alternative Cures

SolvaLite® 716FR was specifically designed for press and autoclave curing methods. For alternative curing methods, or cure profiles other than those recommended, please consult our technical support staff for guidance.

TECHNICAL DATA SHEET

SolvaLite® 716FR

PREPREG

PRODUCT FORM AVAILABILITY

Fibre	Product Form	FAW (gsm)	Resin Content	Normal Cured Ply Thickness (mm)*
E-Glass	2X2T	600	33%	0.451
E-Glass	(7781) 8HS	300	33%	0.226
12K HS Carbon	2X2T	400	42%	0.447
3K HS Carbon	2X2T	199	42%	0.218
50K HS Carbon	Unidirectional	200	40%	0.211

*Nominal theoretical

PHYSICAL PROPERTIES

Cured Resin Density	1.31g/cm^3
Colour	Black
DMA E′ Onset Tg*	145°C (288°F) by DMA E′ Onset, following 8 minutes @ 150°C cure

* DMA E′ Onset T_g values determined using an all 0° 200-TRW4050K 2mm thick coupon.

FIRE PERFORMANCE

Fibre	Product Form	FAW (gsm)	UL 94 (1-3mm thickness)	UL 2596 (2mm thickness)
E-Glass	2X2T	600	V0	*(Not tested)*
E-Glass	(7781) 8HS	300	V0	PASS - no rupture
12K HS Carbon	2X2T	400	V0	*(Not tested)*
3K HS Carbon	2X2T	199	V0	PASS - no rupture
50K HS Carbon	Unidirectional	200	V0	*(Not tested)*

MECHANICAL PERFORMANCE

Property	Test Condition	2X2T 600gsm EGF 33%	8HS 300gsm EGF 33%	2X2T 400gsm 12K HS Carbon 42%	2X2T 199gsm 3K HS Carbon 42%	UD 200gsm 50K HS Carbon 40%	Test Method (ASTM)
Vf***	-	53	51	51	50	50	-
0° Tensile Strength (MPa)	23°C*	548.5	521.9	1022	762	1942.9	D3039
0° Tensile Modulus (GPa)	23°C*	27.8	28.5	60.2	60	114.7	D3039
0° Compressive Strength (MPa)	23°C* 80°C (176°F) Dry** 80°C (176°F) Wet**	619.1 572 414	645.4 - -	758.2 - -	814.5 643 489	1450.3 1113 -	D695
0° Compressive Modulus (GPa)	23°C*	31.5	30.4	54.9	55.4	106.4	D695
0° Flexural Strength (MPa)	23°C* 80°C (176°F) Dry**	676.7 -	628.2 -	872.7 -	911 -	1421.8 1174.3	D7264
0° Flexural Modulus (GPa)	23°C*	26.3	28.4	51.5	55.2	109.8	D7264
ILSS (MPa)	23°C* 80°C (176°F) Dry** 80°C (176°F) Wet**	57.7 - -	80.4 - -	57 - -	79.3 55.5 30.9	92.9 69.6 -	D2344-84
In-Plane Shear Strength Ultimate (MPa)	23°C*	94	-	-	107	100	D3518
In-Plane Shear Modulus (GPa)	23°C*	4.21	-	-	4.24	4.18	D3518

*23°C ± 2°C (73°F) 50% ± 5% RH

**Tested at 80°C after either a dry conditioning (105°C (221°F) for 7 days) or wet conditioning (immersed in 70°C (158°F) water for 14 days

***Data normalised to the fibre volume fractions (Vf) specified where applicable.

STORAGE

Storage life is 365 days minimum from date of manufacture, stored at -18°C or below, in a sealed container; handling life is 30 days minimum if stored at 21°C

NOTE

Tg data is not applicable for U.S. export control classification or licensing. For export-related information please contact Syensqo.

EXOTHERM

SolvaLite® 716FR prepregs are reactive formulations which can undergo severe exothermic heat up during the initial curing process if incorrect curing procedures are followed.

Great care must be taken to ensure that safe heating rates, dwell temperatures and lay-up/bagging procedures are adhered to, especially when moulding solid laminates in excess of 10mm (0.4in) thickness. The risk of exotherm increases with lay- up thickness and increasing cure temperature. It is strongly recommended that trials, representative of all the relevant circumstances, are carried out by the user to allow a safe cure cycle to be specified. It is also important to recognise that the model or tool material and its thermal mass, combined with the insulating effect of breather/bagging materials can affect the risk of exotherm in particular cases.

HEALTH & SAFETY

Please refer to the product SDS for safe handling, personal protective equipment recommendations and disposal considerations.