



FR308

Flame Retardant Prepreg

Introduction

FR308 prepreg is a flame retardant resin system meeting the flame, smoke and toxicity requirements of aerospace standard CS 25.853 and rail standard EN 45545. It can be supplied on a variety of fabrics to meet your cost and manufacturing requirements.

Typical applications: *Aerospace / Rail / Flame retardant*

Key Features & Benefits

- **FST properties:**
 - **CS 25.853** compliant (Heat Release < **25kW/m²**)
 - **EN 45545** compliant, rated **HL3**
- Cure temperature from **120°C**
- Service temperature up to **170°C** after post cure*
- Work life at 20°C: **21 days**
- Storage life at -18°C: **12 months**
- **Capable of exposure to higher temperatures – consult SHD for details*

Storage & Out Life

This material should be kept frozen at -18°C for a maximum storage life. If kept refrigerated at 6°C storage life will be reduced to 2 months. It must be kept sealed in a polythene bag which must not be opened until fully thawed to room temperature. If the material is not fully used, then the material must be resealed in the polythene bag to prevent moisture absorption.

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Cure Cycles & Service Temperatures

Cure		Post cure		Service Temperature	Tg – E' Onset	Tg – tan δ Peak
120°C	90 min	-	-	120°C	125°C	170°C
130°C	1 hour	-	-	150°C	160°C	200°C
130°C	1 hour	150°C	3 hours	170°C	175°C	220°C

Recommended cures:

- **Autoclave / Oven cure**
 - **130°C for 1h**, at a ramp rate of **2-3°C/min**
 - P3 Release film recommended
- **Press cure**
 - **80°C for 15min**, at a ramp rate of **2-3°C/min**
 - **130°C for 1h**, at a ramp rate of **2-3°C/min**
 - Cool down below **90°C** before opening the press

The cures given are as a guide only, and will be subject to changes in part geometry and construction.

Please contact SHD for further details.

Notes:

- Due to the chemical nature of this material, water is evolved during the cure. If press curing the press may need to be vented during the cure for best results. If curing under vacuum, it is recommended that a water trap is placed in the vacuum line to prevent damage to vacuum pump oil.
- For autoclave cure, the maximum pressure that can be applied will vary depending on the curing temperature. Consult our technical team for more information.

Issued 31st May 2018

Note: The information and assistance provided herein is for your consideration without legal responsibility. Users are required to perform verification and testing to confirm that the product meets with their requirements.

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Flame, Smoke and Toxicity properties

CS 25.853		Results	Limit		
60s vertical burn		0.2	6.0	<i>in</i>	PASS
15s horizontal burn		0.0	2.5	<i>in/min</i>	PASS
Heat release	Peak	20.4	65	<i>kW/m2</i>	PASS
	2 min average	14.1	65	<i>kW.min/m2</i>	
Smoke emission		4.27	200		PASS
Toxic gas emission	CO	115	1000		PASS
	HCN	1	150		
	HF	0	100		
	HCL	2	150		
	SO2	0	100		
	NOx	5	100		

Material tested: 8x FR308 – G300 (7781) – 33%RW prepreg
Cured 1h@130°C

CS 25.853 – Sandwich panel		Results	Limit		
Heat release	Peak	20.8	65	<i>kW/m2</i>	PASS
	2 min average	17.6	65	<i>kW.min/m2/</i>	

Material tested: 2x FR308 – G300 (7781) – 42%RW prepreg on each side of a 12mm Nomex core
Cured 1h@130°C

EN 45545		Results	Limits for category R1			Rating
			HL1	HL2	HL3	
ISO 5658-2	CFE (<i>kW/m2</i>)	44.47	20 (<i>min</i>)	20 (<i>min</i>)	20 (<i>min</i>)	HL1, HL2, HL3
ISO 5660-1	MAHRE (<i>kW/m2</i>)	30.3	N/A	90	60	HL1, HL2, HL3
ISO 5659-2	DS4	38.5	600	300	150	HL1, HL2, HL3
	VOF4	83.34	1200	600	300	HL1, HL2, HL3
EN 45545-2	CITG (4min)	0.007	1.2	0.9	0.75	HL1, HL2, HL3
Annex C.1	CITG (8min)	0.009	1.2	0.9	0.75	HL1, HL2, HL3

Material tested: 8x FR308 – G300 (7781) – 38%RW prepreg
Autoclave cured (6bar) 1h@130°C

Tests completed independently by a UKAS approved organisation. Tests results can be supplied upon request.

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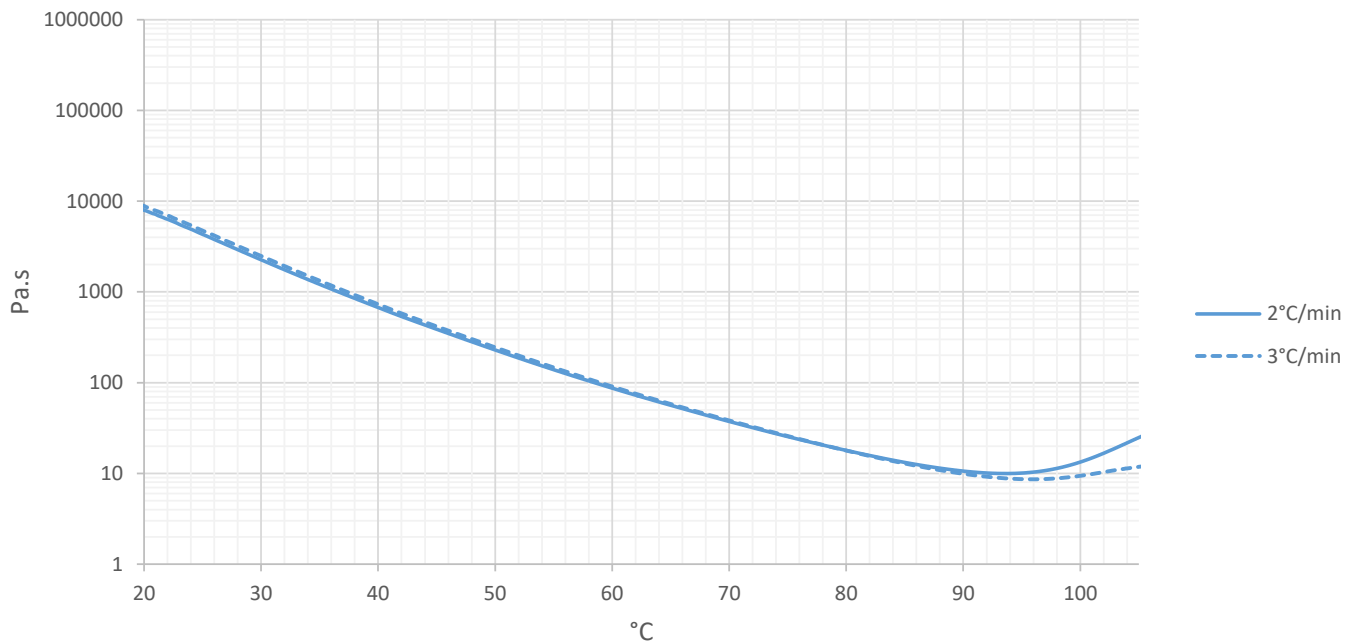
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Viscosity Profile

Testing carried out at $23 \pm 2^\circ\text{C}$, $50 \pm 5\%$ RH.



Health and Safety

Please refer to the product Safety Data Sheet before using this material. The following precautions must be taken when using PFA resin prepregs:

- Impervious gloves are recommended.
- To avoid exotherm, particular care must be taken with thick laminates.
- Ramp rates must not exceed $3.0^\circ\text{C}/\text{min}$ during initial cure and $1.0^\circ\text{C}/\text{min}$ during post cure.

SHD Composite Materials Ltd cannot accept any liability for injury or damage where the above precautions have not been taken or where the material is used for any purpose other than its intended use.

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