

## Simpres<sup>®</sup>M850 250°F (121°C) Curing Vinyl Ester Prepreg

### Description

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Simpres<sup>®</sup> M850 is an advanced vinyl ester prepreg with low styrene emission designed to provide a high performance-to-cost ratio. It has a medium to high tack and provides good adhesion to core materials such as Nomex<sup>®</sup> honeycomb, balsa and foams. Simpres<sup>®</sup> M850 is a great choice for many applications in the range of low to medium service temperature.

### Features

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#### Prepreg

- ❖ Fast curing cycles: **20 min @ 250°F (121°C)**.
- ❖ Suitable for low pressure: 1-3 bar.
- ❖ Excellent flexibility and handling.
- ❖ Environmentally friendly and retains its tack for many days.
- ❖ Controlled flow for ease processing (autoclave, press-mold & vacuum bagging).
- ❖ Weight loss < 1%, as determined in a vacuum curing process.

#### Laminate

- ❖ Superior toughness and excellent fatigue resistance.
- ❖ Good resistance to a broad range of organic and inorganic acids, alkalis, oxidizing chemical and salt solutions, commonly up to 239°F (115°C).

### Physical Properties on 7781 E-Glass Fabric

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- Standard weight: 0.092 lbs/sq. ft. (484 g/m<sup>2</sup>).
- Standard resin content: 38% by weight.
- Standard tack: good tack on both sides.
- Cured ply thickness: 0.010" (0.254 mm).

### Typical Applications

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- FRP parts for chemical resistance purposes.
- General-purpose composites.
- High performance sporting goods.
- Racing vehicles.

**Shelf Life**

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Minimum 8 months @ 68°F (20°C)

**Compression Curing Cycles**

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Laminate Temp. (°C)	Dwell Time (min.)	Dwell Pressure (bar)	Recommended Pressure Release Temp. (°C)
120	20	1-3	<80
125	15	1-3	<85
130	10	1-3	<90
135	8	1-3	<95
140	6	1-3	<100

**Oven/Vacuum Cure Cycles**

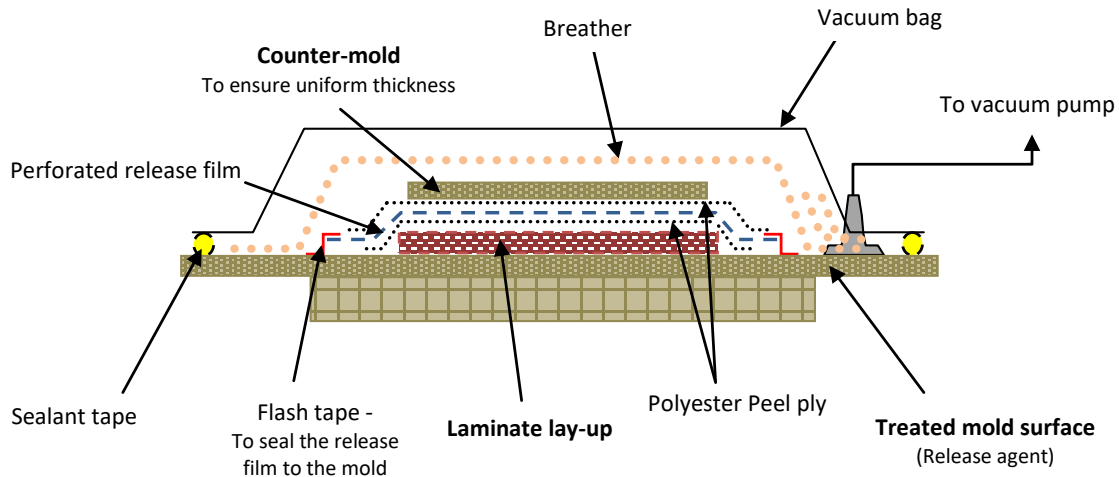
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- Apply 24" Hg vacuum for 3-5 minutes before beginning heat cycle.
- Raise laminate temperature from room temperature to 250°F (120°C) within 30-45 min.
- Hold laminate at 250°F (**120°C**) for **20min.**
- Cool the laminate to 176°F (80°C), at no more than 8°F/min, prior to release vacuum pressure.

❖ **In case Gel-coat is being used:**

- Apply 24" Hg vacuum for 3-5 minutes before beginning heat cycle.
- Raise laminate temperature from room temperature to 194°F (**90°C**) within 20-30 min.
- Hold laminate at 194°F (**90°C**) for **30 min.**
- Raise laminate temperature from 194°F (90°C) to 250°F (**120°C**).
- Hold laminate at 250°F (**120°C**) for **20min.**
- Cool the laminate to 176°F (80°C), at no more than 8°F/min, prior to release vacuum pressure.

### Recommended Bagging Arrangement



#### Note down

- ✓ It must be understood that the curing time starts only after the prepreg temperature achieves the recommended temperature. The **use of a thermocouple is a must** to monitor the actual prepreg temperature.
- ✓ In case of vacuum bag processing, one ply of lightweight breather, 120 gsm, is recommended. A heavyweight breather, 340 gsm, has to be used in case of Autoclave processing. In both cases, two or three additional layers of breather have to be applied locally beside the vacuum ports.
- ✓ In some applications, a **post-cure @ 284-302°F (140-150°C)**, is required for optimum performance.

**Laminate Properties**

✓ Glass Transition Temperature (DSC): 140-145°C

Mechanical Properties	ASTM	E-Glass 7781 ▪	E-Glass 7781 ♣	Carbon 12K Stitched UD – (1700.) ♣
<b>Flexural</b>				
Strength, MPa	D-790	<b>550-600</b>	TBD	<b>1300-1440</b>
Modulus, GPa		<b>22-24</b>	TBD	<b>109-110</b>
<b>Tensile</b>				
Strength, MPa	D-3039	TBD	TBD	TBD
Modulus, GPa		TBD	TBD	TBD
<b>Compression</b>				
Strength, MPa	D-695	TBD	TBD	TBD
Modulus, GPa		TBD	TBD	TBD
<b>Inter-laminar Shear</b>				
Strength, MPa	D-2344	<b>48-52</b>	TBD	<b>75-84</b>

■ Laminate cured in press @ 121°C / 20 min / 3 bars, and then post-cured @ 140°C / 20 min.

♣Laminate cured under vacuum @ 121°C / 20 min, and then post-cured @ 140°C / 20 min.

**Storage and Handling**

All Simprex®prepregs are wrapped in a shrink film immediately after impregnation and then packed into a barrier film.

Simprex®prepregs should be stored in their original packaging barrier film, or an equivalent film, and maintained air-tightness, at 68°F (20°C) and dry place.

If the prepreg roll has to be maintained out of its packaging barrier film, for few hours during lamination and processing time, it should be wrapped up again in a shrink film. This will protect the prepreg and extend its out of the bag life time.

The small prepreg pieces that were cut from the roll in order to be laminated should be handled and protected properly. The release film must not be removed from the prepreg piece only when ready to be placed and laminated in the mold. The top release film must not be removed only when the following prepreg layer is ready to be placed. Such lamination care will ensure minimum styrene emission and working area highly environmentally friendly. The prepreg tack time out of the barrier packaging bag will be for several days, depending on the previous handling and protective caring.



### Safety Precautions

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Usual precautions should be observed. The prepreg contains mainly uncured synthetic resins. The operator has to use appropriate mask – respirator and work in a clean, dry (R.H. = 50% or less), and ventilated area. The use of clean disposable inert gloves provides protection for the operator and avoids contamination of material and components.

### Important Notice

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The data reported in this sheet are based on representative samples. Since the method and circumstances of handling and processing are keys to the material performance, Gulf Composite Materials L.L.C., does not guaranty these data. Users should make their own assessment of the suitability of any product for the performance required.