



SIMPREG®M655-200 203-284°F (95-140°C) CURING VINYL ESTER PREPREG

Description

Simpreg®M655-200 is an advanced vinyl ester prepreg with low styrene emission designed to provide a high performance-to-cost ratio. It has a low to medium tack and provides high adhesion to core materials such as Nomex® honeycomb, balsa and foams. Simpreg®M655-200 can be cured at a lower temperature (**203°F**), than standard Prepregs, within **4 hours**. Simpreg®M655-200 has a **very low exothermic** curing reaction, only 5°F above the curing temperature (200°F), even in thick laminates (**up to 35 mm thick**). It provides an excellent surface finish and remains a great choice for many low service temperature applications.

Features

Prepreg

- ❖ Fast curing cycles: **5-6 min @ 284°F (140°C); 10-12 min @ 266°F (130°C); 15-20 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 resistance to abrasion, high impact and excellent fatigue resistance.
- ❖ Good resistance to a broad range of organic and inorganic acids, alkalis, oxidizing chemical and salt solutions, commonly up to 203°F (95°C).

Physical Properties on 7781 E-Glass Fabric

- Standard weight: 0.092 lbs/sq. ft. (484 g/m²).
- Standard resin content: 38% by weight.
- Standard tack: good tack on both sides.
- Cured ply thickness: 0.010" (0.254 mm).



Typical Applications

- Marine and chemical resistance composites.
- General-purpose composites.
- High performance sporting goods.
- Wind Energy.

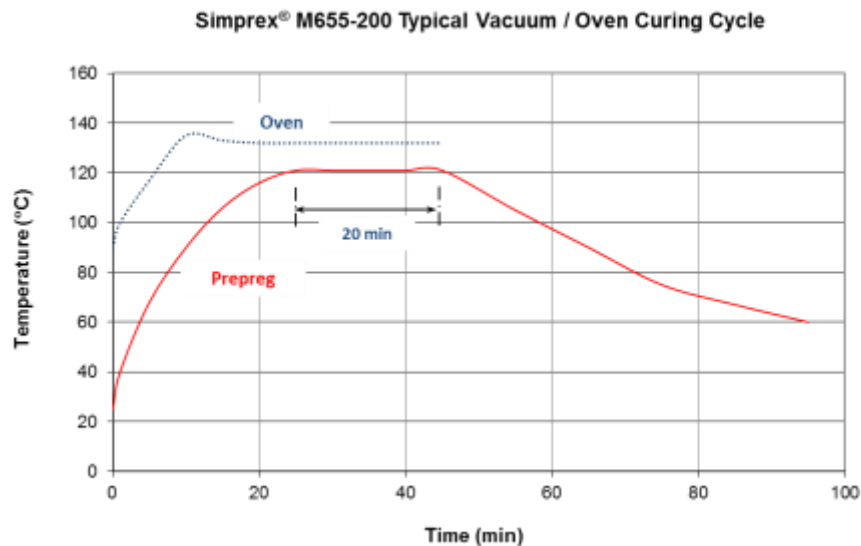
Shelf Life

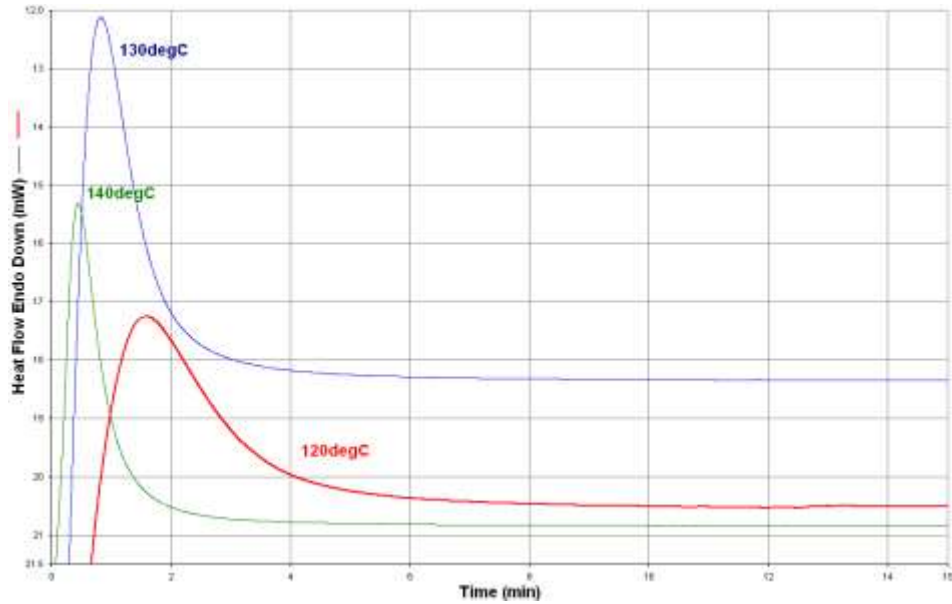
Minimum 6 months @ 68°F (20°C)

Curing Conditions

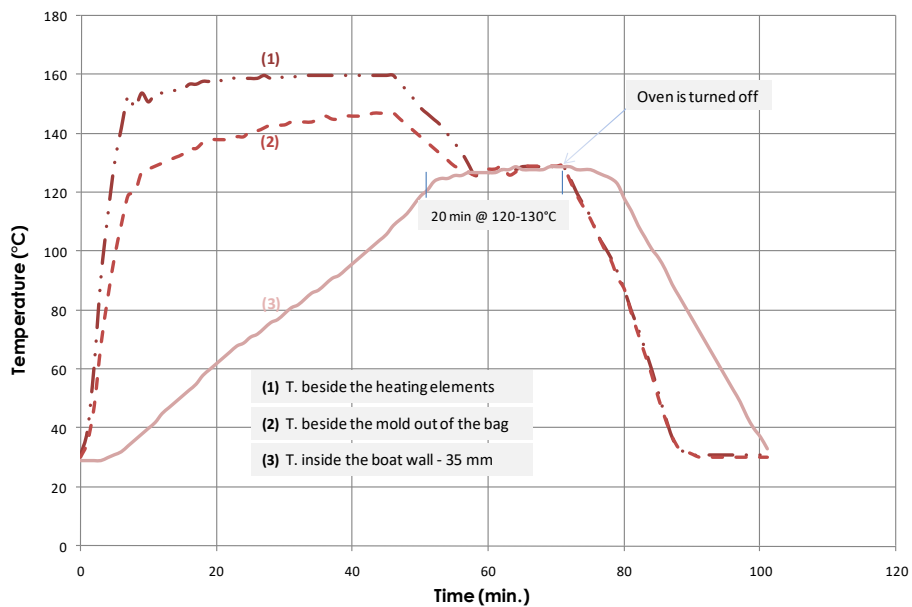
Normal curing cycle is **15-20 min @ 250-257°F (121-125°C), under 1-3 bars pressure**. In press-mold, pressure should increase gradually to reach its maximum within 60-90 sec. In some applications, a **post-cure @ 284-293°F (140-145°C)**, is required for optimum performance.

- It must be understood that the curing time starts only after the prepreg temperature achieves the recommended temperature. This involves a dwell time which depends on the heating rate.





Isothermal DSC Cure of Simprex® M655-200/E-Glass 7781 prepreg at 120, 130 and 140°C.



Curing Profile of a demo boat hull, 22 – 35 mm thick, manufactured from Simprex® M655-200 /



WR Glass 600 gsm (50 layers), and cured under vacuum.

Laminate Properties

✓ Glass Transition Temperature (DSC): 115-120°C

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

■ 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

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

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.