

EP-PREG® S883 275-302°F (135-150°C) CURING EPOXY PREPREG

DESCRIPTION

Ep-preg® S883 is a Bisphenol-A epoxy prepreg designed for the vacuum bagging and the compression molding processes. It develops much less exothermic reaction during the curing of thick parts compared with the S153.

Dynamic scan using Differential Thermal Analysis (DTA) showed that Ep-preg® S883 starts curing at about 110°C. DTA isothermal curing at 135°C showed that 1 hour is required to achieve a nearly full curing.

Neat S883 resin specimens showed slight residual curing peaks when adding a short (15 min) isothermal segment at 150°C. Glass transition temperature (T_g) was measured by DTA at 127°C.

PREPREG FEATURES

- Tack time: at least 4 weeks @ 20°C (after, heat gun may be used to increase the tackiness while draping)
- Shelf life: 5-6 weeks expected @ 20°C, 4-5 months @ 4°C & 18 months @ -18°C
- Self-adhesive for cores and secondary bonding
- Good flexibility and easy handling
- Suitable for thin and thick laminates

CURED MATRIX PROPERTIES

	1 hr @ 135°C (+ 15 min @ 150°C)	Method
Tensile Strength (MPa)	75 – 80	ISO R527
Tensile Modulus (GPa)	3.0 - 3.2	ISO R527
Strain (%)	3.6 - 3.8	ISO R527
Flexural Strength (MPa)	130 - 145	ISO R178
Flexural Modulus (GPa)	2.8 - 3.3	ISO R178
Strain (%)	5.5 - 8.1	ISO R178
Density (g/cm ³)	1.14 - 1.16	
Glass Transition Temperature (°C)	125 - 130	DTA - 10°C/min.

TYPICAL APPLICATIONS

- Wind blades
- Industrial composites
- Recreational composites

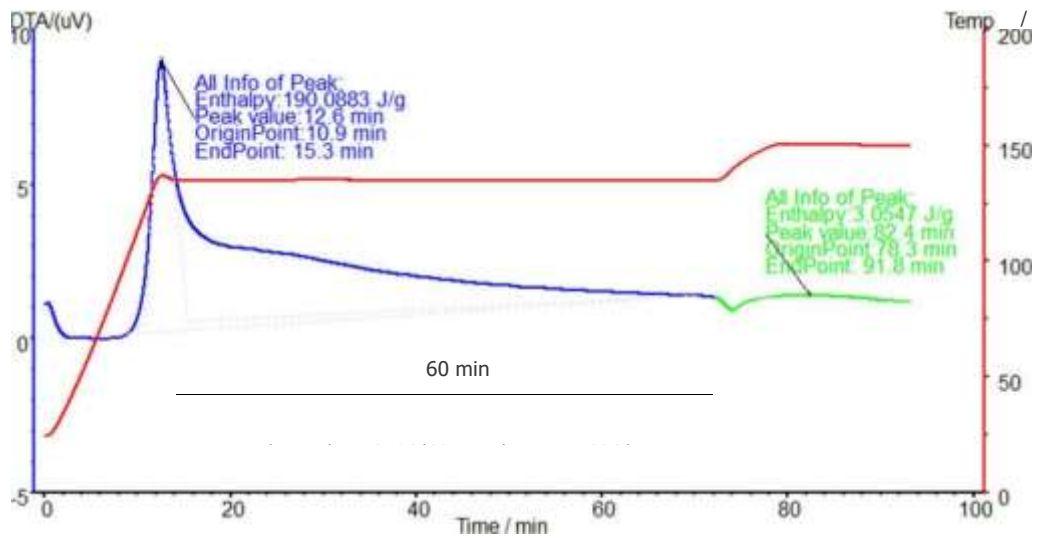
STORAGE AND HANDLING

All Ep-preg® prepreps are wrapped in a barrier film immediately after impregnation. During storing and handling, the following notes must be considered:

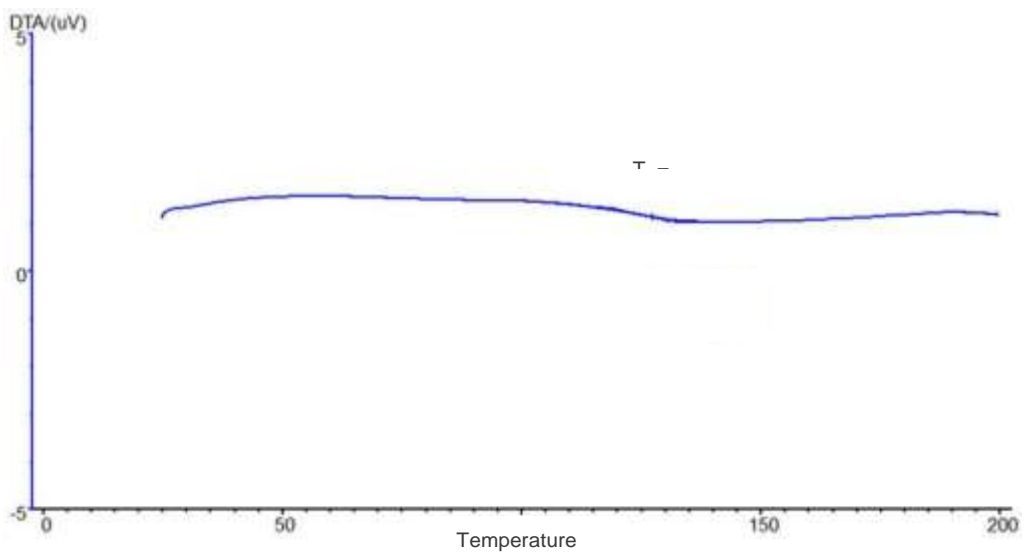
- Ep-preg® prepreps **must** be stored in their original packaging barrier film, or an equivalent film, at **-18° to 4°C**.

- Before use, the prepreg roll has to be out of the freezer and remain tightly sealed for 48 hours, time required to reach ambient room temperature.
- It is highly recommended to handle the prepreg at a clean area where relative humidity is $\leq 52\%$ and ambient temperature is 20-23°C.

DTA CURING THERMOGRAMS



GLASS TRANSITION TEMPERATURE



TYPICAL OVEN VACUUM CURING CYCLE

- Apply 24" Hg vacuum for 5-10 minutes before beginning heat cycle.
- Raise laminate temperature from room temperature to 185°F (85°C) within 30-45 min.
- Hold laminate at 185°F (85°C) for 30 min.
- Raise laminate temperature from 185°F (85°C) to 275°F (135°C).
- Hold laminate at 275°F (135°C) for 60 min.
- **Optional:** Raise laminate temperature from 275°F (135°C) to 302°F (150°C), then hold the laminate at 302°F (150°C) for 15-30 min.
- Cool the laminate to at least 176°F (80°C), prior to release vacuum pressure.

Notice:

- 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.

SAFETY PRECAUTIONS

Usual precautions, as following, must be considered:

- During lamination, workers must avoid skin contact by wearing appropriate disposable protective gloves.
- Clean protective coveralls or equivalent clothes must be worn before laminating and also sanding.
- Protective glasses must be worn to avoid eyes contamination. In case of contamination, eyes must be flushed for 15 min and then medical treatment must be applied.
- After working, hands and contaminated skin, if any, have to be washed with soap and warm water. This has to be implemented as a routine practice.