

# POSS<sup>®</sup> Resin SC4500

**SC4500** is an optically clear resin that has superior flame retardancy but without the hazardous smoke typically associated with halogenated materials. It can be employed as an unfilled, nanocomposite resin or it can be filled and utilized with reinforcements such as glass fiber or carbon fiber. SC4500 has significantly improved thermal and flame retardant properties when compared to other high temperature thermoset resins. It is recommended to use SC4500 in flame barrier composites for its superior flame resistance and very low smoke.



POSS<sup>®</sup> Resin SC4500



SC4500 Glass Fiber Composite

## Key Performance Properties

- *Fire Retardancy without halogens*
- *Increased HDT*
- *Optically Transparent*
- *Elimination of VOC*

## Thermal, Mechanical, Rheological Properties for SC4500 Resin and Composite\*

Property	Value
Resin type	1 part
Density	1.20 g/ml
Catalyst	Pt
Gel time	45-60 min @ 60°C with 0.2wt% catalyst load
Viscosity	100 cps
Shelf life (w/o catalyst)	24-36 months
Heat distortion temperature	>1,100 °F (600°C)
Flexural Strength @ 23°C	13,513 psi / 67,200 psi*
Flexural Modulus @ 23°C	1.4 x 10 <sup>5</sup> psi
Elongation	3.5% / 1.7%*

### Cone Calorimetry Data for SC4500 Glass Fiber Composite

Heat Flux (kW/m <sup>2</sup> )	Time to Ignition (sec)	Peak Heat Release Rate (kW/m <sup>2</sup> )	60s Avg. Heat Release Rate (kW/m <sup>2</sup> )	180s Avg. Heat Release Rate (kW/m <sup>2</sup> )	300s Avg. Heat Release Rate (kW/m <sup>2</sup> )	Avg. Specific Extinction Area (m <sup>2</sup> /kg)
*50	268	74	26	54	46	39

\*Composites contained ~30 wt% resin. 2% weight loss of composite upon test completion.

### CURE AND VARTM PROCESSING INSTRUCTIONS

- (1) Store Resin/Catalyst @ Room Temperature
- (2) Add Catalyst (0.05%, Pot life ~12 hours) at room temperature; stir thoroughly
- (3) Infuse
- (4) Heat part to 140F (+/-10 °F) (60 °C) and hold for 60 minutes
- (5) Heat part to 175F (+/-10 °F) (80 °C) and hold for 60 minutes
- (6) Heat part to 250F (+/-10 °F) (120 °C) and hold for 120 minutes
- (7) Cool part to below 150 °F at 1-5 °F / minute before handling

### WARRANTY

The information contained herein is believed to be accurate and reliable. However, the user is responsible for determining the suitability and use of the final formulations/products. Hybrid Plastics warrants that its products will meet specifications, but not merchantability or fitness for use.

**Hybrid Plastics™ Superior Technology for Superior Products**  
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