



POLYMER-TO-CERAMIC™ TECHNOLOGY

Engineering Appendix: Crosslinking and Firing Processing of Starfire Systems Oxide based Polymers

Table 1: Cross linking Conditions SL-405, SL-409, SL-411 oxide based Laminates

Temperature	Condition	Pressure
RT – 85 °C +/- 5 °C	Heat at maximum rate	Vacuum Bag, Autoclave (optional)
85 °C +/- 5 °C	Hold for 3 hours +/- 1 hour	
85 °C – 120 °C +/- 5 °C	Ramp Heat at 1.0 – 1.5 °C/min	
120 °C +/- 5 °C	Hold for 10 hours +/- 2 hour	
120 °C – 180 °C	Ramp Heat at 1.0 – 1.5 °C/min	
180 °C +/- 5 °C	Hold for 3 hours +/- 1 hour	
180 °C – RT	Cool at maximum rate	

Table 2: Cross linking Conditions SL-455 oxide based Laminates

Temperature	Condition	Pressure
RT – 85 °C +/- 5 °C	Heat at maximum rate	Vacuum Bag, Autoclave (optional)
85 °C +/- 5 °C	Hold for 10 hours +/- 2 hour	
85 °C – 140 °C	Ramp Heat at 1.0 – 1.5 °C/min	
140 °C +/- 5 °C	Hold for 3 hours +/- 1 hour	
140 °C – RT	Cool at maximum rate	

Table 3: Furnace Conditions to Fire Oxide based Laminates

Temperature	Condition	Atmosphere
RT – *1,000 °C +/- 10 °C	Ramp Heat at 1.0 – 1.5 °C/min	Air, atmospheric pressure
*1,000 °C +/- 10 °C	Hold for 2 hours +/- 10 minutes	
[Maximum Firing Temperature] – RT	1.0 °C/min	

*Maximum temperature up to 1,200°C

These conditions are to be treated as processing guidelines, and may not be optimized for unique applications.