

## POST-MACHINING AND ANNEALING GUIDELINES

MATERIALS	HEAT UP	HOLD UP	COOL DOWN	ENVIRONMENT
ABS	50°F per hour to 200°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Acrylic	2 hours to 180°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Acetal copolymer	4 hours to 310°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen or Air
Delrin® acetal homopolymer	4 hours to 320°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen or Air
Ertalyte® PET-P	4 hours to 350°F	30 minutes per 1/4' thickness	50°F per hour	Oil or Nitrogen
Halar® ECTFE	50°F per hour to 225°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Hydex® 4101 PBT-P	4 hours to 300°F	60 minutes per 1/4' thickness	50°F per hour	Nitrogen or Air
Kynar® PVDF	2 hours to 275°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Noryl® PPO	50°F per hour to 250°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Noryl® PPO 30% glass filled	50°F per hour to 260°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Nylon - type 6	4 hours to 300°F	30 minutes per 1/4' thickness	50°F per hour	Oil or Nitrogen
Nylon - type 6/6	4 hours to 350°F	30 minutes per 1/4' thickness	50°F per hour	Oil or Nitrogen
Nylon - glass - filled	4 hours to 375°F	30 minutes per 1/4' thickness	50°F per hour	Oil or Nitrogen
PCTFE	3 hours to 225°F	60 minutes per 1/4' thickness	50°F per hour	Air
PEEK™	2 hours to 300°F then 2 hours to 375°F	60 minutes per 1/4' thickness 60 minutes per 1/4' thickness	50°F per hour	Air
Polycarbonate (unfilled)	4 hours to 275°F	30 minutes per 1/4' thickness	50°F per hour	Air
Polycarbonate (glass - filled)	4 hours to 290°F	30 minutes per 1/4' thickness	50°F per hour	Air
Polyethylene (UHMW)	2 hours to 220°F	30 minutes per 1/4' thickness	10°F per hour	Nitrogen
Polystyrene	50°F per hour to 170°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen
Radel® R polyethersulfone	4 hours to 390°F	30 minutes per 1/4' thickness	50°F per hour	Nitrogen or Air
Ryton® PPS	4 hours to 350°F	30 minutes per 1/4' thickness	50°F per hour	Air
Techtron® PPS	4 hours to 350°F	30 minutes per 1/4' thickness	50°F per hour	Air
Torlon® PAI	4 hours to 300°F then 4 hours to 420°F then 4 hours to 470°F then 4 hours to 500°F	1 day 1 day 1 day 3 to 10 days	50°F per hour	Air
Udel® polysulfone	4 hours to 330°F	30 minutes per 1/4' thickness	50°F per hour	Air
Ultem® PEI (unfilled)	4 hours to 390°F	30 minutes per 1/4' thickness	50°F per hour	Air
Ultem® PEI (20%, 30% glass filled)	4 hours to 400°F	30 minutes per 1/4' thickness	50°F per hour	Air

\* Finish machining of critical dimensions should be performed after annealing.

**\*\*\* Important: Annealing cycles have been generalized to apply to majority of machined parts. Changes in heat up and hold time may be possible if cross sections are thin. Parts should be fixtured during annealing to prevent distortion.\*\*\***