Torch Work Annealing Guidelines
1/8" - 2" Thick (3mm-76mm) Solid Work

	Firing Schedules (ramps for work on mandrels in open air)							
	Heating		Annealing & Cooling					
	Step 1*		Step 2	Step 3		Step 4		
Target temps >>	960˚ F 516˚ C		950˚ F 510˚ C	800˚ F 427˚ C		100˚ F 38˚ C		
Maximum Thickness in thickest dimension	Ramp Rate (per hour)	Minimum Hold (minutes)	Hold (minutes)	Ramp Rate (per hour)	Hold (minutes)	Ramp Rate (per hour)	Hold (minutes)	Minimum Time (hours) Steps 2, 3 & 4
1/2" 12mm	300˚ F 166˚ C	15	30	150˚ F 28˚ C	0	300˚ F 166˚ C	0	7.6
1" 25mm	300˚ F 166˚ C	15	60	100˚ F 56˚ C	0	200˚ F 111˚ C	0	9.4
1 1/2" 38mm	300˚ F 166˚ C	15	120	50˚ F 28˚ C	0	100˚ F 56˚ C	0	15.5
2" 51mm	300˚ F 166˚ C	15	160	25˚ F 14˚ C	0	50˚ F 28˚ C	0	26.3
2 1/2" 63mm	300˚ F 166˚ C	15	200	18˚ F 10˚ C	0	36˚ F 20˚ C	0	32.1

*This loading hold temperature works for typical bead kilns with small doors. Kilns with larger doors allow more cooling when the door is opened. In this case use a higher Step 1 temperature, for example 1000˚ F (538˚C) but always start Step 2, the pre-annealing soak, at 960˚F (516˚C).

Basic Definition of firing steps	
Step 1	Heat glass, small premade components & kiln interior to the annealing point or slightly above. Hold through the loading period. If kiln is empty during heatup, heating AFAP is OK.
Step 2	Pre-annealing soak - after last piece is loaded. Equalizes temperatures throughout glass and kiln.
Step 3	Annealing ramp: slow cool through the annealing zone to below the strain point.
Step 4	Cooling ramp. Turn off at end. For work 1" (25mm) or thicker, wait to open kiln until interior is 100˚ F/38˚ C, or room temperature.

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