

MULTI-ETCH® Times and Temps

Action	Surface Change (unless otherwise noted)	Strength	Degrees F	Brass	Bronze	Copper	Niobium	Silver	Titanium CP4 – Grade 1			
Preparing for Anodizing or Welding	<i>Brightens</i>	Full	150 - 160°						Not usually necessary	7 - 10 Seconds		
		Double	70°							2 Minutes		
Removing Color Note: Times are for removing high-voltage green; lower voltage colors will take less time to remove.	<i>Brightens / Matte</i>	Full	150 - 160°						4.5 minutes (no surface change)	30 seconds		
		Double	150 - 160°						3.5 minutes (slightly matte)	30 seconds		
			70°						Not practical	6 minutes		
Etch Rates	<i>Brightens / Matte</i>	Full	150 - 160°						.00006" (trending toward matte)	1 minute	0.00012"	
										.00015" (matte)	2 minutes	0.00023"
										.00023" (matte)	3 minutes	0.00040"
		135°			20 - 30 seconds if Ancient Bronze from Rio Grande	no surface depth change (brightened, no smut)	3 minutes if PMC	.050" (matte)				
			15 minutes	0.004" (matte)	3 minutes if PMC	0.0025" (brightened, no smut)	15 minutes	0.002" (matte, dark brown smut)				
			188 minutes	.050" (matte)	3 minutes if Fast PMC	0.0030" (reveals more grain structure)	94 minutes	0.008" (matte)				
		Double	150 - 160°								1 minute	0.00023"
											2 minutes	0.00060"
												3 minutes
Remove Drill Bit	<i>Trend Toward Matte</i>	Full	135°						3+ Minutes	3+ minutes (slightly matte)		
Remove Light Fire Scale		Full	135°							3 minutes		

Compiled by Pigasus.Studio; apologies for any typos; rely on this at your own risk; see Multi-Etch site for original-source information

More on Multi-Etch® and various etch rates: <https://www.multietch.com/etch-rates>

More about Titanium Grades / Alloys: <https://continentalsteel.com/titanium/grades/>