

METAL OPTICS FIGURE AND ROUGHNESS GUIDELINES

		Roughness																		
† RMS Å												Å								
												1118	559	279	134	67	34	17	5	
† RMS inches		μ inches																		
		2200	1100	550	275	137.5	64.3	32.5	17.6	8.8	4.4	2.2	1.1	0.528	0.264	0.132	0.066	0.033		
Ra meters		μm						nm												
		50	25	12.5	6.2	3.2	1.6	800	400	200	100	50	25	12	6	3	1.5	0.075		
Materials	Ra inches	μ inches																		
		2000	1000	600	250	125	63	32	16	8	4	2	1	0.5	0.2	0.1	0.05	0.025		
CUTTING																				
All (Al, AlBeMet, Be, Cu, SS)	Sawing	█																		
	Planing, Shaping			█																
	Drilling			█																
	Milling		█																	
	Boring, Turning		█																	
	ABRASIVE																			
	Grinding					█														
	Lapping								█											
	OPTICAL PROCESS																			
	Lapping											█								
Bare Al, Cu, Crystals	Fly Cutting												█							
Bare Al, Cu, Crystals	Diamond Turn													█						
SS, Be, Nickel Plated Metals	Polishing												█							
SS, Al, Be, AlBeMet	Nickel Plate and Polish																█			

		Flatness							
OPTICAL PROCESS		waves							
		5	2	1	1/2	1/4	1/8	1/10	1/20
	Lapping	█	█	█	█	█	█	█	█
	Direct Polishing	█	█	█	█	█	█	█	█
	Fly Cutting	█	█	█	█	█	█	█	††
	Diamond Turn	█	█	█	█	█	█	█	††
	Nickel Plate and Polish	█	█	█	█	█	█	█	█

NOTES

This table was adapted from ANSI B46.1 - 1985 [1]

This chart should be used as a guideline only. Achievable figure and roughness are dependent upon appropriate design, material choice and aspect ratio.

† RMS ~ 1.1 x Ra (The factor 1.1 is generally accepted to convert between RMS and Ra, however there is no exact conversion as these quantities are dependent on measurement technique.)

†† Achievable with QQA 225/8 (ASTM - B211), QQA 200/8 (ASTM-B221)