



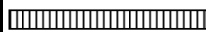
ACABAMENTOS SUPERFICIAIS

SÍMBOLOS DE RUGOSIDADE

TIPOS DE USINAGEM

(ISO 1302)

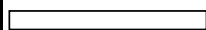
Tipo de usinagem	Grosseiro			Médio			Fino			Finíssimo		
Símbolo	N12, N11, N10			N9, N8, N7			N6, N5, N4			N3, N2, N1		
	(▽)	▽		(▽▽)	▽		(▽▽▽)	▽		(▽▽▽▽)	▽	
Grupos de rugosidade	N12	N11	N10	N9	N8	N7	N6	N5	N4	N3	N2	N1
R _a em micron	50	25	12,5	6,3	3,2	1,6	0,8	0,4	0,2	0,1	0,05	0,025
Serragem, corte	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Limagem	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Aplainamento	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Torneamento	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Broqueamento	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Escareação	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Perfuração	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Fresagem	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Brocagem	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Raspagem	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Retífica vertical	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Retífica tangencial	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Brunidura	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Super retífica	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Esmerilhamento	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		
Polimento	[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]			[Hatched] [Solid] [White]		



Rugosidade para esboço



Rugosidade obtida na prática normal



Rugosidade obtida com cuidados especiais

() — SINAL ANTIGO



— SINAL ATUAL

R_a = Valor médio aritmético da rugosidade, dando a diferença média do perfil da superfície da linha mediana.