

### Material Property and Grindability Summary

#	Material type	Grindability	Density	Elasticity	Thermal diffusivity
		$G_c \times 10^4$ ( $\text{mm}^3/\text{m}\cdot\text{min}$ )	$r$ ( $\text{g}/\text{mm}^3$ )	$E$ (GPa)	$a$ ( $\text{cm}^2/\text{s}$ )
1	Si <sub>3</sub> N <sub>4</sub> , SN220	24.3	3.25		
2	Si <sub>3</sub> N <sub>4</sub> , S/RBSN	18.5	3.31	282.26	0.1357
3	Si <sub>3</sub> N <sub>4</sub> , S/RBSN	17.1	3.36		
4	ZrO <sub>2</sub> , TTZ	37.9	5.73	329.90	0.0111
5	ZrO <sub>2</sub> , TTZ	37.0	5.70	209.40	0.0114
6	Si <sub>3</sub> N <sub>4</sub> , S/RBSN	22.9	2.49	265.83	0.1071
7	Si <sub>3</sub> N <sub>4</sub> , S/RBSN	22.2	3.15	274.25	
8	Si <sub>3</sub> N <sub>4</sub> , GS44	21.2	3.22		
9	Si <sub>3</sub> N <sub>4</sub> , GN10	18.2	3.31	316.55	0.2625
10	SiC, CVD	70.2	3.20	466.47	
11	SiC, Hexoloy	87.7	3.13	429.07	
12	Al <sub>2</sub> O <sub>3</sub> , AL995	181.3	3.82	290.24	
13	SiC, PAB B	91.8	3.18	453.96	
14	Si <sub>3</sub> N <sub>4</sub> , GS44	19.6	3.22	387.63	0.1665
15	Si <sub>3</sub> N <sub>4</sub> , NCX5102	6.9	3.23	333.01	
16	Si <sub>3</sub> N <sub>4</sub> , SN235p	15.5	3.24	316.56	0.1692
17	Si <sub>3</sub> N <sub>4</sub> , SN253-6	23.7	3.34		
18	Si <sub>3</sub> N <sub>4</sub>	34.3	3.23	325.73	0.2579
19	Si <sub>3</sub> N <sub>4</sub>	34.8	3.27		
20	Si <sub>3</sub> N <sub>4</sub>	36.0	3.15		
21	Si <sub>3</sub> N <sub>4</sub>	32.8	3.28		
22	Si <sub>3</sub> N <sub>4</sub>	44.3	3.16		
23	YZ-110	18.6	6.05	227.09	
24	YZ	23.0			
25	ALN	230.7	3.31	322.95	
26	Si <sub>3</sub> N <sub>4</sub> , NC132	17.4	3.20		
27	Si <sub>3</sub> N <sub>4</sub>	14.0	3.32		0.1774
28	Si <sub>3</sub> N <sub>4</sub>	39.6	3.21	315.93	0.3799
29	SiC	96.8			
30	SiC	95.6			
31	YZ	19.3	5.89	225.22	0.0133
32	Si <sub>3</sub> N <sub>4</sub>	17.0	3.21		
33	YZ-130	20.6	6.02	204.80	0.0102
34	Si <sub>3</sub> N <sub>4</sub>	19.0			0.2874

Grindability of ceramic materials  $G_c$  is defined as:

$$G_c = Z_w/v_s F_n$$

where  $Z_w$  is the volumetric material removal rate,  $v_s$  is the belt speed and  $F_n$  is the normal force