



MATERIAL MACHINABILITY IN STANDARD GEAR CUTTING APPLICATIONS

STEEL	MACHINABILITY (B1112 = 100%)
1018	70%
1018 HR	52%
1020	72%
1020 HR	52%
1035	65%
1040/42	64%
1045	64%
1045 HR	56%
1050	54%
1095	42%
1117	90%
11L17	115%
1137	70%
1141	71%
1144	76%
1144 HR	64%
1144 STRESSPROOF/A311	83%
1144 FATIGUEPROOF	80%
1212	100%
12L14	170%
1215	136%
2335	70%
4130	72%
4140/42	66%
4140/42 HR	57%
41L42	85%
4140/42 A434	50%
4145	55%
4150	60%
ETD150	73%
4340	50%
300M	50%
4340 A434	32/39 HRC
4620	60%
4820	49%
5120	30%
6150	50%
8620	64%
8620 HR	60%
86L20	90%
8740	65%
9310	51%
A36	70%
A572	62%
A514 (T-1)	40%
SPECIALTY STEEL	
NITRONIC 60	17%
MARAGING 300	36%

269/321 Bhn

STAINLESS STEEL	MACHINABILITY (B1112 = 100%)
302	45%
302/304 "B"	28%
303	69%
303 HT	40%
304	42%
304 L	458%
316	42%
321	35%
347	35%
410	54%
416 ANN	75%
416 HT	41%
420	39%
420 F	51%
430	50%
430 F	55%
431	42%
440A	40%
440C	26%
440 F Se	45%
15-5PH-A	43%
17-4PH H1150	45%
17-4PH-A	42%
17-4PH H1025	34%
17-4PH H900	411 BHN!
A286 AGED	30%

ALUMINUM	
A-132-T	110%
A-214	200%
A-356-T	140%
112/B-113	180%
D-132-T/333-T	130%
108/122-T	140%
195-T	190%
212	160%
218-T	240%
220-T	230%
319-T/355-T	160%
750-T	180%
2011	200%
2014/7-T	140%
2024-T	150%
3003/4	180%
5052/6	190%
4032-T	110%
6051-T	140%
6061-T	180%
6063-T	190%
7075-T	120%

CAST IRON ASTM	MACHINABILITY (B1112 = 100%)	SAE J431 PREVIOUS	SAE J431 CURRENT
CLASS 20	73%	G1800	G7
CLASS 25	55%	G2500	G9
CLASS 30	48%	G3000	G10
CLASS 35	48%	G3500	G11
CLASS 40	48%	G4000	G12
CLASS 45	36%		
CLASS 50	36%		
60-40-18	61%	TOOL LIFE	
65-45-12	61%	160%	
80-55-06	39%	80%	
100-70-03	30%		

MACHINABILITY BRASS - BRONZE (C36000 = 100%)		
C36000	100%	FREE CUTTING BRONZE
C46400	30%	NAVY BRASS (LEAD FREE)
C48500	70%	NAVY BRASS (LEADED)
C62400	50%	ALUMINUM BRONZE
C63000	30%	NICKEL ALUMINUM BRONZE
C64200	80%	SILICON ALUMINUM BRONZE
C67500	80%	MANGANESE BRONZE
C86300	20%	MANGANESE BRONZE SAE 430B
C90300	30%	SAE 620 TIN BRONZE, NAVY G
C90500	30%	TIN BRONZE SAE 62 GUN METAL
C90700	20%	TIN BRONZE SAE 65
C92200	42%	TIN BRONZE NAVY M SAE 622 STEAM
C93200	70%	SAE 660 BEARING BRONZE
C93700	80%	HIGH LEAD TIN BRONZE SAE 64
C95400	60%	ALUMINUM BRONZE
C95500	50%	NICKEL ALUMINUM BRONZE

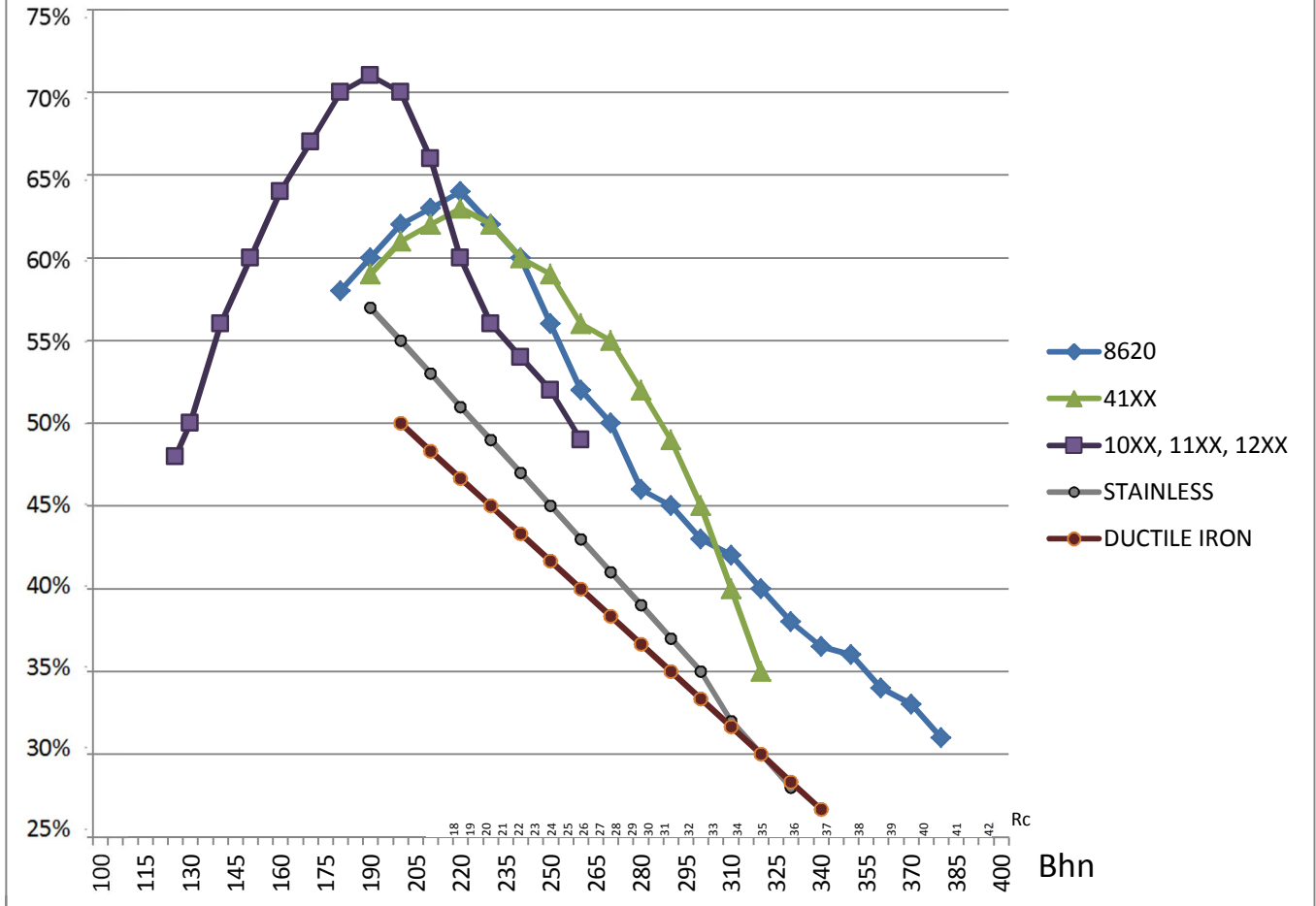
MACHINABILITY TOOL STEEL (W1 = 100%)	
A-11	40%
A-2	42%
A-6	33%
D-2	27%
D-3	27%
H-13	65%
M-2	39%
M-2	45%
M-3/4	36%
M-48	17%
O-1	42%
O-2	42%
S-7	65%
T-15	27%
W-1	100%

MACHINABILITY TITANIUM (B1112 = 100%)	
Ti 6Al 4V ANN	21%
Ti 6Al 4V AGED	12%

This summary table contains theoretical Maximum Machinability based on a variety of sources and actual experiences. It should be used as a reference only under the judgment of a qualified engineer. Note that these machinability ratings are highly dependent on the process of generation and the material's hardness. Reference "Machinability vs. Bhn" graph for additional information.



Machinability vs. Material Hardness



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