

# Speeds and Feeds



## Recommended cutting speed as per workpiece (vc) Inch

Workpiece		Hardness brinell (HB)	vc (sfm)		
			HU35T	HU30T	
P	Carbon steel	Low carbon (C = 0.1-0.25 %)	125	380~630	360~620
		Medium carbon (C = 0.25-0.55 %)	150	330~580	330~540
		High carbon (C = 0.55-0.85 %)	170	300~510	290~510
	Low alloy steel (alloying elements ≤ 5%)	Non-hardened	180	330~600	330~590
		Hardened	275	250~460	250~460
		Hardened	350	230~450	230~440
	High alloy steel (alloying elements > 5%)	Annealed	200	260~400	260~390
		Hardened	325	170~330	160~330
	Cast steel	Low alloy (alloying elements <5%)	200	230~430	230~430
		High alloy (alloying elements >5%)	225	200~400	200~390
M	Stainless steel ferritic	Non-hardened	200	230~430	230~430
		Hardened	330	170~310	160~310
	Stainless steel austenitic	Austenitic	180	260~400	260~390
		Super austenitic	200	100~330	100~330
	Stainless steel cast ferritic	Non-hardened	200	300~400	290~390
		Hardened	330	220~360	210~360
	Stainless steel cast austenitic	Austenitic	200	280~360	280~360
		Hardened	330	200~330	200~330
H	High temperature alloy	Annealed (Iron based)	200	150~200	150~190
		Aged (Iron based)	280	100~170	100~160
		Annealed (Nickel or Cobalt based)	250	70~100	65~160
		Aged (Nickel or Cobalt based)	350	50~80	50~80
	Titanium alloy	99.5% pure Titanium	400Rm	460~560	460~560
		Titanium alloy	1050Rm	170~230	160~230
	Extra hard steel	Hardened & tempered	55HRC	150~200	150~190
K	Malleable cast iron	Ferritic (short chips)	130	230~400	190~390
		Pearlitic (long chips)	230	230~400	190~390
	Gray cast iron	Low tensile strength	180	230~430	190~430
		High tensile strength	260	200~330	200~330
	Nodular SG iron	Ferritic	160	410~530	410~520
		Pearlitic	260	300~400	290~390
N	Aluminum alloy wrought	Non-aging	60	330~830	330~820
		Aged	100	260~600	260~590
	Aluminum alloy	Cast	75	660~1300	660~1310
		Cast & aged	90	660~920	660~920
		Cast Si 13-22%	130	200~500	200~590
	Copper and copper alloy	Brass	90	260~400	260~690
		Bronze and non-lead copper	100	260~400	260~690



# Speeds and Feeds



Recommended cutting speed as per workpiece (vc) Metric					
Workpiece		Hardness brinell (HB)	vc (m/min)		
			HU35T	HU30T	
P	Carbon steel	Low carbon (C = 0.1-0.25 %)	125	115~190	110~190
		Medium carbon (C = 0.25-0.55 %)	150	100~180	100~165
		High carbon (C = 0.55-0.85 %)	170	90~155	90~155
	Low alloy steel (alloying elements ≤ 5%)	Non-hardened	180	100~180	100~180
		Hardened	275	80~140	80~140
		Hardened	350	70~135	70~135
	High alloy steel (alloying elements > 5%)	Annealed	200	80~120	80~120
		Hardened	325	50~100	50~100
	Cast steel	Low alloy (alloying elements <5%)	200	70~130	70~130
		High alloy (alloying elements >5%)	225	60~120	60~120
M	Stainless steel ferritic	Non-hardened	200	70~130	70~130
		Hardened	330	50~95	50~95
	Stainless steel austenitic	Austenitic	180	80~120	80~120
		Super austenitic	200	30~100	30~100
	Stainless steel cast ferritic	Non-hardened	200	90~120	90~120
		Hardened	330	65~110	65~110
	Stainless steel cast austenitic	Austenitic	200	85~110	85~110
		Hardened	330	60~100	60~100
H	High temperature alloy	Annealed (Iron based)	200	45~60	45~55
		Aged (Iron based)	280	30~50	30~50
		Annealed (Nickel or Cobalt based)	250	20~30	20~50
		Aged (Nickel or Cobalt based)	350	15~25	15~25
	Titanium alloy	99.5% pure Titanium	400Rm	140~170	140~170
		Titanium alloy	1050Rm	50~70	50~70
	Extra hard steel	Hardened & tempered	55HRC	45~60	45~55
K	Malleable cast iron	Ferritic (short chips)	130	70~120	55~120
		Pearlitic (long chips)	230	70~120	55~120
	Gray cast iron	Low tensile strength	180	70~130	55~130
		High tensile strength	260	60~100	60~100
	Nodular SG iron	Ferritic	160	125~160	125~160
		Pearlitic	260	90~120	90~120
N	Aluminum alloy wrought	Non-aging	60	100~250	100~250
		Aged	100	80~180	80~180
	Aluminum alloy	Cast	75	200~395	200~400
		Cast & aged	90	200~280	200~280
		Cast Si 13-22%	130	60~150	60~180
	Copper and copper alloy	Brass	90	80~120	80~210
		Bronze and non-leaded copper	100	80~120	80~210

# Speeds and Feeds



## Number of Passes

$$n = \frac{vc \times 12}{\pi \times D}$$

$$AC = \frac{\pi \times D \times n}{12}$$

n: Revolution Per Minute [min<sup>-1</sup>]  
vc: Cutting Speed [sfm]  
D: Workpiece Diameter [inch]

Pitch	mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
	tpi	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
<b>No. of passes</b>		4~6	4~7	4~8	5~9	6~10	7~12	7~12	8~14	9~16	10~18	11~18	11~19	12~20	12~20	12~20	15~24

## Application Grade

Grade	Features	Available insert type
<b>HU30T</b>	<ul style="list-style-type: none"> <li>• For chip breaker type only</li> <li>• Stable machining on a wide application due to fine-grained carbide substrate with balanced heat resistance and toughness</li> <li>• Excellent wear resistance and oxidation resistance due to AlTiN coating film</li> <li>• Outstanding performance on high speed machining</li> </ul>	CFA/CFB (Insert with Chip breaker)
<b>HU35T</b>	<ul style="list-style-type: none"> <li>• A tough sub-micron substrate with TiAlN coating provides good fracture toughness and excellent wear resistance</li> <li>• Outstanding performance on STS and hard to cut materials</li> </ul>	ER/IR (Ground insert)

## Application Range

Workpiece		
<b>P</b>	Carbon steel, Alloy steel, Cast Steel	
<b>M</b>	Stainless steel, Heat resistant steel, Titanium alloy steel	
<b>K</b>	Carbon Iron, Aluminum, Cast Steel, Copper	

