

Recommended Cutting Conditions

Cutting of the Flat Surface

(inch)

DC		Work Material		Mild Steel ($\leq 180\text{HB}$)		Carbon Steel, Alloy Steel (180–280HB)	
		inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
				AISI 1010 etc.		AISI 1045, 4140 etc.	
.1260	3.2			245 (195–295)	.0024 (.0016–.0031)	245 (195–295)	.0024 (.0016–.0031)
.1575	4.0			245 (195–295)	.0031 (.0024–.0039)	245 (195–295)	.0031 (.0024–.0039)
.1969	5.0			245 (195–295)	.0039 (.0031–.0051)	245 (195–295)	.0039 (.0031–.0051)
.2480	6.3			245 (195–295)	.0051 (.0039–.0059)	245 (195–295)	.0051 (.0039–.0059)
.3150	8.0			245 (195–295)	.0059 (.0051–.0067)	245 (195–295)	.0059 (.0051–.0067)
.3937	10.0			245 (195–295)	.0067 (.0059–.0079)	245 (195–295)	.0067 (.0059–.0079)
.4724	12.0			245 (195–295)	.0079 (.0067–.0098)	245 (195–295)	.0079 (.0067–.0098)
.6299	16.0			245 (195–295)	.0098 (.0079–.0118)	245 (195–295)	.0098 (.0079–.0118)
.7874	20.0			245 (195–295)	.0118 (.0098–.0138)	245 (195–295)	.0118 (.0098–.0138)

DC		Work Material		Carbon Steel, Alloy Steel (280–350HB)		Austenitic Stainless Steel ($\leq 200\text{HB}$)	
		inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
				AISI 4340 etc.		AISI 304, 316 etc.	
.1260	3.2			210 (165–260)	.0024 (.0016–.0031)	100 (65–165)	.0008 (.0004–.0012)
.1575	4.0			210 (165–260)	.0031 (.0024–.0039)	100 (65–165)	.0012 (.0008–.0016)
.1969	5.0			210 (165–260)	.0039 (.0031–.0059)	100 (65–165)	.0016 (.0012–.0020)
.2480	6.3			210 (165–260)	.0051 (.0039–.0059)	100 (65–165)	.0020 (.0016–.0024)
.3150	8.0			210 (165–260)	.0059 (.0051–.0079)	100 (65–165)	.0024 (.0020–.0031)
.3937	10.0			210 (165–260)	.0067 (.0059–.0087)	100 (65–165)	.0031 (.0024–.0039)
.4724	12.0			210 (165–260)	.0079 (.0067–.0098)	100 (65–165)	.0039 (.0031–.0047)
.6299	16.0			210 (165–260)	.0098 (.0079–.0118)	100 (65–165)	.0047 (.0039–.0059)
.7874	20.0			210 (165–260)	.0118 (.0098–.0138)	100 (65–165)	.0059 (.0047–.0079)

DC		Work Material		Gray Cast Iron ($\leq 350\text{MPa}$)		Ductile Cast Iron ($\leq 450\text{MPa}$)	
		inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
				No45B etc.		60-40-18 etc.	
.1260	3.2			245 (195–295)	.0024 (.0016–.0031)	210 (180–245)	.0020 (.0016–.0024)
.1575	4.0			245 (195–295)	.0031 (.0024–.0039)	230 (195–260)	.0024 (.0020–.0031)
.1969	5.0			245 (195–295)	.0039 (.0031–.0047)	230 (195–260)	.0031 (.0024–.0039)
.2480	6.3			245 (195–295)	.0047 (.0039–.0055)	230 (195–260)	.0039 (.0031–.0047)
.3150	8.0			245 (195–295)	.0055 (.0047–.0063)	230 (195–260)	.0047 (.0039–.0059)
.3937	10.0			245 (195–295)	.0063 (.0055–.0071)	230 (195–260)	.0059 (.0047–.0071)
.4724	12.0			245 (195–295)	.0071 (.0063–.0079)	230 (195–260)	.0071 (.0059–.0079)
.6299	16.0			245 (195–295)	.0079 (.0071–.0094)	230 (195–260)	.0079 (.0071–.0098)
.7874	20.0			245 (195–295)	.0094 (.0079–.0110)	230 (195–260)	.0098 (.0079–.0118)

Recommended Cutting Conditions

■ Cutting of the Flat Surface (inch)

DC		Work Material		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
		Aluminum Alloy (Si<5%)			
		ASTM A6061, 7075 etc.			
.1260	3.2			360 (295—425)	.0024 (.0016—.0031)
.1575	4.0			360 (295—425)	.0031 (.0024—.0039)
.1969	5.0			360 (295—425)	.0039 (.0031—.0051)
.2480	6.3			360 (295—425)	.0051 (.0039—.0063)
.3150	8.0			360 (295—425)	.0063 (.0051—.0079)
.3937	10.0			360 (295—425)	.0079 (.0063—.0094)
.4724	12.0			360 (295—425)	.0094 (.0079—.0110)
.6299	16.0			360 (295—425)	.0110 (.0094—.0126)
.7874	20.0			360 (295—425)	.0126 (.0110—.0142)

Cutting of the < 30° Angled Surface

(inch)

Work Material		Mild Steel (≤180HB)		Carbon Steel, Alloy Steel (180–280HB)	
		AISI 1010 etc.		AISI 1045, 4140 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	245 (195–295)	.0017 (.0011–.0022)	245 (195–295)	.0017 (.0011–.0022)
.1575	4.0	245 (195–295)	.0022 (.0017–.0028)	245 (195–295)	.0022 (.0017–.0028)
.1969	5.0	245 (195–295)	.0028 (.0022–.0036)	245 (195–295)	.0028 (.0022–.0036)
.2480	6.3	245 (195–295)	.0036 (.0028–.0041)	245 (195–295)	.0036 (.0028–.0041)
.3150	8.0	245 (195–295)	.0041 (.0036–.0047)	245 (195–295)	.0041 (.0036–.0047)
.3937	10.0	245 (195–295)	.0047 (.0041–.0055)	245 (195–295)	.0047 (.0041–.0055)
.4724	12.0	245 (195–295)	.0055 (.0047–.0069)	245 (195–295)	.0055 (.0047–.0069)
.6299	16.0	245 (195–295)	.0069 (.0055–.0083)	245 (195–295)	.0069 (.0055–.0083)
.7874	20.0	245 (195–295)	.0083 (.0069–.0096)	245 (195–295)	.0083 (.0069–.0096)

Work Material		Carbon Steel, Alloy Steel (280–350HB)		Austenitic Stainless Steel (≤200HB)	
		AISI 4340 etc.		AISI 304, 316 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	210 (165–260)	.0017 (.0011–.0022)	100 (65–165)	.0006 (.0003–.0008)
.1575	4.0	210 (165–260)	.0022 (.0017–.0028)	100 (65–165)	.0008 (.0006–.0011)
.1969	5.0	210 (165–260)	.0028 (.0022–.0041)	100 (65–165)	.0011 (.0008–.0014)
.2480	6.3	210 (165–260)	.0036 (.0028–.0041)	100 (65–165)	.0014 (.0011–.0017)
.3150	8.0	210 (165–260)	.0041 (.0036–.0055)	100 (65–165)	.0017 (.0014–.0022)
.3937	10.0	210 (165–260)	.0047 (.0041–.0061)	100 (65–165)	.0022 (.0017–.0028)
.4724	12.0	210 (165–260)	.0055 (.0047–.0069)	100 (65–165)	.0028 (.0022–.0033)
.6299	16.0	210 (165–260)	.0069 (.0055–.0083)	100 (65–165)	.0033 (.0028–.0041)
.7874	20.0	210 (165–260)	.0083 (.0069–.0096)	100 (65–165)	.0041 (.0033–.0055)

Work Material		Gray Cast Iron (≤350MPa)		Ductile Cast Iron (≤450MPa)	
		No45B etc.		60-40-18 etc.	
DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
inch	mm				
.1260	3.2	245 (195–295)	.0017 (.0011–.0022)	210 (180–245)	.0014 (.0011–.0017)
.1575	4.0	245 (195–295)	.0022 (.0017–.0028)	230 (195–260)	.0017 (.0014–.0022)
.1969	5.0	245 (195–295)	.0028 (.0022–.0033)	230 (195–260)	.0022 (.0017–.0028)
.2480	6.3	245 (195–295)	.0033 (.0028–.0039)	230 (195–260)	.0028 (.0022–.0033)
.3150	8.0	245 (195–295)	.0039 (.0033–.0044)	230 (195–260)	.0033 (.0028–.0041)
.3937	10.0	245 (195–295)	.0044 (.0039–.0050)	230 (195–260)	.0041 (.0033–.0050)
.4724	12.0	245 (195–295)	.0050 (.0044–.0055)	230 (195–260)	.0050 (.0041–.0055)
.6299	16.0	245 (195–295)	.0055 (.0050–.0066)	230 (195–260)	.0055 (.0050–.0069)
.7874	20.0	245 (195–295)	.0066 (.0055–.0077)	230 (195–260)	.0069 (.0055–.0083)

Recommended Cutting Conditions

Cutting of the < 30° Angled Surface (inch)

DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
Work Material		Aluminum Alloy (Si<5%) ASTM A6061, 7075 etc.	
.1260	3.2	360 (295—425)	.0017 (.0011—.0022)
.1575	4.0	360 (295—425)	.0022 (.0017—.0028)
.1969	5.0	360 (295—425)	.0028 (.0022—.0036)
.2480	6.3	360 (295—425)	.0036 (.0028—.0044)
.3150	8.0	360 (295—425)	.0044 (.0036—.0055)
.3937	10.0	360 (295—425)	.0055 (.0044—.0066)
.4724	12.0	360 (295—425)	.0066 (.0055—.0077)
.6299	16.0	360 (295—425)	.0077 (.0066—.0088)
.7874	20.0	360 (295—425)	.0088 (.0077—.0099)

Cutting of the > 30° Angled Surface

(inch)

DC		Work Material		Mild Steel ($\leq 180\text{HB}$)		Carbon Steel, Alloy Steel (180–280HB)	
		AISI 1010 etc.		AISI 1045, 4140 etc.			
inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)		
.1260	3.2	245 (195–295)	.0012 (.0008–.0016)	245 (195–295)	.0012 (.0008–.0016)		
.1575	4.0	245 (195–295)	.0016 (.0012–.0020)	245 (195–295)	.0016 (.0012–.0020)		
.1969	5.0	245 (195–295)	.0020 (.0016–.0026)	245 (195–295)	.0020 (.0016–.0026)		
.2480	6.3	245 (195–295)	.0026 (.0020–.0030)	245 (195–295)	.0026 (.0020–.0030)		
.3150	8.0	245 (195–295)	.0030 (.0026–.0033)	245 (195–295)	.0030 (.0026–.0033)		
.3937	10.0	245 (195–295)	.0033 (.0030–.0039)	245 (195–295)	.0033 (.0030–.0039)		
.4724	12.0	245 (195–295)	.0039 (.0033–.0049)	245 (195–295)	.0039 (.0033–.0049)		
.6299	16.0	245 (195–295)	.0049 (.0039–.0059)	245 (195–295)	.0049 (.0039–.0059)		
.7874	20.0	245 (195–295)	.0059 (.0049–.0069)	245 (195–295)	.0059 (.0049–.0069)		

DC		Work Material		Carbon Steel, Alloy Steel (280–350HB)		Austenitic Stainless Steel ($\leq 200\text{HB}$)	
		AISI 4340 etc.		AISI 304, 316 etc.			
inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)		
.1260	3.2	210 (165–260)	.0012 (.0008–.0016)	100 (65–165)	.0004 (.0002–.0006)		
.1575	4.0	210 (165–260)	.0016 (.0012–.0020)	100 (65–165)	.0006 (.0004–.0008)		
.1969	5.0	210 (165–260)	.0020 (.0016–.0026)	100 (65–165)	.0008 (.0006–.0010)		
.2480	6.3	210 (165–260)	.0026 (.0020–.0030)	100 (65–165)	.0010 (.0008–.0012)		
.3150	8.0	210 (165–260)	.0030 (.0026–.0039)	100 (65–165)	.0012 (.0010–.0016)		
.3937	10.0	210 (165–260)	.0033 (.0030–.0043)	100 (65–165)	.0016 (.0012–.0020)		
.4724	12.0	210 (165–260)	.0039 (.0033–.0049)	100 (65–165)	.0020 (.0016–.0024)		
.6299	16.0	210 (165–260)	.0049 (.0039–.0059)	100 (65–165)	.0024 (.0020–.0030)		
.7874	20.0	210 (165–260)	.0059 (.0049–.0069)	100 (65–165)	.0030 (.0024–.0039)		

DC		Work Material		Gray Cast Iron ($\leq 350\text{MPa}$)		Ductile Cast Iron ($\leq 450\text{MPa}$)	
		No45B etc.		60-40-18 etc.			
inch	mm	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)	vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)		
.1260	3.2	245 (195–295)	.0012 (.0008–.0016)	210 (180–245)	.0010 (.0008–.0012)		
.1575	4.0	245 (195–295)	.0016 (.0012–.0020)	230 (195–260)	.0012 (.0010–.0016)		
.1969	5.0	245 (195–295)	.0020 (.0016–.0024)	230 (195–260)	.0016 (.0012–.0020)		
.2480	6.3	245 (195–295)	.0024 (.0020–.0028)	230 (195–260)	.0020 (.0016–.0024)		
.3150	8.0	245 (195–295)	.0028 (.0024–.0031)	230 (195–260)	.0024 (.0020–.0030)		
.3937	10.0	245 (195–295)	.0031 (.0028–.0035)	230 (195–260)	.0030 (.0024–.0035)		
.4724	12.0	245 (195–295)	.0035 (.0031–.0039)	230 (195–260)	.0035 (.0030–.0039)		
.6299	16.0	245 (195–295)	.0039 (.0035–.0047)	230 (195–260)	.0039 (.0035–.0049)		
.7874	20.0	245 (195–295)	.0047 (.0039–.0055)	230 (195–260)	.0049 (.0039–.0059)		

Recommended Cutting Conditions

Cutting of the > 30° Angled Surface (inch)

DC		vc (Min.—Max.) (SFM)	fr (Min.—Max.) (IPR)
Work Material		Aluminum Alloy (Si<5%) ASTM A6061, 7075 etc.	
.1260	3.2	360 (295—425)	.0012 (.0008—.0016)
.1575	4.0	360 (295—425)	.0016 (.0012—.0020)
.1969	5.0	360 (295—425)	.0020 (.0016—.0026)
.2480	6.3	360 (295—425)	.0026 (.0020—.0031)
.3150	8.0	360 (295—425)	.0031 (.0026—.0039)
.3937	10.0	360 (295—425)	.0039 (.0031—.0047)
.4724	12.0	360 (295—425)	.0047 (.0039—.0055)
.6299	16.0	360 (295—425)	.0055 (.0047—.0063)
.7874	20.0	360 (295—425)	.0063 (.0055—.0071)