

FEEDS & SPEEDS CHART FOR KEYSEATS - CARBIDE TIPPED

Feeds & speeds are a starting recommendation for catalog standards only. Factors such as machine, fixture and tooling rigidity, horse-power available, coolant application and others will affect the performance significantly. Please read machine operators instructions and use all safety shields and glasses before performing these operations. (Series 3700, 3701, 3702, & 3703 Keyseat Cutters)

IPM is based on catalog standards only using the mid SFPM and a 0.002 IPT chip load as a starting point. For all other conditions use the following formulas to calculate RPM and IPM from the ranges listed in the material group and brinell harness section as a starting point.

$$\text{RPM} = \text{SFPM} * 3.82 / \text{Cutter Diameter}$$

$$\text{IPM} = \text{IPT} * \text{RPM} * \# \text{Teeth}$$



CLASSIFICATION	MATERIAL	BRINELL	SPEED IN SFPM	FEED RATE IPT	KEYSEAT CUTTER DIAMETER									
					1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	
					IPM	IPM	IPM	IPM	IPM	IPM	IPM	IPM	IPM	
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30-150*	1200+	.002-.010	110	88	73	63	73	65	59	53	49	
	MAGNESIUM ALLOY	50-90*	1000+	.002-.010	92	73	61	52	61	54	49	44	41	
	LEAD ALLOY	10-20*	-	-	-	-	-	-	-	-	-	-	-	
	NON-METAL AND PLASTIC	-	1500+	.002-.006	138	110	92	79	92	81	73	67	61	
	ZINC ALLOY - DIE CAST	80-100	750-1000	.002-.006	80	64	53	46	53	48	43	39	36	
NON-FERROUS (HARD)	ALUMINUM BRONZE	40-175	200-600	.002-.006	37	29	24	21	24	22	20	18	16	
	BRASS ALLOY - LEADED AND FREE CUTTING	10-100Rb	400-550	.002-.006	44	35	29	25	29	26	23	21	19	
	NICKEL SILVER	10-100Rb	200-400	.002-.006	28	22	18	16	18	16	15	13	12	
	COPPER ALLOY - TOUGH	40-200*	200-500	.002-.006	32	26	21	18	21	19	17	16	14	
CAST IRON	DUCTILE CAST IRON - AUSTENITIC	120-275	75-150	.002-.004	10	8	7	6	7	6	6	5	5	
	DUCTILE CAST IRON - FERRITIC	140-270	200-400	.002-.007	28	22	18	16	18	16	15	13	12	
	DUCTILE CAST IRON - MARTENSITIC	270-440	150-350	.002-.007	23	18	15	13	15	14	12	11	10	
	GRAY - PEARLITIC	220-320	150-300	.002-.007	21	17	14	12	14	12	11	10	9	
	GRAY - FERRITIC	110-240	220-410	.002-.006	29	23	19	17	19	17	15	14	13	
	MALLEABLE CAST IRON - MARTENSITIC	200-320	130-300	.002-.004	20	16	13	11	13	12	11	10	9	
LOW CARBON STEELS	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100-250	200-500	.001-.005	32	26	21	18	21	19	17	16	14	
	LOW AND MEDIUM CARBON STEEL - WROUGHT	100-375	200-400	.001-.005	28	22	18	16	18	16	15	13	12	
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100-275	200-400	.001-.005	28	22	18	16	18	16	15	13	12	
	LOW AND MEDIUM CARBON ALLOY STEEL	85-375	130-330	.001-.005	21	17	14	12	14	12	11	10	9	
	STAINLESS STEEL - 400 SERIES	135-325	135-375	.002-.005	24	19	16	14	16	14	13	12	11	
	STAINLESS STEEL - 400 SERIES FREE MACHINING	135-275	250-500	.002-.005	34	28	23	20	23	20	18	17	15	
HIGH STRENGTH STEELS	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175-400	75-200	.001-.004	13	28	23	20	23	20	18	17	15	
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140-300	50-150	.001-.004	9	7	6	5	6	5	5	4	4	
	STAINLESS STEEL - 300 SERIES	135-375	75-175	.001-.004	11	9	8	7	8	7	6	6	5	
	STAINLESS STEEL - PH SERIES	150-440	75-175	.001-.004	11	9	8	7	8	7	6	6	5	
	TITANIUM ALLOY	110-380	75-200	.002-.006	13	10	8	7	8	7	7	6	6	

FEEDS & SPEEDS CHART FOR MILLS & SAWS - CARBIDE TIPPED



Feeds & speeds are a starting recommendation only. Factors such as machine, fixture and tooling rigidity, horsepower available, coolant application and others will affect the performance significantly. Please read machine operators instructions and use all safety shields and glasses before performing these operations.

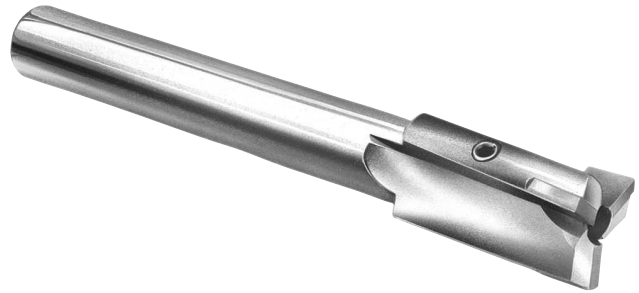
$$\text{RPM} = \text{SFPM} * 3.82 / \text{Cutter Diameter}$$

$$\text{IPM} = \text{IPT} * \text{RPM} * \# \text{Teeth}$$

CLASSIFICATION	MATERIAL	BRINELL	SURFACE FEET PER MINUTE (SFPM)	INCHES PER TOOTH (IPT)
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30 - 150*	1000 - 2000	.004-.008
	MAGNESIUM ALLOY	50 - 90*	750 - 1500	.004-.008
	LEAD ALLOY	10 - 20*	300 - 1000	.004-.008
	NON-METAL AND PLASTIC	-	1500 - 3000	.004-.008
	ZINC ALLOY - DIE CAST	80 - 100	750 - 1500	.005-.010
NON-FERROUS (HARD)	ALUMINUM BRONZE	40 - 175	200 - 600	.003-.006
	BRASS ALLOY - LEADED AND FREE CUTTING	10 - 100Rb	400 - 800	.004-.008
	NICKEL SILVER	10 - 100Rb	200 - 400	.003-.006
	COPPER ALLOY - TOUGH	40 - 200*	200 - 500	.004-.008
CAST IRON	DUCTILE CAST IRON - AUSTENITIC	120 - 275	75 - 150	.002-.004
	DUCTILE CAST IRON - FERRITIC	140 - 270	250 - 400	.003-.006
	DUCTILE CAST IRON - MARTENSITIC	270 - 400	200 - 300	.003-.006
	GRAY - PEARLITIC	220 - 320	120 - 300	.002-.004
	GRAY - FERRITIC	110 - 240	250 - 425	.003-.006
	MALLEABLE CAST IRON - MARTENSITIC	200 - 320	130 - 225	.002-.004
	MALLEABLE CAST IRON - FERRITIC & PEARLITIC	110 - 240	200 - 400	.003-.006
LOW CARBON STEELS	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100 - 250	250 - 500	.003-.006
	LOW AND MEDIUM CARBON STEEL - WROUGHT	100 - 375	200 - 400	.002-.004
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100 - 275	200 - 400	.002-.004
	LOW AND MEDIUM CARBON ALLOY STEEL	85 - 375	150 - 300	.002-.005
	STAINLESS STEEL - 400 SERIES	135 - 325	200 - 400	.003-.006
	STAINLESS STEEL - 400 SERIES FREE MACHINING	135 - 275	250 - 500	.003-.006
HIGH STRENGTH STEELS	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175 - 400	75 - 150	.002-.004
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140 - 300	50 - 150	.002-.004
	STAINLESS STEEL - 300 SERIES	135 - 375	75 - 150	.002-.004
	STAINLESS STEEL - PH SERIES	150 - 440	75 - 150	.002-.004
	TITANIUM ALLOY	110 - 380	100 - 200	.002-.004

FEEDS & SPEEDS CHART FOR COUNTERBORES

Feeds & speeds are a starting recommendation only. Factors such as machine, fixture and tooling rigidity, horsepower available, coolant application and others will affect the performance significantly. Please read machine operators instructions and use all safety shields and glasses before performing these operations.



$$\text{RPM} = \text{SFPM} * 3.82 / \text{Cutter Diameter}$$

CLASSIFICATION	MATERIAL	COUNTERBORING		FEED RATE (INCHES PER REVOLUTION) FINISHED HOLE DIAMETER IN INCHES					
		BRINELL	SFPM	¼	½	¾	1	1 ½	2
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30-150*	750-900	.006	.006	.007	.007	.009	.010
	MAGNESIUM ALLOY	50-90*	875-1000	.006	.006	.007	.007	.009	.010
	LEAD	10-20*	875-1000	.006	.006	.007	.007	.009	.010
	NON-METAL AND PLASTIC	-	700-1200	.006	.006	.007	.007	.009	.010
	ZINC ALLOY - DIE CAST	80-100	700-850	.005	.005	.006	.006	.007	.009
NON-FERROUS (HARD)	ALUMINUM BRONZE	40-175	700-850	.006	.006	.007	.007	.009	.010
	BRASS ALLOY - LEADED AND FREE CUTTING	10-100Rb	850-1000	.006	.006	.007	.007	.009	.010
	CHROMIUM - NICKEL	10-100Rb	75-85	.003	.003	.003	.003	.004	.005
	COPPER ALLOY - TOUGH	40-200*	275-350	.005	.005	.006	.006	.007	.009
CAST IRON	DUCTILE CAST IRON - AUSTENITIC	120-275	85-110	.002	.002	.002	.002	.003	.004
	DUCTILE CAST IRON - FERRITIC	140-270	200-250	.006	.006	.007	.007	.009	.010
	DUCTILE CAST IRON - MARTENSITIC	270-400	75-95	.002	.002	.002	.002	.003	.004
	GRAY - PEARLITIC	220-320	125-200	.004	.004	.004	.005	.006	.007
	GRAY - FERRITIC	110-240	200-250	.004	.004	.004	.005	.006	.007
	MALLEABLE CAST IRON - MARTENSITIC	200-320	60-85	.004	.004	.004	.005	.006	.007
LOW CARBON STEELS	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100-250	200-250	.006	.006	.007	.007	.009	.010
	LOW AND MEDIUM CARBON STEEL - WROUGHT	100-375	150-200	.006	.006	.007	.007	.009	.010
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100-275	145-185	.004	.004	.004	.005	.006	.007
	LOW AND MEDIUM CARBON ALLOY STEEL	85-375	130-165	.004	.004	.004	.005	.006	.007
	STAINLESS STEEL - 400 SERIES	135-325	150-200	.003	.003	.003	.003	.004	.005
	STAINLESS STEEL - 400 SERIES FREE MACHINING	135-275	155-205	.003	.003	.003	.003	.004	.005
HIGH STRENGTH STEELS	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175-400	90-135	.002	.002	.002	.002	.003	.003
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140-300	40-65	.002	.002	.002	.002	.003	.003
	STAINLESS STEEL - 300 SERIES	135-375	150-300	.003	.003	.003	.003	.004	.005
	STAINLESS STEEL - PH SERIES	150-440	115-175	.003	.003	.003	.003	.004	.005
	TITANIUM ALLOY	110-380	125-175	.002	.002	.002	.002	.003	.003

FEEDS & SPEEDS CHARTS FOR REAMERS - CARBIDE TIPPED

Feeds & speeds are a starting recommendation only. Factors such as machine, fixture and tooling rigidity, horsepower available, coolant application and others will affect the performance significantly. Please read machine operators instructions and use all safety shields and glasses before performing these operations.



$$\text{RPM} = \text{SFPM} \times 3.82 / \text{Cutter Diameter}$$

CLASSIFICATION	MATERIAL	BRINELL	SPEED IN SFPM	FEED RATE (INCHES PER REVOLUTION)					HOLE DIAMETER IN INCHES			
			GENERAL PURPOSE (G.P.)	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30 - 150*	150 - 250	.004	.006	.008	.011	.012	.013	.016	.019	.020
	MAGNESIUM ALLOY	50 - 90*	130 - 190	.005	.010	.012	.015	.016	.017	.020	.022	.025
	LEAD ALLOY	10 - 20*	150 - 250	.002	.006	.008	.012	.014	.015	.018	.021	.022
	NON-METAL AND PLASTIC	-	90 - 250	.004	.005	.007	.008	.009	.012	.014	.016	.018
	ZINC ALLOY - DIE CAST	80 - 100	140 - 210	.005	.007	.008	.010	.011	.012	.015	.018	.020
NON-FERROUS (HARD)	ALUMINUM BRONZE	40 - 175	50 - 90	.004	.006	.010	.012	.014	.016	.018	.020	.022
	BRASS ALLOY - LEADED AND FREE CUTTING	10 - 100Rb	100 - 250	.005	.008	.011	.015	.017	.018	.020	.022	.025
	NICKEL SILVER	10 - 100Rb	50 - 90	.004	.006	.008	.010	.011	.012	.014	.015	.016
CAST IRON	COPPER ALLOY - TOUGH	40 - 200*	50 - 90	.005	.006	.008	.010	.011	.012	.014	.016	.017
	DUCTILE CAST IRON - AUSTENITIC	120 - 275	45 - 70	.004	.006	.007	.008	.010	.013	.015	.018	.020
	DUCTILE CAST IRON - FERRITIC	140 - 270	50 - 90	.004	.005	.008	.010	.012	.014	.017	.020	.023
	DUCTILE CAST IRON - MARTENSITIC	270 - 400	35 - 60	.004	.006	.007	.008	.009	.010	.012	.014	.016
	GRAY - PEARLITIC	220 - 320	45 - 70	.004	.006	.008	.009	.010	.012	.014	.018	.020
	GRAY - FERRITIC	120 - 220	65 - 135	.005	.008	.010	.011	.013	.016	.020	.022	.025
LOW CARBON STEELS	MALLEABLE CAST IRON - MARTENSITIC	200 - 320	45 - 70	.004	.006	.008	.010	.012	.013	.015	.018	.025
	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100 - 250	70 - 100	.005	.008	.010	.012	.014	.015	.020	.025	.030
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON STEEL - WROUGHT	100 - 375	30 - 85	.004	.008	.009	.011	.013	.015	.018	.020	.022
	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100 - 275	65 - 100	.005	.008	.010	.015	.017	.018	.022	.025	.027
	LOW AND MEDIUM CARBON ALLOY STEEL	85 - 375	40 - 85	.005	.010	.012	.015	.018	.020	.025	.027	.030
	STAINLESS STEEL - 400 SERIES	135 - 325	40 - 90	.003	.005	.006	.007	.008	.008	.010	.011	.012
HIGH STRENGTH STEELS	STAINLESS STEEL - 400 SERIES FREE MACHINING	135 - 275	65 - 100	.004	.006	.007	.008	.009	.009	.010	.011	.012
	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175 - 400	35 - 70	.004	.006	.007	.008	.009	.010	.011	.012	.013
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140 - 300	15 - 85	.003	.005	.005	.005	.006	.007	.008	.010	.012
	STAINLESS STEEL - 300 SERIES	135 - 375	40 - 75	.003	.004	.005	.006	.006	.007	.008	.009	.010
	STAINLESS STEEL - PH SERIES	150 - 440	35 - 70	.003	.004	.004	.005	.006	.007	.008	.009	.010
	TITANIUM ALLOY	110 - 380	30 - 45	.004	.006	.008	.010	.011	.011	.012	.013	.014

CLASSIFICATION	MATERIAL	BRINELL	SPEED IN SFPM	FEED RATE (INCHES PER REVOLUTION)					HOLE DIAMETER IN INCHES			
			COOLANT FED (C.F.)	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30 - 150*	200 - 300	-	.008	.010	.013	.015	.017	.021	.022	.024
	MAGNESIUM ALLOY	50 - 90*	150 - 250	-	.012	.015	.018	.019	.020	.024	.026	.028
	LEAD ALLOY	10 - 20*	200 - 300	-	.008	.010	.016	.017	.018	.022	.024	.026
	NON-METAL AND PLASTIC	-	125 - 300	-	.006	.008	.009	.010	.014	.016	.018	.020
	ZINC ALLOY - DIE CAST	80 - 100	170 - 240	-	.009	.011	.013	.014	.016	.020	.022	.025
NON-FERROUS (HARD)	ALUMINUM BRONZE	40 - 175	70 - 105	-	.008	.013	.015	.016	.018	.021	.024	.028
	BRASS ALLOY - LEADED AND FREE CUTTING	10 - 100Rb	125 - 300	-	.010	.014	.020	.022	.024	.026	.028	.032
	NICKEL SILVER	10 - 100Rb	70 - 190	-	.007	.010	.012	.013	.014	.017	.018	.018
CAST IRON	COPPER ALLOY - TOUGH	40 - 200*	70 - 105	-	.008	.010	.013	.014	.016	.018	.019	.020
	DUCTILE CAST IRON - AUSTENITIC	120 - 275	65 - 100	-	.008	.009	.011	.014	.016	.018	.020	.025
	DUCTILE CAST IRON - FERRITIC	140 - 270	70 - 105	-	.007	.010	.012	.015	.017	.022	.024	.027
	DUCTILE CAST IRON - MARTENSITIC	270 - 400	50 - 85	-	.008	.009	.010	.011	.013	.014	.017	.019
	GRAY - PEARLITIC	220 - 320	55 - 100	-	.008	.010	.012	.014	.015	.018	.020	.026
	GRAY - FERRITIC	120 - 220	95 - 190	-	.010	.013	.014	.017	.020	.024	.028	.030
LOW CARBON STEELS	MALLEABLE CAST IRON - MARTENSITIC	200 - 320	65 - 100	-	.008	.010	.012	.014	.015	.020	.023	.030
	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100 - 250	100 - 150	-	.012	.014	.016	.018	.020	.025	.030	.035
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON STEEL - WROUGHT	100 - 375	40 - 110	-	.009	.011	.013	.015	.017	.022	.024	.026
	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100 - 275	90 - 135	-	.010	.012	.018	.020	.022	.025	.027	.030
	LOW AND MEDIUM CARBON ALLOY STEEL	85 - 375	65 - 100	-	.012	.015	.018	.022	.024	.028	.030	.033
	STAINLESS STEEL - 400 SERIES	135 - 325	50 - 100	-	.007	.007	.008	.009	.009	.012	.014	.015
HIGH STRENGTH STEELS	STAINLESS STEEL - 400 SERIES FREE MACHINING	135 - 275	90 - 135	-	.008	.009	.010	.011	.012	.013	.013	.014
	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175 - 400	50 - 100	-	.007	.008	.009	.011	.012	.014	.015	.016
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140 - 300	20 - 115	-	.006	.007	.007	.008	.008	.010	.012	.015
	STAINLESS STEEL - 300 SERIES	135 - 375	60 - 90	-	.006	.007	.008	.008	.009	.010	.011	.012
	STAINLESS STEEL - PH SERIES	150 - 440	50 - 90	-	.006	.006	.007	.008	.009	.010	.012	.014
	TITANIUM ALLOY	110 - 380	40 - 60	-	.008	.010	.013	.014	.014	.016	.016	.018

FEEDS & SPEEDS CHARTS FOR DRILLS - CARBIDE TIPPED

Feeds & speeds are a starting recommendation only. Factors such as machine, fixture and tooling rigidity, horsepower available, coolant application and others will affect the performance significantly. Please read machine operators instructions and use all safety shields and glasses before performing these operations.

$$\text{RPM} = \text{SFPM} \times 3.82 / \text{Drill Diameter}$$



CLASSIFICATION	MATERIAL	BRINELL	SPEED IN SFPM	FEED RATE (INCHES PER REVOLUTION)					HOLE DIAMETER IN INCHES			
			GENERAL PURPOSE (G.P.)	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30 - 150*	250-350	.003	.005	.007	.008	.010	.011	.014	.017	.019
	MAGNESIUM ALLOY	50 - 90*	300-400	.003	.005	.006	.007	.008	.009	.013	.015	.016
	LEAD ALLOY	10 - 20*	350-450	.003	.005	.006	.007	.008	.009	.013	.015	.017
	NON-METAL AND PLASTIC	-	175-450	.002	.004	.005	.005	.006	.008	.009	.010	.012
	ZINC ALLOY - DIE CAST	80 - 100	300-400	.003	.005	.007	.009	.011	.012	.014	.016	.018
NON-FERROUS (HARD)	ALUMINUM BRONZE	40 - 175	125-190	.002	.005	.007	.008	.009	.010	.012	.014	.016
	BRASS ALLOY - LEADED AND FREE CUTTING	10 - 100Rb	225-400	.003	.005	.007	.008	.009	.010	.012	.014	.016
	NICKEL SILVER	10 - 100Rb	125-190	.002	.005	.007	.008	.009	.010	.012	.014	.016
	COPPER ALLOY - TOUGH	40 - 200*	125-190	.002	.005	.007	.008	.009	.010	.012	.014	.016
	DUCTILE CAST IRON - AUSTENITIC	120 - 275	-	-	-	-	-	-	-	-	-	-
CAST IRON	DUCTILE CAST IRON - FERRITIC	140 - 270	150-225	.002	.004	.006	.008	.010	.012	.014	.016	.018
	DUCTILE CAST IRON - MARTENSITIC	270 - 400	-	-	-	-	-	-	-	-	-	-
	GRAY - PEARLITIC	220 - 320	130-225	.002	.004	.006	.007	.009	.010	.013	.016	.018
	GRAY - FERRITIC	120 - 220	125-190	.002	.005	.008	.009	.010	.011	.012	.014	.016
	MALLEABLE CAST IRON - MARTENSITIC	200 - 320	100-150	.002	.004	.006	.007	.008	.010	.012	.014	.016
LOW CARBON STEELS	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100 - 250	125-175	.003	.004	.008	.010	.012	.014	.017	.018	.019
	LOW AND MEDIUM CARBON STEEL - WROUGHT	100 - 375	-	-	-	-	-	-	-	-	-	-
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100 - 275	-	-	-	-	-	-	-	-	-	-
	LOW AND MEDIUM CARBON ALLOY STEEL	85 - 375	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - 400 SERIES	135 - 325	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - 400 SERIES FREE MACHINING	135 - 275	100-150	.002	.004	.005	.006	.007	.008	.010	.012	.014
HIGH STRENGTH STEELS	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175 - 400	-	-	-	-	-	-	-	-	-	-
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140 - 300	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - 300 SERIES	135 - 375	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - PH SERIES	150 - 440	-	-	-	-	-	-	-	-	-	-
	TITANIUM ALLOY	110 - 380	-	-	-	-	-	-	-	-	-	-

CLASSIFICATION	MATERIAL	BRINELL	SPEED IN SFPM	FEED RATE (INCHES PER REVOLUTION)					HOLE DIAMETER IN INCHES			
			COOLANT FED (C.F.)	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
NON-FERROUS (SOFT)	ALUMINUM ALLOY - WROUGHT	30 - 150*	375-550	-	.004	.005	.006	.006	.007	.009	-	-
	MAGNESIUM ALLOY	50 - 90*	450-550	-	.005	.006	.007	.008	.009	.013	-	-
	LEAD ALLOY	10 - 20*	400-500	-	.004	.006	.007	.008	.009	.013	-	-
	NON-METAL AND PLASTIC	-	-	-	-	-	-	-	-	-	-	-
	ZINC ALLOY - DIE CAST	80 - 100	400-500	-	.004	.005	.006	.008	.009	.010	-	-
NON-FERROUS (HARD)	ALUMINUM BRONZE	40 - 175	200-300	-	.004	.005	.006	.007	.008	.010	-	-
	BRASS ALLOY - LEADED AND FREE CUTTING	10 - 100Rb	300-450	-	.004	.005	.006	.007	.008	.010	-	-
	NICKEL SILVER	10 - 100Rb	225-300	-	.004	.005	.006	.007	.008	.010	-	-
	COPPER ALLOY - TOUGH	40 - 200*	225-300	-	.004	.005	.006	.007	.008	.010	-	-
	DUCTILE CAST IRON - AUSTENITIC	120 - 275	-	-	-	-	-	-	-	-	-	-
CAST IRON	DUCTILE CAST IRON - FERRITIC	140 - 270	200-250	-	.004	.005	.006	.007	.008	.010	-	-
	DUCTILE CAST IRON - MARTENSITIC	270 - 400	200-250	-	.004	.005	.006	.007	.008	.010	-	-
	GRAY - PEARLITIC	220 - 320	225-325	-	.004	.006	.008	.010	.012	.015	-	-
	GRAY - FERRITIC	120 - 220	200-250	-	.004	.006	.008	.008	.008	.010	-	-
	MALLEABLE CAST IRON - MARTENSITIC	200 - 320	200-250	-	.004	.005	.006	.007	.008	.010	-	-
LOW CARBON STEELS	LOW AND MEDIUM CARBON STEEL - FREE MACHINING	100 - 250	150-250	-	.005	.006	.008	.009	.010	.012	-	-
	LOW AND MEDIUM CARBON STEEL - WROUGHT	100 - 375	-	-	-	-	-	-	-	-	-	-
MEDIUM STRENGTH STEELS	LOW AND MEDIUM CARBON ALLOY STEEL - FREE MACHINING	100 - 275	100-220	-	.005	.006	.007	.008	.010	.012	-	-
	LOW AND MEDIUM CARBON ALLOY STEEL	85 - 375	100-150	-	.005	.006	.007	.008	.010	.012	-	-
	STAINLESS STEEL - 400 SERIES	135 - 325	110-150	-	.004	.005	.006	.007	.008	.010	-	-
	STAINLESS STEEL - 400 SERIES FREE MACHINING	135 - 275	125-190	-	.004	.005	.006	.007	.007	.008	-	-
HIGH STRENGTH STEELS	HIGH STRENGTH STEEL - WROUGHT & TOOL STEEL	175 - 400	100-150	-	.0015	.002	.003	.004	.005	.006	-	-
HIGH TEMP. ALLOYS	HIGH TEMP ALLOYS NICKEL & IRON BASE ALLOY	140 - 300	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - 300 SERIES	135 - 375	-	-	-	-	-	-	-	-	-	-
	STAINLESS STEEL - PH SERIES	150 - 440	-	-	-	-	-	-	-	-	-	-
	TITANIUM ALLOY	110 - 380	-	-	-	-	-	-	-	-	-	-