

# FEEDS AND SPEEDS FOR ANNULAR CUTTERS

## CUTTING SPEED IN FEET/MIN. (SFPM)

MATERIAL TO BE DRILLED	HSS CUTTER	COBALT CUTTER	
Steel	Freecutting-Leaded Up To 180 Brinell	100	150
	A-36	80to110	130
	180 To 285 Brinell	80to110	130
	285 To 375 Brinell	45to70	80
	375 & Up Brinell	30to45	55
	Manganese (low)	15to25	35
	Stainless-Freecutting	15to20	25
	Stainless 304,316, 320 & Tougher	30to60	70
Inconel, Hastelloy	25to40	55	
Inconel - X	20to25	35	
Titanium	30to40	50	
A-286	25to35	50	

## SPEED IN FEET/MIN. (SFPM)

MATERIAL TO BE DRILLED	HSS CUTTER	COBALT CUTTER
Aluminum	150	250
Brass	Ordinary	150
	Leaded	200
Bronze	Ordinary	250
	Hi-tensile	300
Cast Iron	Soft	100
	Medium	80
	Hard	70
	Chilled	25
Copper	100	150
Magnesium	80	90
Malleable Iron	50	70
Monel	25	35
Copper	Upto300	200
	70	400
	40	80
Malleable Iron	70	80
Monel	40	50

## OPERATING FEED\*

CUTTER DIAMETER	FEED INS./REV.
7/16" to 9/16"	.002 to .006
5/8" to 3/4"	.003 to .007
13/16" - 1-1/16"	.004 to .008
1-1/8" - 1-7/16"	.006 to .010
1-1/2" to 2"	.008 to .012
2" to 2-1/2"	.012 to .025

\*Always commence operations at the lower end of RPM.

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	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1"	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	2"	2-1/4	2-1/2	
10	87	76	68	61	56	51	47	44	41	38	34	31	28	25	24	22	19	17	15	10
20	175	153	136	122	111	102	94	87	82	76	68	61	56	51	47	44	38	34	31	20
30	262	229	204	183	167	153	141	131	122	115	102	92	83	76	71	65	57	51	46	30
40	349	306	272	245	222	204	188	175	163	153	136	122	111	102	94	87	76	68	61	40
50	437	382	339	306	278	255	235	218	204	191	170	153	140	127	118	109	95	85	76	50
60	524	458	407	367	333	306	282	353	245	229	204	183	167	153	141	131	115	102	92	60
70	611	535	475	428	389	357	329	306	285	267	238	214	194	178	165	153	134	119	107	70
80	700	611	543	489	444	408	376	350	326	306	272	244	222	204	188	175	153	136	122	80
90	786	688	611	550	500	458	426	393	367	344	306	275	250	229	212	196	172	153	138	90
100	873	764	679	611	556	509	470	436	408	382	340	306	278	255	235	218	191	170	153	100
120	1048	917	815	733	667	611	564	524	489	458	407	367	333	306	282	262	229	204	183	120
140	1222	1070	950	856	778	713	658	611	571	535	475	428	390	356	329	306	267	238	214	140
150	1310	1146	1018	917	833	764	705	655	611	573	509	458	417	382	353	327	286	255	229	150
160	1397	1222	1086	978	889	815	752	698	652	611	543	490	444	407	376	350	306	272	244	160
180	1572	1375	1222	1100	1000	917	846	786	734	688	611	550	500	458	423	393	344	306	275	180
200	1747	1528	1358	1222	1111	1020	940	874	815	764	680	611	556	510	470	437	382	340	306	200
220	1920	1681	1494	1345	1222	1121	1034	960	897	840	747	672	611	560	517	480	420	374	336	220
240	2096	1833	1630	1467	1333	1222	1128	1048	978	917	815	733	667	611	564	524	458	407	367	240
250	2183	1910	1697	1528	1389	1274	1175	1091	1020	955	850	764	694	637	588	546	477	424	382	250
260	2270	1986	1765	1590	1444	1325	1221	1135	1060	993	883	795	722	662	611	568	497	441	397	260
280	2445	2140	1900	1712	1556	1426	1316	1222	1140	1070	950	856	778	713	658	611	535	475	428	280
300	2620	2292	2037	1834	1667	1528	1410	1310	1222	1146	1020	917	833	764	705	655	573	510	458	300

CUTTING SPEEDS (SFPM)

# SPEED AND FEED FORMULAS

SPEED OF CUTTER IN SURFACE  
FEET PER MINUTE (SFM)

$$SFP = D \times .26 \times RPM$$

REVOLUTIONS PER MINUTE (RPM)

$$RPM = SFM \times 3.82 \text{ divided by Dia.}$$

FEED IN INCHES PER MINUTE (IPM)  
OR (F)

$$F = f \times T \times RPM$$