

Material and Hole Condition		Hardness Range B.H.N.	Included Point Angle	Speed Ft./Min.	m./min.	Lubricant
Aluminium Alloys Alum. Alloys Cast	Deep Hole	50-140	118°	200-300	61-91	Soluble Oil
	High Silicon	45-120	118°	80-120	24-37	
	Low Silicon	35-110	118°	140-200	43-61	
Aluminium Forged Alum. Alloys Forged	Shallow Hole	50-140	118°	200-500	61-153	Kerosene
	Deep Hole	50-140	118°	200-500	61-153	
Brass	Leaded Free Machining	100-150	118°	200-300	61-91	Soluble Oil
Bronze	Castings	80-120	118°	60-90	18-27	Soluble Oil
	Wrought	120-220	118°	35-80	11-24	
Cast Iron	Chilled or White	400	150°	15-25	4.6-7.6	Soluble Oil
	Hard Grey Iron	Over 200	118°	45-50	14-15	
Cast Iron	Medium Grey	150-200	90°-110°	80-110	24-34	Dry or Compressed Air
	Iron Soft Grey Iron	Below 150	90°	140-150	43-46	
Cast Iron S.G.	Malleable	140	118°	80-100	24-34	Soluble Oil
	As Cast	220	118°	40-50	12-15	
	Annealed-Ferritic	190	118°	45-65	14-20	
Copper Die Castings (Zinc Base)		45-110	100°	70-100	21-30	Soluble Oil
Gunmetal Leaded & Brass Castings		70-90	118°	300-400	91-122	Soluble Oil
Magnesium and Alloys		40-70	118°	200-500	61-153	Soluble Oil and Kerosene
"R" Monel, Nickel		110-200	118°	40-100	12-30	Sulphur Base Oil
"K" Monel		160-275	135°	20-60	6-18	Sulphur Base Oil
Nickel Alloys	31/2% Nickel Steel	190-240	135°-140°	30-50	9-15	Soluble Oil
Plastics	Thermo-plastics		90°	100-300	30-91	Soapy Water
Steel	Free Cutting	110-130	118°	120-150	37-46	Soluble Oil
	Mild 30 ton	130	118°	120-140	37-43	
	Medium Carbon 35 ton	155	118°	100-115	30-35	
	Medium Carbon 45 ton	210	118°	65-90	20-27	
Steel Steel Alloy	Tool and Spring	200-400	140°	25-65	7.6-20	Sulphur Base Oil
	55 ton	250	118°	50-70	15-21	
	65 ton	300	118°-140°	40-55	12-17	
	75 ton	340	130°-150°	30-40	9-12	
Steel Stainless	Ferritic	150-200	118°	50-90	15-27	Sulphur Base Oil
	Martensitic	250	125°-135°	35-50	11-15	
	Austenitic	170	118°	20-30	6-9	
	Mart. Free Machining	250	125°-135°	40-55	12-17	
	Aust. Free Machining	170	118°	25-40	7.6-12	
Wood			60°	500	153	None

RECOMMENDED FEEDS FOR VARIOUS DIAMETER DRILLS

Diameter of Drill - Inches	Feed per Revolution	
	Inches	Millimetres
Under 1/8	.001 to .003	.02 to .08
1/8 to 1/4	.002 to .006	.05 to .15
1/4 to 1/2	.004 to .010	.10 to .25
1/2 to 1	.007 to .015	.18 to .40
1 inch and over	.015 to .025	.40 to .63

Note: It is best to start with a moderate speed and feed, increasing either one, or both, after observing the action and condition of the drill.

