



TANGKONG TOOLS

# DRILLING OPERATING PARAMETERS

## Speeds for High-Speed Steel Drills

Material	SFM	Material	SFM
Aluminum and its Alloys	200-300	Steel (Continued)	
Brass and Bronze (Ordinary)	150-300	Steel (.4 carbon to .5 carbon)	70-80
Bronze (High Tensile)	70-150	Tool (1.2 carbon)	50-60
Die Castings (Zinc Base)	300-400	Forgings	40-50
Iron		Alloy-.300 to 400 Brinell	20-30
Cast (Soft)	100-150	High Tensile (Heat Treated)	
Cast (Medium hard)	70-100	35 to 40 Rockwell C	30-40
Hard Chilled	30-40	40 to 45 Rockwell C	25-35
Malleable	80-90	45 to 50 Rockwell C	15-25
Magnesium and its Alloys	250-400	50 to 55 Rockwell C	7-15
Monel Metal or High-Nickel Steel	30-50	Stainless Steel	
Plastics or Similar Materials (Bakelite)	100-300	Free Machining Grades	30-80
Steel		Work Hardening Grades	15-50
Mild (.2 carbon to .3 carbon)	80-110	Wood	300-400

## Feed Per Drill Revolution

Drill Dia. Range	Light	Medium	Heavy
1/16 to 1/8"	.0005-.0010	.0010-.0020	.0020-.0040
1/8 to 1/4"	.0010-.0030	.0030-.0050	.0040-.0060
1/4 to 3/8"	.0030-.0050	.0050-.0070	.0060-.0100
R/R to 1/2"	.0040-.0060	.0050-.0080	.0080-.0120
1/2 to 3/4"	.0050-.0070	.0070-.0100	.0090-.0140
F~1/4 to 1"	.0070-.0100	.0090-.0140	.0140-.0200

## Speeds and Feeds for Deep-Hole Drilling

Holes which must be drilled three diameters deep or more fall into the "deep-hole" drilling class, and some adjustment of feeds and speeds is necessary. The deeper the hole, the greater the tendency there is for chips to pack and clog the flutes of the drill. This increases the amount of heat generated and prevents the coolant from conducting the heat away from the point. A build-up of heat at the point will eventually result in premature failure.

Step drilling, also called "peck" drilling, is the practice of drilling a short distance, then withdrawing the drill. This often reduces chip packing. The deeper the hole, the more frequent the drill must be retracted to be effective. Generally, a reduction in speed and feed to reduce the amount of heat generated is required in most deep-hole applications, where coolant cannot be effectively applied.

## Speed and Feed Reduction (Based upon hole depth)

Hole Depth to Dia. Ratio (times drill diameter)	Speed Reduction	Feed Reduction
3	10%	10%
4	20%	10%
5	30%	20%
6	35-40%	20%

**Note:** Remember that these values are only a starting point. They may require adjustment based on conditions or individual requirements.