

## SPEED AND CUTTING FLUIDS

### TAPPING SPEEDS

Proper speeds are essential for successful tapping. There are certain speeds at which taps operate efficiently in specific materials, but the composition of the material to be threaded, the kind of steel from which the tap is made, and the design of both the tap and tapping machine, all have a direct bearing on the tapping speeds.

The importance of proper tapping speeds cannot be stressed too strongly, for too much or insufficient speed are both detrimental to efficient tapping. A little experimentation will soon determine the right speed at which to operate. High or maximum speeds should only be reached by gradual stages.

The table below shows Suggested Tapping Speeds for the most commonly used taps and materials, but, due to the many variables that enter into tapping, this table should be used only as a guide for determining speeds at which taps will operate efficiently.

### LUBRICATION

Longer tap life, greater production, better size control, smoother and more accurate threads, less resharping, also more efficient removal of chips are some of the direct results traceable to the application of proper lubricants or what are also termed cutting fluids. We cannot overemphasize the importance of proper lubricants in tapping operations.

There is no one lubricant that can be recommended for tapping under all conditions. Although we have given a great deal of study to this subject, we feel that the user of taps should take advantage of the services offered by most Oil Companies through their "Cutting Fluid Specialists," who usually will make a survey of each individual requirement and will recommend the proper lubricant.

The table below will serve as a preliminary guide until such time as the Oil Company's representative can call and make his own recommendations.

### SUGGESTED TAPPING SPEEDS AND CUTTING FLUIDS

MATERIAL	FEET PER MINUTE								CUTTING FLUID
	CARBON STEEL TAPS				HIGH SPEED STEEL TAPS				
	HAND TAP		GUN TAP		HAND TAP		GUN TAP		
	Coarse Threads	Fine Threads	Coarse Threads	Fine Threads	Coarse Threads	Fine Threads	Coarse Threads	Fine Threads	
Stainless Steel	..	..	..	..	15	20	20	25	Sulphur base Oil Soluble Oil or Sulphur base Oil. Kerosene and Lard Oil Sulphur base Oil Dry or Soluble Oil Soluble or Light Oil
Drop Forgings	20	25	20	25	50	55	60	65	
Aluminum and Die Castings	..	..	..	..	70	90	80	100	
Mild Steel	35	40	35	40	70	80	90	100	
Cast Iron	35	40	35	40	80	90	100	110	
Brass	70	80	70	80	160	180	200	220	

### DRILLING SPEEDS AND CUTTING FLUIDS

What has been said above about tapping is equally applicable to drilling operations. Like the suggestions for tapping, the information in the following table should be

used only as a guide or starting point in arriving at the best solution under a given set of operating conditions.

### SUGGESTED DRILLING SPEEDS AND CUTTING FLUIDS FOR HIGH SPEED DRILLS

SPEEDS Feet per Minute	MATERIAL	CUTTING FLUID	FEED IN INCHES	
			Size Drill (nearest to)	Feed
50	Monel Metal	Soluble Oil or Sulphur base Mineral Oil	Smaller than 1/8	.001-.002
60	Tool Steel	Soluble Oil or Sulphur base Oil	1/8	.002-.003
60	Drop Forgings	Soluble Oil or Sulphur base Oil	3/8	.006
65	Nickel Steel 3 1/2 %	Sulphur base Oil	1/2	.008
80	Steel .40-.50 Carbon	Soluble Oil or Sulphur base Oil	3/8	.009
85	Malleable Iron	Soluble Oil, low viscous Neutral Oil	3/4	.010
100	Cast Iron	Dry or Jet of Compressed Air	1/8	.011
110	Mild Steel .20-.30 Carbon	Soluble Oil or Sulphur base Oil	1	.013
200	Brass	Dry or Soluble Oil or Kerosene and Lard Oil	1 1/8	.014
200	Aluminum	Soluble Oil, Kerosene and Lard Oil, Kerosene and Soluble Oil	1 1/4 - 1 1/2	.015
250	Magnesium	Low viscous Neutral Oil	1 3/8 - 2	.016

Carbon Steel Drills should be run at 40% to 50% of the speeds shown in this table.