Houghton Metalworking Fluid Selection Guide

Houghton International has developed a Fluid Selection Guide to help in selecting a proper cutting fluid, This information will allow you to become familiar with metals and applications. Please keep in mind that *this is only a guide*. You must consult your Houghton Technical Representative who has the experience to recommend a specific Houghton product.

Look at the top of the column to find the recommended Houghton product.

How to Use the Chart

Step 1
Locate the steel being machined and then note the machinability rating (% relative speed).

Step 2
In the key of the chart, find the letter that identifies the machinability of the steel you are using.

Step 3
Then, in the left-hand column, find the machining method you are using.

Step 4
From this point, run your finger across the chart.

	Straight Oils				Water Solubles					
Machining Method	**Cut-Max 100 Series**	**Cut-Max 200 Series**	**Cut-Max 570**	**Cut-Max 670**	**Cindol Series**	**Hocut 763 763-B**	**Hocut 767 767-B**	**Hocut 776 776-RHS**	**Hocut 787 787-B**	**Hocut 795**
Broaching - Internal		**B**	**C**	**C**		**B 10:1**	**A 10:1**	**A 10:1**	**C 10:1**	**B 10:1**
Broaching - External		**B**	**C**	**C**					**C 10:1**	**B 10:1**
Threading, Tapping including Pipe & Bolt Threading		**B**	**C**	**C**					**C 10:1**	**B 10:1**
Gear Shaving		**A**	**C**	**B**		**B 15:1**	**A 10:1**	**A 10:1**	**C 10:1**	**B 10:1**
Deep Hole Drilling (Gun Drills)		**A**	**C**	**B**					**B 10:1**	**B 10:1**
Gear Cutting Hobbing & Shaping		**B**	**C**	**B**		**B 15:1**	**A 15:1**	**A 10:1**	**B 15:1**	**B 10:1**
Automatic Screw Machines - Single & Multiple Spindle Machines	**A**	**B**	**C**	**B**						
Reaming		**A**	**C**	**B**	**A**	**B 10:1**		**A 15:1**	**C 15:1**	**B 15:1**
Trepanning			**C**			**B 10:1**			**B 15:1**	
Turning & Boring Lathes	**A**	**B**	**C**	**B**	**A**	**B 20:1**	**A 15:1**	**A 20:1**	**C 20:1**	**B 20:1**
Stamping		**B**	**C**	**B**	**A**				**B 10:1**	
Job Shops		**B**	**C**	**B**		**B 20:1**	**A 15:1**	**A 20:1**	**C 15:1**	**B 20:1**

Key: **A** Ferrous metals with machinability ratings above 70% **B** Ferrous metals with machinability ratings of 50 to 70%
C Ferrous metals with machinability ratings below 50%

Machinability Ratings

A.I.S.I. Number	S.A.E. Number	Surface ft./min.	% Relative Speed +
Free Cutting Steels			
B1111	1111	155	94
B1112	1112	165	100
B1113 (RSB 1113)	1113	225	136
C1108	–	135	81
C1109	1109	135	81
C1113	–	165	100
C1115	1115	135	81
C1116	1116	155	94
C1117	1117	150	91
C1118	1118	150	91
C1119	1119	165	100
C1120	1120	135	81
C1125	–	135	81
C1126	1126	135	81
C1132	1132	125	76
C1137	1137	120	72
C1138	1138	125	76
C1139	1139	125	76
C1140	1140	120	72
C1141	1141	115	70
C1141*	1141	135	81
C1144	1144	125	76
C1144*	1144	140	85
C1145	1145	110	66
C1145*	1145	130	78
C1146	1146	115	70
C1151	1151	115	70
C1151*	1151	135	81
C1211	–	155	94
C1212	–	165	100
C1213 (RSC 1213)	–	225	136
Carbon Steels			
C1008	1008	110	66
C1010**	1010	120	–
C1011**	–	120	–
C1012**	–	120	–
C1013**	–	120	–
C1015	1015	120	72
C1016	1016	130	78
C1017	1017	120	72
C1018	1018	130	78
C1019	1019	130	78
C1020	1020	120	72
C1021	1021	130	78
C1022	1022	130	78
C1023	–	125	76
C1024	–	110	66
C1025	1025	120	72
C1026	1026	130	78
C1027	1027	110	66
C1029	–	115	70
C1030	1030	115	70
C1031	–	115	70
Carbon Steels (cont'd.)			
C1033	1033	115	70
C1034	–	115	70
C1035	1035	115	70
C1036	1036	105	64
C1037	1037	115	70
C1038	1038	105	64
C1039	1039	105	64
C1040	1040	105	64
C1041	1041	95	57
C1042	1042	105	64
C1043	1043	95	57
C1045	1045	95	57
C1045*	1045	120	72
C1046	1046	95	57
C1049	1049	90	54
C1050	1050	90	54
C1050*	1050	115	70
C1051	–	90	54
C1052	1052	80	49
C1053	–	90	54
C1054	–	90	54
C1055*	1055	85	51
C1059*	–	85	51
C1060*	1060	85	51
C1061*	–	85	51
C1064*	–	80	49
C1065*	1065	80	49
C1066*	–	80	49
C1069*	–	80	49
C1070*	1070	80	49
C1071*	–	80	49
C1074*	–	75	45
C1075*	–	75	45
C1078*	1078	75	45
C1080*	1080	70	42
C1084*	1084	70	42
C1085*	1085	70	42
C1086*	1086	70	42
C1090*	1090	70	42
C1095*	1095	70	42
B1010	–	130	78
Alloy Steels			
1330*	1330	100	60
1335*	1335	100	60
1340*	1340	95	57
3140	3140	70	42
3140*	3140	110	66
E3310	3310	85	51
4012	4012	130	78
4023	4023	130	78
4024	4024	130	78
4027	4027	110	66
4028	4028	120	72
4037*	4037	120	72
4042*	4042	115	70
Alloy Steels (cont'd.)			
4047*	4047	110	66
4063*	4063	85	51
4118	4118	130	78
4130*	4130	120	72
4135*	–	115	70
4137*	4137	115	70
4140*	4140	110	66
4142*	–	110	66
4145*	4145	105	64
4147*	–	105	64
4150*	4150	100	60
4320*	4320	100	60
4337*	–	90	54
4340*	4340	95	57
4422	4422	120	72
4427	4427	115	70
4520	4520	115	70
4615	4615	110	66
4617	–	110	66
4620	4620	110	66
4621	–	110	66
4718	4718	100	60
4720	4720	100	60
4815*	4815	85	51
4817*	4817	80	49
4820*	4820	80	49
5015	5015	130	78
5046*	5046	115	70
5115	5115	125	76
5120	5120	125	76
5130	5130	95	57
5132*	5132	120	72
5135*	5135	120	72
5140*	5140	115	70
5145*	5145	110	66
5147*	5147	110	66
5150*	5150	105	64
5155*	5155	100	60
5160*	5160	100	60
E50100*	50100	70	42
E51100*	51100	65	40
E52100*	52100	65	40
6118	6118	110	66
6120	–	95	57
6150*	6150	100	60
8115	8115	115	70
8615	8615	115	70
8617	8617	110	66
8620	8620	110	66
8622	8622	110	66
8625	8625	105	64
8627	8627	105	64
8630*	8630	120	72
8637*	8637	115	70
8640*	8640	110	66
8642*	8642	110	66
Alloy Steels (cont'd.)			
8645*	8645	105	64
8650*	8650	100	60
8655*	8655	95	57
8660*	8660	90	54
8720	8720	110	66
8735*	8735	115	70
8740*	8740	110	66
8742*	–	110	66
8822	8822	105	64
9255*	9255	90	54
9260*	9260	85	51
9262*	9262	80	49
E9310*	9310	85	51
9840*	9840	85	51
9850*	9850	75	45
TS4150*	–	100	60
TS14B35*	–	120	72
50B40*	50B40	115	70
50B44*	50B44	115	70
50B46*	50B46	115	70
5B50*	50B50	115	70
50B60*	50B60	105	64
51B60*	51B60	100	60
81B45*	81B45	110	66
86B45*	86B45	105	64
94B15	94B15	115	70
94B17	94B17	110	66
94B30*	94B30	120	72
94B40*	94B40	110	66
Stainless Steels			
302	N/A	75	45
303	N/A	100	60
304	N/A	75	45
321	N/A	60	36
347	N/A	60	36
410	N/A	90	54
416	N/A	150	91
420	N/A	95	57
420F	N/A	105	63
430	N/A	90	54
430F	N/A	150	91
440A	N/A	75	45
440B	N/A	70	42
440C	N/A	65	40
440F	N/A	90	54

Key: + Based on A.I.S.I. B1112 (S.A.E. 1112) as 100%
* Annealed
** Light feeds

Tables courtesy of Republic Steel Corporation