

AccuPort 432® HSS Inserts | Imperial (inch)

Speeds and Feeds		Hardness (BHN)	Grade	Speed (SFM)				Feed Rate (IPR) by Tube Size and T-A® Insert Series						
				TiN	TiAlN	TiCN	AM200®	Tube No. 4 - 5	Tube No. 6 - 8	Tube No. 10	Tube No. 12 - 16	Tube No. 20 - 24	Tube No. 32	
ISO	Material							T-A Series Y - Z	T-A Series 0	T-A Series 1	T-A Series 2	T-A Series 3	T-A Series 4	
P	Free Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	200	280	260	325	0.007	0.010	0.013	0.016	0.020	0.023	
		150 - 200	HSS	180	260	235	300	0.007	0.010	0.013	0.016	0.020	0.023	
		200 - 250	HSS	160	240	210	280	0.006	0.010	0.013	0.016	0.020	0.023	
	Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	250	220	290	0.006 ❖	0.009	0.012	0.015	0.019	0.023	
		125 - 175	HSS	160	240	210	275	0.006 ❖	0.009	0.012	0.015	0.019	0.023	
		175 - 225	HSS	150	225	195	260	0.005 ❖	0.008	0.010	0.014	0.018	0.021	
	Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	240	210	275	0.006	0.009	0.012	0.015	0.019	0.023	
		175 - 225	HSS	150	225	195	260	0.005	0.008	0.010	0.014	0.018	0.021	
		225 - 275	HSS	140	210	180	240	0.005	0.008	0.010	0.014	0.018	0.021	
	Alloy Steel 4140, 5140, 8640, etc.	275 - 325	SC	130	195	170	225	0.004	0.007	0.009	0.012	0.016	0.019	
		125 - 175	HSS	150	210	195	240	0.006	0.008	0.010	0.014	0.017	0.019	
		175 - 225	HSS	140	195	180	225	0.005	0.008	0.010	0.014	0.017	0.019	
		225 - 275	HSS	130	180	170	210	0.005	0.007	0.010	0.014	0.017	0.019	
	High Strength Alloy 4340, 4330V, 300M, etc.	275 - 325	SC	120	170	155	195	0.004	0.006	0.009	0.012	0.015	0.017	
		325 - 375	SC	110	155	145	180	0.003	0.006	0.009	0.012	0.015	0.017	
		225 - 300	SC	80	110	100	125	0.005 ❖	0.007	0.009	0.010	0.014	0.017	
	Structural Steel A36, A285, A516, etc.	300 - 350	SC	60	85	80	100	0.004 ❖	0.007	0.009	0.010	0.014	0.017	
		350 - 400	SC	50	70	65	80	0.003 ❖	0.006	0.008	0.009	0.012	0.015	
		100 - 150	HSS	140	200	180	235	0.006 ❖	0.010	0.012	0.014	0.018	0.021	
	Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	150 - 250	HSS	120	170	155	190	0.005 ❖	0.009	0.010	0.012	0.016	0.019	
		250 - 350	SC	100	140	130	160	0.004 ❖	0.009	0.009	0.010	0.014	0.017	
		150 - 200	SC	80	110	105	125	0.004 ❖	0.006	0.008	0.010	0.014	0.015	
	S	High Temp Alloy Hastelloy B, Inconel 600, etc.	200 - 250	SC	60	90	85	105	0.004 ❖	0.006	0.008	0.010	0.012	0.015
			140 - 220	SC	30	40	35	45	0.003 ❖	0.007	0.008	0.010	0.012	0.015
M	Stainless Steel 400 Series 416, 420, 303, etc.	220 - 310	SC	25	35	30	40	0.003 ❖	0.006	0.007	0.008	0.010	0.012	
		185 - 275	SC	75	105	95	110	0.006 ❖	0.008	0.009	0.011	0.012	0.016	
K	Nodular, Grey, Ductile Cast Iron	275 - 350	SC	60	90	80	100	0.005 ❖	0.007	0.008	0.010	0.012	0.014	
		120 - 150	HSS	170	250	220	290	0.007	0.012	0.016	0.020	0.024	0.027	
		150 - 200	HSS	150	225	195	260	0.006	0.011	0.014	0.018	0.022	0.025	
		200 - 220	HSS	130	195	170	225	0.006	0.009	0.012	0.016	0.018	0.021	
N	Aluminum	220 - 260	SC	110	165	145	190	0.005	0.007	0.009	0.012	0.014	0.017	
		260 - 320	SC	90	135	120	155	0.004	0.006	0.007	0.009	0.012	0.014	
N	Aluminum	30	HSS	600	850	750	-	0.008	0.013	0.016	0.020	0.022	0.025	
		180	HSS	300	450	400	-	0.008	0.013	0.016	0.018	0.022	0.025	

Formulas

1. RPM = (3.82 • SFM) / DIA where: RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = finish diameter of drill (inch)	2. SFM = RPM • 0.262 • DIA where: SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)	3. IPM = RPM • IPR where: IPM = Feed rate RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)
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The table and equations on this page are found in the *Machinery's Handbook*. Permission to simplify and print the equations is granted by the Editor of the *Machinery's Handbook*.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering Team. Due to potential chip formation issues, contact our Application Engineering Team for assistance machining materials marked with a ❖.

Coolant Recommendations		Pressure / Flow Rate	Tube No. 4 - 5	Tube No. 6 - 8	Tube No. 10	Tube No. 12 - 16	Tube No. 20 - 24	Tube No. 32
			T-A Series Y - Z	T-A Series 0	T-A Series 1	T-A Series 2	T-A Series 3	T-A Series 4
P	Free Machining Steel 1118, 1215, 12L14, etc.	PSI	175 - 185	100 - 120	105 - 140	80 - 115	75 - 100	40 - 50
		GPM	2.5 - 2.6	2.8 - 3.0	4.4 - 5.2	7 - 8	12 - 14	30 - 33
	Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	PSI	165 - 170	75 - 90	75 - 95	60 - 80	55 - 75	30 - 40
		GPM	2.4 - 2.5	2.4 - 2.6	3.7 - 4.2	6 - 7	11 - 12	26 - 30
	Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	PSI	160 - 165	70 - 85	70 - 90	55 - 75	50 - 70	30 - 40
		GPM	2.3 - 2.4	2.3 - 2.6	3.7 - 4.2	5 - 6	10 - 12	26 - 30
	Alloy Steel 4140, 5140, 8640, etc.	PSI	160 - 165	65 - 75	65 - 80	50 - 70	45 - 60	30 - 35
		GPM	2.3 - 2.4	2.2 - 2.4	3.5 - 3.9	5 - 6	10 - 11	26 - 28
	High Strength Alloy 4340, 4330V, 300M, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23
	Structural Steel A36, A285, A516, etc.	PSI	160 - 165	75 - 85	65 - 80	40 - 55	40 - 50	25 - 30
		GPM	2.3 - 2.4	2.4 - 2.6	3.5 - 3.9	5 - 6	9 - 10	23 - 26
Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25	
	GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23	
S	High Temp Alloy Hastelloy B, Inconel 600, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26
M	Stainless Steel 400 Series 416, 420, 303, etc.	PSI	171	86	75	55	51	29
		GPM	3	3	4	6	10	26
K	Nodular, Grey, Ductile Cast Iron	PSI	160	65	61	41	35	29
		GPM	2	2	3	5	9	26
N	Aluminum	PSI	210	180	230	159	125	51
		GPM	3	4	6	9	16	33

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied's recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering Department for a more specific recommendation of coolant requirements and/or speeds and feeds.