

AccuPort 432® Carbide Inserts | Imperial (inch)

| Speeds and Feeds | | Hardness (BHN) | Grade | Speed (SFM) | | | Feed Rate (IPR) by Tube Size and T-A® Insert Series | | | | | |
|---|---|----------------|--------|-------------|-------|------------------|---|----------------|--------------|------------------|------------------|-------------|
| | | | | TiN | TiAlN | 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 | C1, C5 | 320 | 420 | 480 | 0.008 | 0.012 | 0.015 | 0.018 | 0.021 | 0.58 |
| | | 150 - 200 | C1, C5 | 280 | 360 | 415 | 0.007 | 0.011 | 0.014 | 0.016 | 0.019 | 0.58 |
| | | 200 - 250 | C1, C5 | 260 | 340 | 390 | 0.006 | 0.010 | 0.013 | 0.015 | 0.017 | 0.58 |
| | Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc. | 85 - 125 | C1, C5 | 300 | 390 | 450 | 0.008 ❖ | 0.010 | 0.013 | 0.017 | 0.019 | 0.58 |
| | | 125 - 175 | C1, C5 | 260 | 340 | 390 | 0.007 ❖ | 0.010 | 0.013 | 0.016 | 0.018 | 0.58 |
| | | 175 - 225 | C1, C5 | 240 | 310 | 355 | 0.006 ❖ | 0.009 | 0.012 | 0.015 | 0.017 | 0.53 |
| | Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc. | 125 - 175 | C1, C5 | 260 | 340 | 390 | 0.007 | 0.010 | 0.013 | 0.016 | 0.018 | 0.58 |
| | | 175 - 225 | C1, C5 | 240 | 310 | 355 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | 0.53 |
| | | 225 - 275 | C1, C5 | 210 | 270 | 310 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | 0.53 |
| | Alloy Steel 4140, 5140, 8640, etc. | 275 - 325 | C1, C5 | 180 | 230 | 265 | 0.005 ❖ | 0.008 | 0.011 | 0.014 | 0.016 | 0.48 |
| | | 125 - 175 | C1, C5 | 250 | 325 | 375 | 0.007 | 0.010 | 0.013 | 0.016 | 0.018 | 0.48 |
| | | 175 - 225 | C1, C5 | 230 | 300 | 345 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | 0.48 |
| | | 225 - 275 | C1, C5 | 210 | 270 | 310 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | 0.48 |
| | | 275 - 325 | C1, C5 | 200 | 250 | 285 | 0.005 | 0.008 | 0.011 | 0.014 | 0.016 | 0.43 |
| | High Strength Alloy 4340, 4330V, 300M, etc. | 325 - 375 | C1, C5 | 170 | 220 | 255 | 0.004 | 0.007 | 0.010 | 0.013 | 0.015 | 0.43 |
| | | 225 - 300 | C1, C5 | 160 | 200 | 230 | 0.006 ❖ | 0.009 | 0.010 | 0.012 | 0.015 | 0.43 |
| | | 300 - 350 | C1, C5 | 140 | 180 | 205 | 0.005 ❖ | 0.008 | 0.009 | 0.011 | 0.014 | 0.43 |
| | Structural Steel A36, A285, A516, etc. | 350 - 400 | C1, C5 | 120 | 160 | 185 | 0.004 ❖ | 0.007 | 0.008 | 0.010 | 0.012 | 0.38 |
| | | 100 - 150 | C1, C5 | 240 | 310 | 355 | 0.008 ❖ | 0.011 | 0.014 | 0.016 | 0.018 | 0.53 |
| | | 150 - 250 | C1, C5 | 200 | 250 | 285 | 0.006 ❖ | 0.010 | 0.012 | 0.014 | 0.016 | 0.48 |
| Tool Steel H-13, H-21, A-4, 0-2, S-3, etc. | 250 - 350 | C1, C5 | 180 | 230 | 265 | 0.005 ❖ | 0.009 | 0.011 | 0.012 | 0.014 | 0.43 | |
| | 150 - 200 | C1, C5 | 160 | 220 | 255 | 0.004 ❖ | 0.007 | 0.009 | 0.011 | 0.013 | 0.38 | |
| S | High Temp Alloy Hastelloy B, Inconel 600, etc. | 200 - 250 | C1, C5 | 120 | 170 | 195 | 0.004 ❖ | 0.007 | 0.009 | 0.011 | 0.013 | 0.38 |
| | | 140 - 220 | C2 | 80 | 105 | 120 | 0.004 ❖ | 0.007 | 0.009 | 0.011 | 0.013 | 0.38 |
| M | Stainless Steel 400 Series 416, 420, 303, etc. | 220 - 310 | C2 | 60 | 85 | 95 | 0.004 ❖ | 0.006 | 0.008 | 0.010 | 0.012 | 0.30 |
| | | 185 - 275 | C2 | 160 | 210 | 240 | 0.007 ❖ | 0.009 | 0.012 | 0.014 | 0.016 | 0.41 |
| K | Nodular, Grey, Ductile Cast Iron | 275 - 350 | C2 | 120 | 160 | 185 | 0.006 ❖ | 0.008 | 0.011 | 0.012 | 0.014 | 0.36 |
| | | 120 - 150 | C2, C3 | 320 | 460 | 500 | 0.008 | 0.012 | 0.015 | 0.019 | 0.023 | 0.69 |
| | | 150 - 200 | C2, C3 | 270 | 400 | 480 | 0.007 | 0.011 | 0.013 | 0.017 | 0.021 | 0.64 |
| | | 200 - 220 | C2, C3 | 240 | 360 | 430 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 | 0.53 |
| | | 220 - 260 | C2, C3 | 210 | 310 | 370 | 0.005 | 0.008 | 0.011 | 0.013 | 0.015 | 0.43 |
| N | Aluminum | 260 - 320 | C2, C3 | 180 | 270 | 335 | 0.005 | 0.007 | 0.010 | 0.011 | 0.013 | 0.36 |
| | | 30 | C2 | 1200 | 1500 | - | 0.010 | 0.015 | 0.018 | 0.020 | 0.022 | 0.64 |
| | | 180 | C2 | 800 | 1000 | - | 0.009 | 0.013 | 0.016 | 0.018 | 0.020 | 0.64 |

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 |
|---|---|----------------------|------------------|----------------|--------------|------------------|------------------|
| | | | T-A Series Y - Z | T-A Series 0 | T-A Series 1 | T-A Series 2 | T-A Series 3 |
| ISO | Material | | | | | | |
| P | Free Machining Steel 1118, 1215, 12L14, etc. | PSI | 195 | 140 | 160 | 140 | 155 |
| | | GPM | 2.6 | 3.3 | 5.5 | 9 | 18 |
| | Low Carbon Steel 1010, 1020, 1025, 1522, 1144, etc. | PSI | 180 | 105 | 105 | 110 | 115 |
| | | GPM | 2.5 | 2.9 | 4.4 | 8 | 15 |
| | Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc. | PSI | 175 | 100 | 90 | 100 | 75 |
| | | GPM | 2.5 | 2.8 | 4.1 | 7 | 13 |
| | Alloy Steel 4140, 5140, 8640, etc. | PSI | 165 | 85 | 100 | 75 | 70 |
| | | GPM | 2.4 | 2.6 | 4.3 | 6 | 12 |
| | High Strength Alloy 4340, 4330V, 300M, etc. | PSI | 160 | 65 | 55 | 40 | 35 |
| | | GPM | 2.4 | 2.3 | 3.2 | 5 | 8 |
| Structural Steel A36, A285, A516, etc. | PSI | 175 | 115 | 105 | 75 | 70 | |
| | GPM | 2.5 | 3 | 4.4 | 6 | 12 | |
| Tool Steel H-13, H-21, A-4, 0-2, S-3, etc. | PSI | 155 | 60 | 55 | 40 | 35 | |
| | GPM | 2.4 | 2.2 | 3.2 | 5 | 8 | |
| S | High Temp Alloy Hastelloy B, Inconel 600, etc. | PSI | 150 - 155 | 60 - 65 | 50 - 55 | 30 - 35 | 25 - 30 |
| | | GPM | 2.3 - 2.4 | 2.2 - 2.3 | 3.1 - 3.2 | 4 - 5 | 7 - 8 |
| M | Stainless Steel 400 Series 416, 420, 303, etc. | PSI | 329 | 239 | 260 | 250 | 190 |
| | | GPM | 3 | 4 | 7 | 12 | 20 |
| K | Nodular, Grey, Ductile Cast Iron | PSI | 225 | 104 | 90 | 90 | 80 |
| | | GPM | 3 | 3 | 4 | 7 | 13 |
| N | Aluminum | PSI | 350 | 319 | 315 | 284 | 200 |
| | | GPM | 4 | 5 | 8 | 12 | 20 |

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.