

**• Materials Listing • Suggested Surface Treatments**  
**• Cutting Fluids and Cutting Speeds**  
*(STARTING SFM RECOMMENDATIONS ONLY)*

| MATERIAL TO BE TAPPED                           | SUGGESTED SURFACE TREATMENT** | LUBRICANT/COOLANT                | HSS SPEED / SFM | CARBIDE SPEED / SFM |
|---|-------------------------------|----------------------------------|-----------------|---------------------|
| ALUMINUM (WROUGHT)                              | TiN, TiCN                     | Soluble, Light Base, or Lard Oil | 90-150          | 100-250             |
| ALUMINUM DIE CASTING                            | TiCN, TiN, CrN, TiAlN+WC/C    | Soluble or Lard Oil              | 65-75           | 75-100              |
| ALUMINUM BRONZE                                 | N, TiN                        | Mineral Oil w/Lard, or Light Oil | 20-60           | 40-80               |
| BAKELITE (HARD PLASTIC)                         | TiCN                          | Dry or Air Jet                   | 25-40           | 25-40               |
| BERYLLIUM COPPER                                | TiAlN+WC/C, CrN, N            | Soluble Light Base Oil           | 50-90           | 50-90               |
| BRASS   | None, TiCN                    | Soluble Light Base Oil           | 100-200         | 100-200             |
| BRONZE (FREE-MACHINE)                           | None, TiCN, N                 | Soluble Light Base Oil           | 80-150          | 100-200             |
| CAST BRASS                                      | N, TiCN                       | Soluble Light Base Oil           | 100-200         | 125-250             |
| CAST IRON (GRAY)                                | N, TiCN                       | Dry or Soluble Oil               | 20-80           | 40-100              |
| COPPER  | TiAlN+WC/C, CrN               | Soluble Light Base Oil           | 80-150          | 100-200             |
| COPPER-NICKEL                                   | N, TiCN                       | Soluble Light Base Oil           | 10-20           | 20-50               |
| DELTRIN   | TiAlN+WC/C, TiN, N            | Dry, Air Jet, or Water Soluble   | 65-100          | 65-100              |
| DUCTILE IRON                                    | N+O, TiN, TiCN                | Soluble or Sulphur Based Oils    | 30-50           | 40-80               |
| DURALUMIN                                       | TiAlN+WC/C, CrN               | Soluble or Lard Oil              | 50-90           | 50-90               |
| FERRO-TIC                                       | None                          | Anti-Seize Compound              | 8-20            | 8-20                |
| FIBERGLASS                                      | TiCN                          | Dry or Air Jet                   | 25-40           | 30-60               |
| HASTELLOY                                       | CrN                           | Sulphur Based Oils               | 8-20            | 8-20                |
| INCONEL   | N, CrN                        | Sulphur Based Oils               | 8-20            | 8-20                |
| MAGNESIUM                                       | CrN                           | Soluble Light Base Oil           | 100-150         | 100-150             |
| MALLEABLE IRON                                  | N+O, TiN, TiCN                | Soluble or Sulphur Based Oils    | 30-50           | 30-50               |
| MANGANESE                                       | TiCN                          | Sulphur Based Oils               | 8-20            | 8-20                |
| MANGANESE BRONZE                                | N, TiCN                       | Soluble Light Base Oil           | 20-60           | 40-80               |
| MOLYBDENUM                                      | N, TiN, TiCN                  | Sulphur Based Oils               | 20-45           | 30-60               |
| MONEL   | N, TiCN                       | Sulphur Based Oils               | 8-20            | 15-40               |
| NAVAL BRASS                                     | N                             | Soluble Light Base Oil           | 100-200         | 100-200             |
| NAVAL BRONZE                                    | None, TiCN                    | Soluble Light Base Oil           | 80-150          | 80-150              |
| NICKEL SILVER                                   | N, TiCN                       | Sulphur Based Oils               | 20-60           | 20-60               |
| NICKEL (PURE)                                   | N, TiCN                       | Soluble Light Base Oil           | 5-25            | 10-40               |
| NITRALLOY                                       | N, TiCN                       | Sulphur Based Oils               | 8-20            | 8-20                |
| NITRONIC (* NO GUARANTEE)                       | N, TiN, TiCN                  | Sulphur Based Oils               | 8-20            | 8-20                |
| NYLON   | N, TiN                        | Dry, Air Jet or Water Soluble    | 65-100          | 65-100              |
| PLASTICS:                                       |                               |                                  |                 |                     |
| THERMOPLASTIC (SOFT)                            | N, TiN                        | Dry, Air Jet or Water Soluble    | 65-100          | 65-100              |
| ABS, DELTRIN, NYLON, PVC, ETC.                  |                               |                                  |                 |                     |
| THERMOSETTING (HARD)                            | TiCN                          | Dry or Air Jet                   | 25-40           | 25-40               |
| BAKELITE, LAMINATES, PHENOLIC, POLYESTERS, ETC. |                               |                                  |                 |                     |
| POWDERED METAL (Sintered)                       | TiCN                          | Soluble Light Based Oil          | 25-80           | 25-80               |
| RUBBER, HARD                                    | None                          | Dry                              | 50-200          | 50-200              |
| SILICON BRONZE                                  | N, TiCN                       | Soluble Light Base Oil           | 20-60           | 20-60               |
| STEEL:  |                               |                                  |                 |                     |
| CARBON STEEL                                    | O, N, TiN                     | Sulphur Based Oils               | 40-90           | 50-120              |
| COLD-ROLLED STEEL (1018, etc.)                  | O, N, TiN                     | Sulphur Based Oils               | 40-90           | 50-120              |
| FORGED  | O, N, TiN                     | Sulphur Based Oils               | 20-50           | 30-75               |
| LEADED (12L14, etc.)                            | O, N, TiN                     | Sulphur Based Oils               | 40-90           | 50-125              |
| STAINLESS:                                      |                               |                                  |                 |                     |
| FREE MACHINING                                  | N, TiN, TiCN                  | Sulphur Based Oils               | 20-40           | 40-80               |
| PRECIP. HARDENING                               | N, TiN, TiCN                  | Sulphur Based Oils               | 8-20            | 10-30               |
| TOOL STEEL                                      | N, TiN, TiCN                  | Sulphur Based Oils               | 20-50           | 30-65               |
| TITANIUM  | O, N, CrN                     | Sulphur Based Oils               | 20-50           | 30-65               |
| TUNGSTEN  | TiN                           | Sulphur Based Oils               | 8-20            | 8-20                |
| TURCITE (SOFT PLASTIC)                          | N, TiN                        | Dry, Air Jet or Water Soluble    | 65-100          | 65-100              |
| ZAMAK (ZINC DIE CAST)                           | TiCN, TiN, CrN, TiAlN+WC/C    | Soluble Light Based Oil          | 50-200          | 50-200              |
| ZINC  | TiCN, TiN, CrN, TiAlN+WC/C    | Soluble Light Based Oil          | 50-200          | 50-200              |

\* If problems are encountered when tapping nitronic, or any other material (listed or not), please consult the factory.

\*\* See definitions of surface treatment abbreviations.

Note: The SFM cutting speeds listed are starting SFM recommendations only and depending on specific tapping conditions, may have to be altered. Allen Benjamin assumes no responsibility or liability of any kind as a result of the above listed SFM recommendations.