

# SHEARTAP™ Cutting Speeds

WORKPIECE MATERIAL	BRINELL HARDNESS (BHN)	SURFACE SPEED (SFM)
Low Carbon Steel - 1118, 12L12, 1108, 1213	≤120	65
Low & Medium Carbon Steel - 1018, 1551, 11L44	120 - 250	40
Medium Carbon and Alloyed Steel - 1040, 1140, 4340, 8640	≤250	40
Free Machining Stainless Steels - 303, 410, 416, 440F	≤260	35
Moderate Machining Stainless Steels - 304, 316	≤300	20

**SPEEDS** shown are suggested starting **points** and may be increased or decreased depending on actual material and machining conditions. Start conservatively and increase until machining cycle is optimized.

**TAP SPEEDS** may be **increased** for coated taps, spiral point taps, fine pitch taps, and when the percentage of thread is decreased.

**TAP SPEEDS** may need to be **decreased** for uncoated taps, spiral flute taps, coarse pitch taps, bottoming taps, difficult materials, longer thread lengths, and when the percentage of thread is increased.

## TOOL COATINGS

**Tool Coatings** enhance cutting tool performance for increased productivity and lower overall tooling cost. Benefits include increased surface hardness, lubricity & heat resistance and decreased chemical reactivity. Results include reduced friction & torque, higher speeds & feeds, increased tool life, decreased galling & chip welding and improved surface finish.

### TiN - Titanium Nitride

A good general purpose coating for a wide range of ferrous materials. Not recommended for non-ferrous materials. Has higher heat resistance than TiCN coating.

### TiCN - Titanium Carbonitride

Enhanced toughness, hardness & wear resistance for aggressive speeds & feeds. Recommended for difficult-to-machine, gummy & abrasive materials where moderate cutting temperatures are generated.

### TiAlN - Titanium Aluminum Nitride

### ALTiN - Aluminum Titanium Nitride

Excellent all around coatings featuring high heat resistance. Recommended for high thermal stress applications including dry machining, abrasive materials and hard-to-machine materials that generate higher cutting temperatures. ALTiN has higher AL content for increased hardness & heat resistance.

### CrN - Chromium Nitride

### CrC - Chromium Carbide

Especially recommended for titanium and non-ferrous materials including aluminum, copper & brass. CrC has slightly higher hardness than CrN. These coatings resist adhesion of the material being machined and resist chipping and cracking.

### DLC - Diamond Like Carbon

A thin carbon based amorphous (non-crystalline) coating featuring very high hardness & low coefficient of friction. Highly recommended for non-ferrous materials including plastic, aluminum, copper & brass. Typically used on solid carbide tools.