TITANIUM

AND

STAINLESS STEELS

AND OTHER NICKEL-BASED ALLOYS

APPLICATIONS

STANDARD (IN STOCK)

HIGH PERFORMANCE CUTTING TOOLS

CARBIDE DRILLS | CARBIDE ENDMILLS | COBALT ENDMILLS | POWDER METAL ENDMILLS

PCT™

PRECISION CUTTING TOOLS,INC

MACHINING TITANIUM

For many years, Titanium has been the most commonly used material in the aerospace industry. Aircraft engineers prefer using Titanium, because of its low mass and high-strength properties. However, Titanium is very difficult to machine and the proper cutting tools must be utilized.

What you need to know about TITANIUM'S Machinability.

- Low-thermal conductivity makes the tool tip reach high temperatures, causing tool wear.
- High-chemical reactivity leads to chip clogging; this causes erosion on the rake face and cutting edge failure.
- Low modulus of elasticity leads to chatter and a poor surface finish.

MACHINING STAINLESS STEELS

Stainless Steels are frequently used in the aerospace and automotive industries, because they are tough, durable and corrosion resistant. However, Stainless Steels are work-hardening, making them difficult to machine.

What you need to know about STAINLESS STEELS' Machinability.

- Work-hardening property requires a high-cutting force, decreasing the cutting tool's life.
- High-strength property leads to difficult chip-breaking.
- Low-thermal conductivity makes the tool tip reach high temperatures, causing tool wear.
- High-chemical reactivity leads to sticking and clogging during chip evacuation. This causes erosion on the rake face and cutting edge failure.

What You Need when Machining Titanium and Stainless Steels

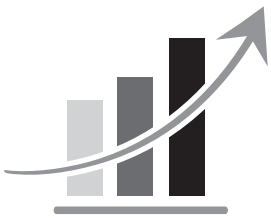
High Wear Resistance

Reduced Tool Tip Temperatures

High Chip Removal Rates

Minimized Vibration

Sharp Cutting Edges



Increased Productivity

COATINGS FOR TITANIUM AND STAINLESS STEELS

Exxtral Plus® — **Exxtral Plus®** (AlTiN) Aluminum-Titanium-Nitride

Exxtral Plus® is ideal for High-Performance machining of hardened materials. Its chemical composition makes it high in hardness, a property necessary for cutting difficult-to-machine materials. Furthermore, Exxtral Plus® coating is corrosion resistant at increased temperatures of up to 1470° F; temperatures significantly higher than that of TiN.

Applications
Steels (Carbon, Mild, Stainless, HSS) // Inconel // Titanium…and other Ferrous materials

Color	Anthracite, Dark Grey
Microhardness (HV 0.05)	3300
Friction coeff. against steel (dry)	0.7
Max. temperature of operation	800°C 1470°F
Coating thickness*	2-5 [µm]
Structure	Multilayer

*For micro cutting tools, a thickness of < 2 µm is recommended.

Silver-Exx® — **Silver-Exx®** (AlTiCrN) Aluminum-Titanium-Chromium-Nitride

Silver-Exx® is a PVD coating specifically intended for use on carbide cutting tools and the machining of abrasive and gummy materials. Its chemical composition consists of a smooth CrN surface which reduces the cold welding tendency, ideal properties for cutting hard materials.

Applications
Titanium // Inconel // Stainless Steels // Cast Iron …and their alloys

Color	Silver
Microhardness (HV 0.05)	3300
Friction coeff. against steel (dry)	0.4
Max. temperature of operation	800°C 1470°F
Coating thickness*	2-4 [µm]
Structure	Multilayer

*For micro cutting tools, a thickness of < 2 µm is recommended.

Varianta Supral® — **Varianta® Supral** (TiAlCN) (ML) Titanium-Aluminum-Carbo-Nitride

Varianta® Supral coating is ideal for dry high-speed machining. Its chemical composition TiAlCN(ML), provides both high heat and oxidation resistance. Furthermore, Varianta® Supral has a low coefficient of friction, reducing tool wear and resulting in a longer tool life.

Applications
Steels (Carbon, Mild, Stainless, HSS) // Inconel // Titanium // Cast Materials // Hardened Tool Steels

Color	Black
Microhardness (HV 0.05)	3500
Friction coeff. against steel (dry)	0.5
Max. temperature of operation	800°C 1470°F
Coating thickness*	2-5 [µm]
Structure	Multilayer

*For micro cutting tools, a thickness of < 2 µm is recommended.

SisNa® — **SisNa®** (AlTiN (nanostructured)) Aluminum-Titanium-Nitride

SisNa® is a PVD coating ideal for dry and high-speed cutting applications of hardened steel (>54HRc). Its nanostructured composition provides both high heat and oxidation resistance. Furthermore, SisNa® helps maintain high cutting forces and a longer tool life.

Applications
Steels (Carbon, Mild, Stainless, HSS) // Inconel // Titanium // Cast Materials // Hardened Tool Steels

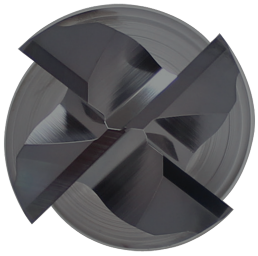
Color	Anthracite, Dark Grey
Microhardness (HV 0.05)	3500
Friction coeff. against steel (dry)	0.7
Max. temperature of operation	900°C 1650°F
Coating thickness*	1-4 [µm]
Structure	Multilayer

*For micro cutting tools, a thickness of < 2 µm is recommended.

FINISHING

451 SERIES

4 Flute Variable Endmill, Primary & Secondary
HIGH-PERFORMANCE MILLING



The 451 Series is engineered for improved chip evacuation and maximum metal removal rates. Its design consists of primary & secondary relief angles, standard chamfer and a variable flute. The 451 Series is ideal for increased metal removal rates and minimal chatter.

Features:

1. **Standard Chamfer**
   Corner radii
   (Available upon request)
2. **Variable Flute**
   Left-hand (Available upon request)
3. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
4. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Stainless Steels
- Carbon Steels
- Titanium
- Gray Cast Iron
- Hardened Tool Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Increased depth-of-cut
- Improved accuracy
- Chatter-free machining
- Higher speeds & feeds
- Superior surface finish on the part

CARBIDE | 4 Flutes

Varianta® Supral

Varianta® Supral provides higher cutting speeds and excellent wear resistance.

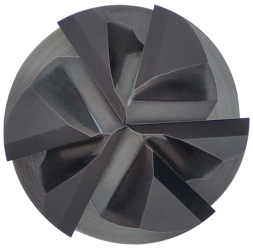
Speeds and Feeds Refer to Page 18.

Scan to View Online >

FINISHING

374 SERIES

6 Flute Variable Endmill, Eccentric OD
HIGH-PERFORMANCE MILLING



The 374 Series is engineered for increased chip removal rates. Its design consists of 6 flutes and an eccentric OD. This variable endmill is excellent for rough and finish operations of High-Temperature Alloys.

Features:

1. **Sharp Corner**
   Corner radii
   (Available upon request)
2. **Eccentric OD**
   For a tougher cutting edge
3. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
4. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Stainless Steels
- Carbon Steels
- Cast Iron
- Hardened Tool Steels
- High-Temperature Alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- Chatter-free machining
- Higher speeds & feeds
- Reduced friction between the chip and tool

CARBIDE | 6 Flutes

Varianta® Supral

Varianta® Supral provides higher cutting speeds and excellent wear resistance.

Speeds and Feeds Refer to Page 18.

Scan to View Online >

Extended Neck •

• Radius
(Available upon request)

The 558 Series is engineered to eliminate harmful harmonics at the point of contact, producing a smoother finish. Its design consists of an eccentric OD and variable flutes; a design ideal for increased metal removal rates and cutting depth.

Features:

1. **Sharp Corner**
   Chamfer / Corner radii
   (Available upon request)
2. **Eccentric OD**
   For a tougher cutting edge
3. **Silver-Exx® Coating**
   High speed operations, semi-dry or dry machining
4. **Variable Flute**
   Left-hand (Available upon request)
5. **Extended Neck**
   Available for deep-pocket applications

Speeds and Feeds Refer to Page 18.

Applications:

- Stainless Steels
- Titanium
- Gray Cast Iron
- Inconel

...and their alloys

Benefits:

- Increased metal removal rates
- Increased depth-of-cut
- Improved accuracy
- Chatter-free machining
- Higher speeds & feeds
- Superior surface finish on the part

CARBIDE | 5 Flutes | 35°

Silver-Exx®

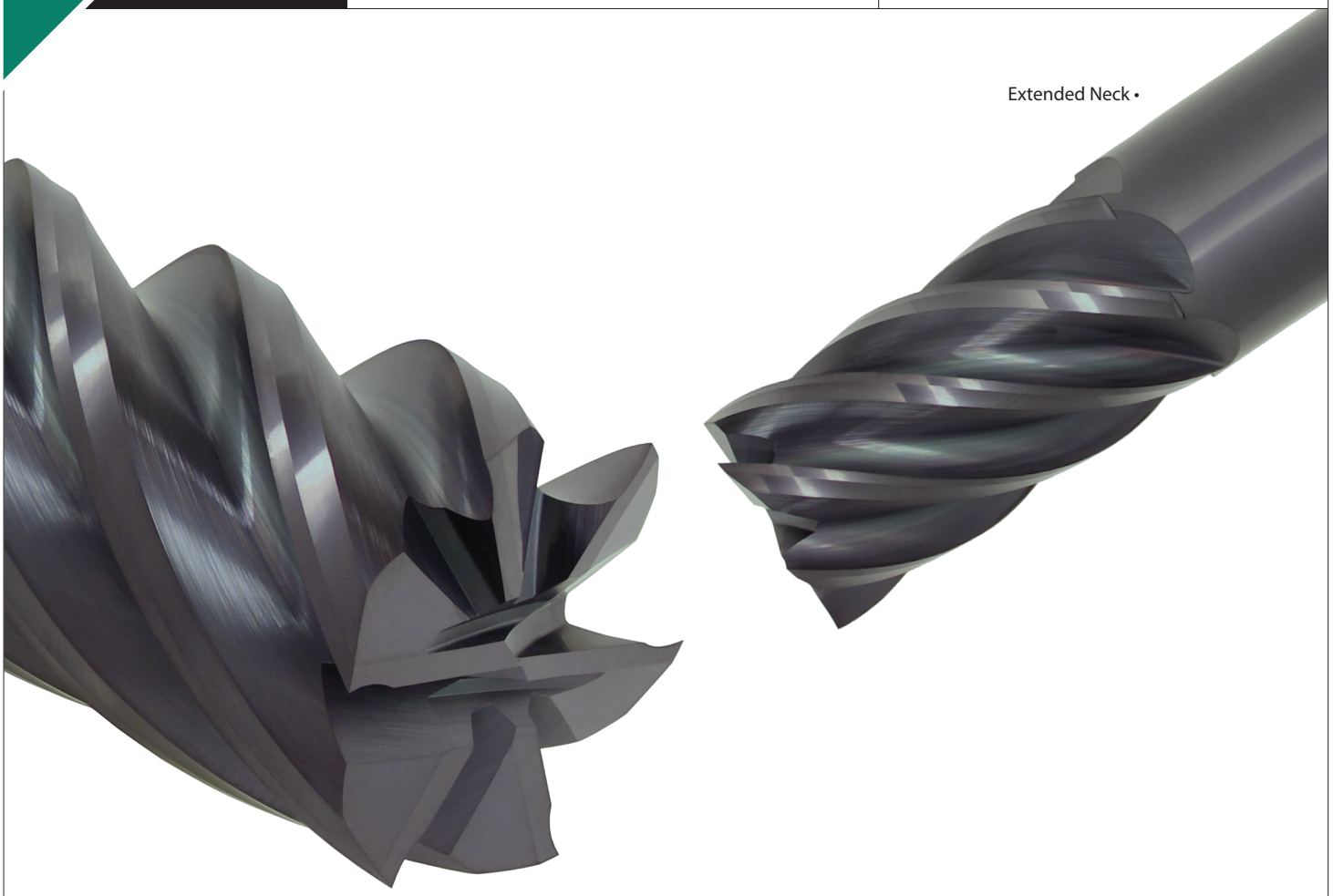
Silver-Exx® is ideal for machining abrasive and gummy materials.

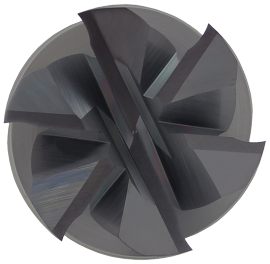
Scan to View Online >

640 SERIES

6 Flute, Primary & Secondary
HIGH-PERFORMANCE ENDMILL

Extended Neck •





The 640 Series is designed for High-Performance machining of Stainless Steels, Cast Iron, Heat-Resistant Alloys and Hardened materials. The 640 Series is excellent for semi-finish and finishing operations. In addition, its 6 flute design and 40° helix allow for enhanced chip evacuation.

Features:

1. **Primary & Secondary**
   Provides sharper cutting edge
2. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
3. **Right Hand**
   Left-hand (Available upon request)
4. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Stainless Steels
- Alloy Steels
- Carbon Steels
- Cast Iron
- Titanium
- Gray Cast Iron
- Hardened Tool Steels

...and their alloys

Benefits:

- Enhanced chip evacuation
- Increased productivity
- Higher speeds & feeds
- High finish on the part

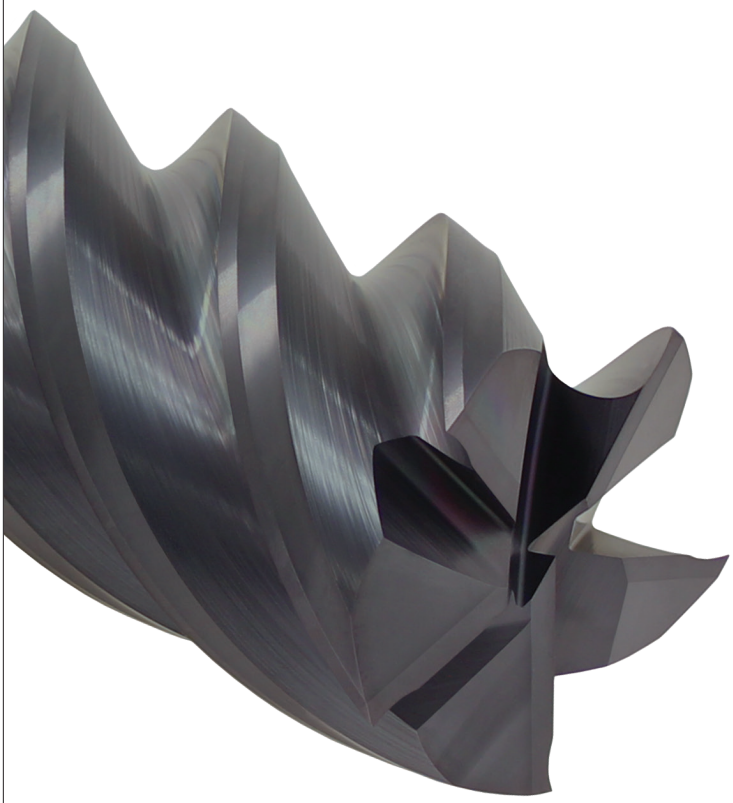
CARBIDE | 6 Flutes | 40°

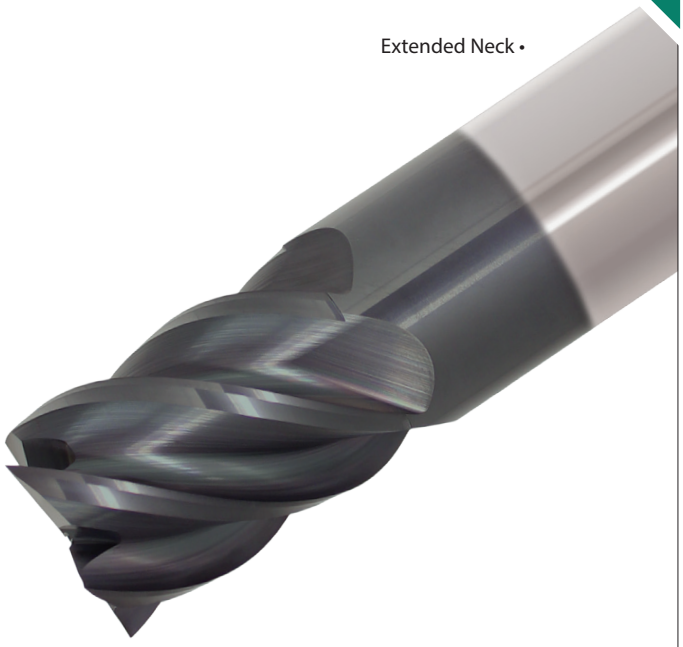
Varianta® Supral

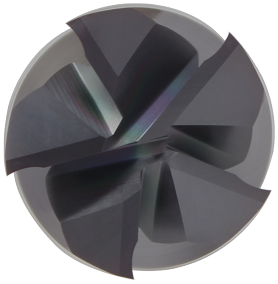
Varianta® Supral provides higher cutting speeds and excellent wear resistance.

Scan to View Online >

Extended Neck •







The 545 Series ideal for profiling & finishing operations of various applications including: Stainless Steels, Cast Iron, Heat-Resistant Alloys and Hardened materials. Its multi-flute design and 45° helix allow for high metal removal rates. In addition, the 545 Series is coated with Varianta® Supral and can be used in both dry and semi-dry machining operations

Features:

1. **Primary & Secondary**
   Provides sharper cutting edge
2. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
3. **Right Hand**
   Left-hand (Available upon request)
4. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Stainless Steels
- Carbon Steels
- Cast Iron
- Titanium
- Heat-Resistant Alloys
- Hardened Tool Steels

…and their alloys

Benefits:

- Enhanced chip evacuation
- Increased productivity
- Higher speeds & feeds
- High finish on the part

CARBIDE | **5-7** Flutes | 45°

Varianta® Supral

Varianta® Supral provides higher cutting speeds and excellent wear resistance.

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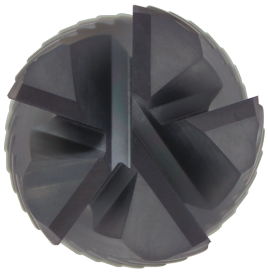
ROUGHING

429 SERIES

5-7 Flute Carbide Rougher
HIGH-PERFORMANCE ROUGHING



The 429 Series is engineered specifically for difficult-to-machine materials. Its design consists of coarse teeth, a 45° helix and Varianta® Supral coating; a design ideal for high-speed operations of hard materials.

Features:

1. **45° Helix**
   High speeds and feeds
2. **Coarse Teeth**
   Large metal removal rates
3. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
4. **5-7 Flutes**
   Left-hand (Available upon request)
5. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Titanium
- Stainless Steels
- Carbon Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- Higher speeds & feeds
- Increased productivity

CARBIDE | **5-7** Flutes | 45° | Coarse Rougher

Varianta® Supral **Varianta® Supral** provides higher cutting speeds and excellent wear resistance.

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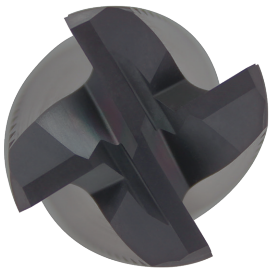
ROUGHING

423 SERIES

4 Flute Fine Pitch Rougher
STANDARD ROUGHING ENDMILL



The 423 Series is engineered specifically for difficult-to-machine materials. Its design consists of fine teeth, a 20° helix and Varianta® Supral coating; a design ideal for roughing operations of hard materials.

Features:

1. **20° Helix**
   For added strength
2. **Fine Teeth**
   Fine chip evacuation
3. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
4. **4 Flutes**
   Left-hand (Available upon request)
5. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Carbon Steels
- Alloy Steels
- Stainless Steels
- Hardened Tool Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Higher speeds & feeds
- Increased productivity
- Longer tool life

CARBIDE | **4** Flutes | 20° | Fine Rough

Varianta® Supral **Varianta® Supral** provides higher cutting speeds and excellent wear resistance.

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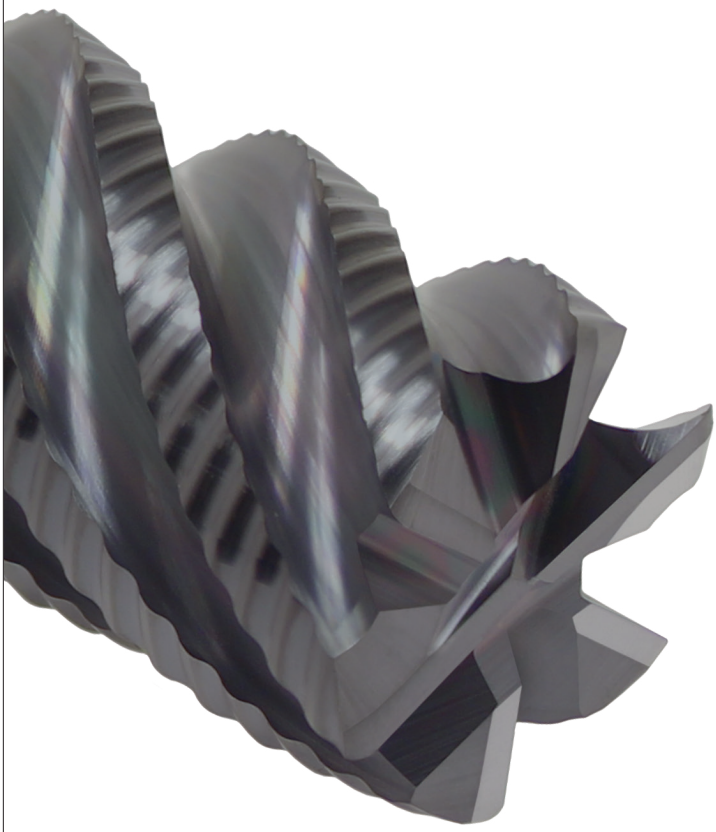

Extended Neck •

The 430 Series is engineered specifically for difficult-to-machine materials. Its design consists of coarse teeth, a negative rake angle and a 40° helix; a design ideal for high-speed operations of hard materials.

Features:

1. **Negative Rake Angle**
   Increased edge strength
2. **Radii**
   Available in Radii: .030, .040, .050
3. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
4. **4-6 Flutes**
   Left-hand (Available upon request)
5. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Titanium
- Stainless Steels
- Carbon Steels
- Gray Cast Iron
- Hardened Tool Steels

…and their alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- Higher speeds & feeds
- Reduced friction between the chip and tool

CARBIDE | 4-6 Flutes | 40° | Coarse Rougher

Varianta® Supral

Varianta® Supral provides higher cutting speeds and excellent wear resistance.

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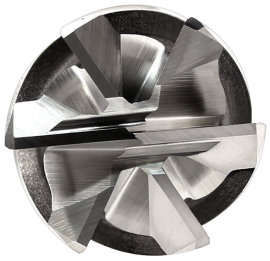
CURVE-CUT
G (GROUND)

4-8 Flute CurveCut Ground
MULTI-FLUTE ENDMILL ROUGHING/ FINISHING



The Cobalt CurveCut (Ground) Endmill is engineered for increased metal removal rates and a smooth finish. Its design consists of CNC-Ground flutes for optimum chip evacuation. This endmill is ideal for machining Titanium, Stainless Steels and their alloys.

Features:

1. **CNC- Ground Flutes**
   Increased chip evacuation
2. **Chamfer/ Radii**
   Available upon request
3. **Right-hand Spiral and Cut**
   Left-hand (Available upon request)
4. **Exxtral Plus® Coating**
   For wet or dry machining operations of steels

Applications:

- Titanium
- Stainless Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- High production rates
- High speeds and feeds
- Longer tool life
- Easy to re-sharpen

M42	4-8 Flutes				35°

Exxtral Plus®

Exxtral Plus® is ideal for high-performance machining of hard materials.

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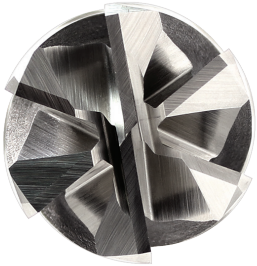

The Cobalt CurveCut (Milled) Endmill is engineered for increased metal removal rates and a smooth finish. Its design consists of Milled flutes for optimum chip evacuation. This endmill is ideal for machining Titanium, Stainless Steels and their alloys.

Features:

1. **Milled Flutes**
   Increased chip evacuation
2. **Chamfer/ Radii**
   Available upon request
3. **Right-hand Spiral and Cut**
   Left-hand (Available upon request)
4. **Exxtral Plus® Coating**
   For wet or dry machining operations of steels

Applications:

- Titanium
- Stainless Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- High production rates
- Easy to re-sharpen
- High speeds and feeds
- Longer tool life

M42	4-8 Flutes				35°

Exxtral Plus®

Exxtral Plus® is ideal for high-performance machining of hard materials.

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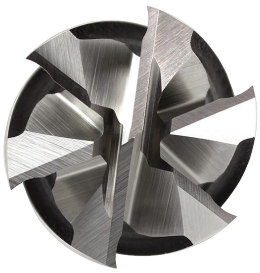
POWDER METAL PM3

4-8 Flute (PM30)
MULTI-FLUTE FINISHING ENDMILL

Extended Neck •

POWDER METAL (PM30) **vs. COBALT** (M42)



Our (4-8 Flute) Powder Metal Finishing Endmills are designed for machining Titanium & Stainless Steel applications. Their geometry includes a 35° helix and Exxtral Plus® coating, for higher speeds and feeds and increased metal removal rates.

Features:

1. **35° Helix**
   Stronger cutting edge
2. **Right-hand Spiral and Cut**
   Left-hand (Available upon request)
3. **Exxtral Plus® Coating**
   For wet or dry machining operations of steels
4. **Weldon Flats**
   Reduced Slippage
5. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Titanium
- Stainless Steels

...and their alloys

Benefits:

- Increased metal removal rates
- Reduced slippage
- Higher speeds & feeds
- Longer tool life

PM30 | **4-8** Flutes | 35°

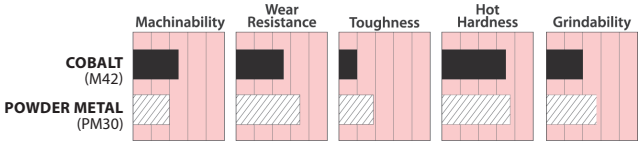
Exxtral Plus®

Exxtral Plus® is ideal for high-performance machining of hard materials.

Scan to View Online >

Extended Neck •

POWDER METAL (PM30) **vs. COBALT** (M42)



The Powder Metal Fine Pitch Roughing Endmill (4-8 Flute) is engineered with fine teeth and a center-cutting design, for excellent fine chip evacuation of Titanium & Stainless Steels. In addition, our Fine Pitch Roughing Endmill comes with Weldon Flats to help reduce tool slippage during machining.

Features:

1. **Fine Teeth**
   Fine chip evacuation
2. **Right-hand Spiral and Cut**
   Left-hand (Available upon request)
3. **Exxtral Plus® Coating**
   For wet or dry machining operations of steels
4. **Weldon Flats**
   Reduced Slippage
5. **Extended Neck**
   Available for deep-pocket applications

Applications:

- Titanium
- Stainless Steels

…and their alloys

Benefits:

- Increased metal removal rates
- Improved accuracy
- Higher speeds & feeds
- Longer tool life

PM30	4-8 Flutes				30°	Rougher

Exxtral Plus®

Exxtral Plus® is ideal for high-performance machining of hard materials.

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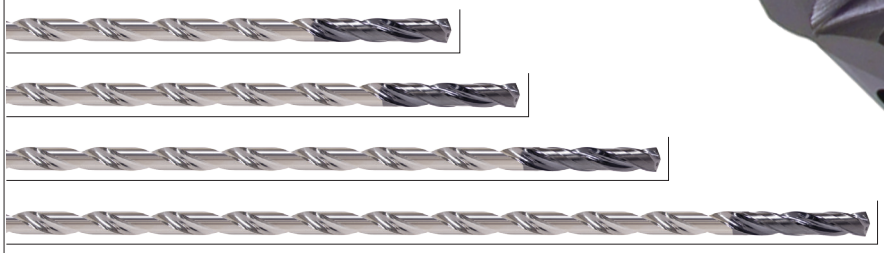
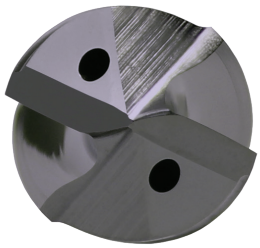
SXC

2 Flute - Double Margin Carbide Drill
HIGH-PERFORMANCE DRILLING

NEW
Now offering 40xD & 50xD
Upon Request

12xD-50xD
STANDARD SIZES IN-STOCK
(INCHES & METRIC)





The SXC Series is engineered to provide you with improved accuracy at high speed and depths. Its design consists of a double margin, internal coolant holes, 30° helix and 135° point geometry; features ideal for Stainless Steels, Heat-Resistant Alloys and Cast Material applications.

Features:

1. **135° Point Geometry**
   For advanced drilling capabilities
2. **Coolant Holes**
   Cools cutting edge and helps evacuate chip
3. **Double Margin**
   Increased stability & smooth finish
4. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
5. **Available: 12xD – 50xD**
   High penetration capabilities

Applications:

- Titanium
- Stainless Steels
- Heat-Resistant Alloys
- Cast Materials

...and their alloys

Benefits:

- Superior hole quality
- No pecking cycles required
- Increased productivity
- Longer tool life
- Long-term cost savings

CARBIDE
CARBURO

12xD to 30xD

Varianta® Supral

Varianta® Supral provides higher cutting speeds and excellent wear resistance.

Scan to View Online >

NEW

HI-DEPTH™ LONG DRILLS

85% LESS CYCLE TIME

40xD-50xD
Solid Carbide - Internal Coolant

SXC **Double Margin**
2 Flute

Triple Margin **AXC**
2 Flute

APPLICATIONS

TITANIUM | STAINLESS STEELS | NICKEL-BASED ALLOYS | ALUMINUM | COPPER | CAST IRON

Our Hi-Depth™ Long Drills have undergone several processes, including EdgeCut™ (edge preparation), flute polishing and premium coating. These procedures allow for a stronger cutting edge, faster speeds and longer tool life. The drills are available in two styles, SXC and AXC series.

Increasing productivity while reducing cycle time.

BENEFITS

Reducing cycle time
Self-centering capabilities & coolant holes allow for peck-free machining.

Increasing productivity
Solid carbide, coolant-through drills can be run at higher speeds and feeds.

Efficient chip evacuation
Parabolic flutes and coolant-hole geometry.

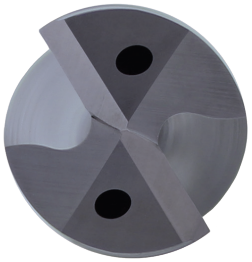
Improving tool life
Polished flutes, preminum coatings and edge preparation.

DRILL DEEP. DRILL FAST. DRILL RIGHT.

DRILLING

GXC

2 Flute - Single Margin Carbide Drill
HIGH-PERFORMANCE DRILLING



The GXC Series is engineered to provide you with improved accuracy at high speeds and depths. Its design consists of a single margin, internal coolant holes, 30° helix and 135° point geometry; a design ideal for Stainless Steels, Titanium and Cast Material applications.

Features:

1. **135° Point Geometry**
   Enhanced chip evacuation
2. **Coolant Holes**
   Maintains strength at increased operating parameters
3. **Single Margin**
   Increased stability & smooth finish
4. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
5. **Available: 3xD – 8xD**
   High penetration capabilities

Applications:

- Titanium
- Stainless Steels
- Cast Materials

…and their alloys

Benefits:

- Superior hole quality
- No pecking cycles required
- Increased productivity
- Longer tool life
- Long-term cost savings

CARBIDE	3xD to 8xD	135°	30°

Varianta Supral®

Varianta Supral® provides higher cutting speeds when drilling steels.

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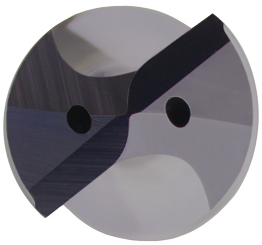
DRILLING

TXC

2 Flute - Single Margin Carbide Drill
HIGH-PERFORMANCE DRILLING



The TXC Series is a multi-purpose drill designed to machine Aluminum, Stainless Steels, and Heat-Resistant Alloys. Its design includes a 38° helix and 140° point geometry, for improved accuracy and thick-chip removal. Furthermore, the TXC has internal coolant holes that allow for improved operating temperatures, at increased speeds and feeds.

Features:

1. **140° Point Geometry**
   For improved accuracy and thick-chip removal
2. **Coolant Holes**
   Maintains strength at increased operating parameters
3. **Single Margin**
   Increased stability & smooth finish
4. **SisNa® Coating**
   Ideal for high-speed machining of tough materials
5. **Available: 3xD – 5xD**
   Penetration capabilities

Applications:

- Stainless Steels
- Heat-Resistant Alloys
- Low-Si Aluminum

…and their alloys

Benefits:

- No pecking cycles required
- Improved accuracy
- Thick-chip removal
- Longer tool life
- Long-term cost savings

CARBIDE	3xD to 5xD	140°	38°

SisNa®

SisNa® is ideal for high-speed machining of tough materials.

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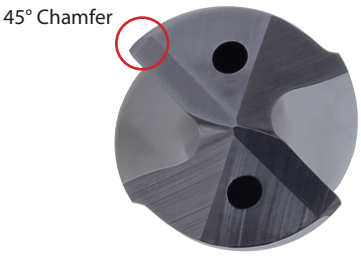
2 Flute - Double Margin Carbide Drill
HIGH-PERFORMANCE DRILLING

NXC



NXC Series is engineered specifically for nickel-based applications. The drills feature double-margin geometry, coolant holes and a slow helix, to provide you with efficient chip evacuation and stronger cutting edge. In addition, the drills include a standard 45° chamfer and SisNa® coating, for increased wear resistance and longer tool life.

Features:

1. **45° Protective Corner Chamfer**
   Longer tool life
2. **135° Point Geometry**
   Enhanced chip evacuation
3. **Coolant Holes**
   Maintains strength at increased operating parameters
4. **Double Margin**
   Increased stability & smooth finish
5. **SisNa® Coating**
   Ideal for high-speed machining of tough materials
6. **Available: 3xD – 30xD**
   High penetration capabilities

Applications:

- Stainless Steels
- Heat-Resistant Alloys
- Low-Si Aluminum

...and their alloys

Benefits:

- No pecking cycles required
- Improved accuracy
- Thick-chip removal
- Longer tool life
- Long-term cost savings

CARBIDE | **3xD to 30xD** | 135° | 15°

SisNa® — **SisNa®** is ideal for high-speed machining of tough materials.

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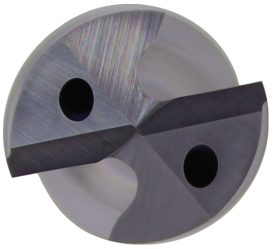
2 Flute - Single Margin Carbide Pilot Drill
DEEP-HOLE DRILLING

PXC



The PXC Series is a multi-purpose Pilot Drill designed to be used before a long-drill begins perforation. Its design includes a 30° helix and 140° point geometry, for superior drill penetration and accuracy. Furthermore, the PXC Series has internal coolant holes that allow for improved operating temperatures, at increased speeds and feeds.

Features:

1. **140° Point Geometry**
   For improved accuracy
2. **Coolant Holes**
   Maintains strength at increased operating parameters
3. **Single Margin**
   Increased stability & smooth finish
4. **Varianta® Supral Coating**
   For wet or dry machining operations of steels
5. **Available: 5xD**
   Penetration capabilities

Applications:

- Stainless Steels
- Heat-Resistant Alloys
- Aluminum Alloys

...and their alloys

Benefits:

- No pecking cycles required
- Improved accuracy
- Longer tool life
- Long-term cost savings

CARBIDE | **5xD** | 140° | 30°

Varianta Supral® — **Varianta Supral®** provides higher cutting speeds when drilling steels.

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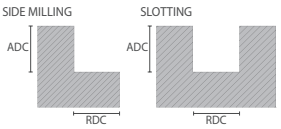
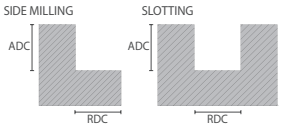


451 Series Speeds & Feeds

			Chipload Per Tooth Recommendations (CPT)							Profiling Radial		Slotting Axial
	Material	SFM (Vc)	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	(ADC)	(RDC)	(ADC)
P 1	Low-Carbon Steel - 1000 Series (>25 HRc)	500	.002	.002	.002	.003	.003	.003	.004	1.5xD	.5xD	1xD
M 1	Austenitic Stainless Steel - Inox, 200 Series, 300 Series	280	.002	.002	.002	.003	.003	.003	.003	1.5xD	.5xD	1xD
M 2	Austenitic Stainless Steel & Cast Stainless Steel - 310, 314, 316 (<25 HRc)	200	.001	.002	.002	.002	.002	.002	.002	1.5xD	.5xD	1xD
K 1	Gray Cast Iron	500	.002	.002	.002	.003	.003	.003	.004	1.5xD	.5xD	1xD
S 4	Titanium Alloys - Commercially Pure, 6Al-AV, AStm 1/2/3, Ti-6Al-2SN-4Zr-2Mo (≤48 HRc)	170	.001	.001	.001	.002	.002	.002	.003	1.5xD	.5xD	1xD

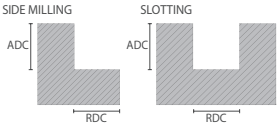
Note: These are only recommended starting figures that depend on conditions such as machine and material rigidity, type of coating if any, etc. TESTING IS RECOMMENDED



558 Series Speeds & Feeds

		SFM		Chipload Per Tooth Recommendations (CPT)							Profiling Radial		Slotting Axial
	Material	SFM <32 HRc	SFM >32 HRc	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	(ADC)	(RDC)	(ADC)
P 1	Low-Carbon Steel - 1000 Series (>25 HRc)	225-425	125-225	.0018	.0019	.0023	.0035	.0048	.0050	.0059	1.5xD	.25xD	1xD
P 5	Ferritic, Martensitic & PH Stainless Steels - 400's, PH Types (≤35 HRc)	150-320	80-220	.0015	.0016	.0021	.0025	.0043	.0033	.0060	1.5xD	.25xD	1xD
P 6	Ferritic, Martensitic & PH Stainless Steels - 400's, PH Types (36-48 HRc)	100-250	100-135	.0016	.0017	.0019	.0025	.0038	.0033	.0055	1.5xD	.25xD	1xD
M 1	Austenitic Stainless Steel - Inox, 200 Series, 300 Series	150-325	100-200	.0018	.0018	.0021	.0028	.0049	.0045	.0053	1.5xD	.25xD	1xD
M 2	Austenitic Stainless Steel & Cast Stainless Steel - 310, 314, 316 (<25 HRc)	220-425	100-245	.0019	.0020	.0023	.0028	.0050	.0047	.0055	1.5xD	.25xD	1xD
K 1	Gray Cast Iron	260-455	130-300	.0010	.0014	.0019	.0022	.0036	.0047	.0036	1.5xD	.25xD	1xD
K 3	Ductile Iron (<38 HRc)	130-355	90-150	.0016	.0017	.0023	.0030	.0045	.0033	.0061	1.5xD	.25xD	1xD
S 2	Nickel Based, Cobalt Based, Heat-Resistant Alloys - Haynes 188, Haynes 21, Hastelloy, Waspaloy, Inconel 625/718 (≤48hRc)	80-125	40-100	.0013	.0015	.0018	.0026	.0038	.0043	.0046	1.5xD	.25xD	1xD
S 4	Titanium Alloys - Commercially Pure, 6Al-AV, AStm 1/2/3, Ti-6Al-2SN-4Zr-2Mo (≤48 HRc)	150-185	100-150	.0015	.0019	.0022	.0031	.0048	.0046	.0058	1.5xD	.25xD	1xD

Note: These are only recommended starting figures that depend on conditions such as machine and material rigidity, type of coating if any, etc. TESTING IS RECOMMENDED



374 Series Speeds & Feeds for High-Performance Milling

					Chipload Per Tooth Recommendations (CPT)						Profiling Radial	
	Material	Hardness	Type of Cut	SFM (Vc)	1/4"	3/8"	1/2"	5/8"	3/4"	1"	(ADC)	(RDC)
P 1	Low-Carbon Steel - 1000 Series (>25 HRc)	40 HRc to 54 HRc	Rough	175	.001	.002	.002	.003	.003	.005	1.5xD	.2xD
			Finish	200	.002	.002	.003	.004	.004	.006	2xD	.1xD
P 5	Ferritic, Martensitic & PH Stainless Steels - 400's, PH Types (≤35 HRc)	Less than 38 HRc	Rough	180	.001	.003	.003	.004	.005	.007	1.5xD	.2xD
			Finish	350	.002	.003	.004	.005	.006	.008	2xD	.1xD
S 2	Nickel Based, Cobalt Based, Heat-Resistant Alloys - Haynes 188, Haynes 21, Hastelloy, Waspaloy, Inconel 625/718 (≤48hRc)	Less than 38 HRc	Rough	100	.001	.001	.002	.002	.002	.003	1.5xD	.2xD
			Finish	130	.001	.002	.002	.002	.002	.004	2xD	.1xD
S 4	Titanium Alloys - Commercially Pure, 6Al-AV, AStm 1/2/3, Ti-6Al-2SN-4Zr-2Mo (≤48 HRc)	Less than 38 HRc	Rough	200	.001	.001	.002	.002	.002	.003	1.5xD	.2xD
			Finish	350	.001	.002	.002	.002	.002	.004	2xD	.1xD

Note: These are only recommended starting figures that depend on conditions such as machine and material rigidity, type of coating if any, etc. TESTING IS RECOMMENDED

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