

## INSERT GRADES

### CVD COATED GRADES

	<p><b>P01 - P10</b></p> <p><b>K10 - K25</b></p>	<p><b>ET1001</b> First choice for stable turning of Cast Iron</p> <p>CVD TiCN - Al<sub>2</sub>O<sub>3</sub></p>
	<p><b>P05 - P20</b></p> <p><b>K15 - K35</b></p>	<p><b>ET31C</b> First choice for high speed finishing of Steels and ductile Cast Iron.</p> <p>CVD TiCN - Al<sub>2</sub>O<sub>3</sub></p>
	<p><b>P15 - P30</b></p>	<p><b>ET32C</b> Versatile grade for general turning of Steels.</p> <p>CVD TiCN - Al<sub>2</sub>O<sub>3</sub></p>
	<p><b>P20 - P35</b></p> <p><b>M20 - M30</b></p>	<p><b>ET33C</b> Tough grade for turning of Stainless Steel and interrupted cutting of Steel.</p> <p>CVD TiCN - Al<sub>2</sub>O<sub>3</sub></p>

### PVD COATED GRADES

	<p><b>M05 - M20</b></p> <p><b>S05 - S20</b></p>	<p><b>ET21P</b> First choice for stable turning of Stainless Steel and HRSA.</p> <p>PVD Coated</p>
	<p><b>M20 - M35</b></p> <p><b>S15 - S25</b></p>	<p><b>ET23P</b> Optimised grade for cutting of Stainless Steel and HRSA at low cutting speeds.</p> <p>PVD Coated</p>
	<p><b>M30 - M40</b></p> <p><b>S25 - S30</b></p>	<p><b>ET24P</b> Optimised grade for interrupted cutting of Stainless Steel and HRSA.</p> <p>PVD Coated</p>
	<p><b>P10 - P30</b></p> <p><b>K20 - K30</b></p> <p><b>H20 - H30</b></p>	<p><b>ET801</b> Turning grade for mid and low cutting conditions in most steels and cast iron</p> <p>PVD Coated</p>

### NON-FERROUS GRADES

	<p><b>N05 - N35</b></p>	<p><b>ET10D</b> First choice for high speed turning of Aluminium, and Si &gt;10%</p> <p>NX Coated</p>
	<p><b>N05 - N35</b></p>	<p><b>ET10U</b> Polished face for general turning of Aluminium.</p> <p>Uncoated</p>

	<p>New Multi-layer CVD coated grades are finished with a special process to enable smoother chip flow.</p>
	<p>Single layer PVD coated grades are designed to balance edge strength with extended tool life.</p>
	<p>NX coated inserts maintain sharp cutting edge due to coating thickness of ≤ 1 µm and highly polished face.</p>

## INSERT GRADE GUIDE

		P STEEL				M STAINLESS STEEL				K CAST IRON			
		05	15	25	35	05	15	25	35	05	15	25	35
CVD	ET1001	1001									1001		
	ET31C	31C									31C		
	ET32C		32C										
	ET33C			33C			33C						
PVD	ET21P					21P							
	ET23P							23P					
	ET24P								24P				
	ET801			801							801		
NX	ET10D												
-	ET10U												

HARDER ← → TOUGHER    HARDER ← → TOUGHER    HARDER ← → TOUGHER

		N NON-FERROUS				S HRSA				H HARDENED STEEL			
		05	15	25	35	05	15	25	35	05	15	25	35
CVD	ET1001												
	ET31C									31C			
	ET32C												
	ET33C												
PVD	ET21P					21P							
	ET23P							23P					
	ET24P								24P				
	ET801										801		
NX	ET10D		10D										
-	ET10U		10U										

HARDER ← → TOUGHER    HARDER ← → TOUGHER    HARDER ← → TOUGHER

## THEORETICAL SURFACE ROUGHNESS BY INSERT RADIUS

Ra (Rz) µm	Insert corner radius					
	0.2	0.4	0.8	1.2	1.6	2.4
	fn (mm/rev)					
0.4 (1.6)	0.05	0.07	0.10	0.12	0.14	0.18
1.6 (6.3)	0.10	0.14	0.20	0.25	0.28	0.35
3.2 (12.5)	0.14	0.20	0.28	0.35	0.40	0.49
6.3 (25)	-	0.28	0.40	0.49	0.57	0.69
8 (32)	-	-	0.45	0.55	0.64	0.78

## INSERT GRADE APPLICATION AREA

The charts below indicate grade selection in relation to cutting speed and feed rate

