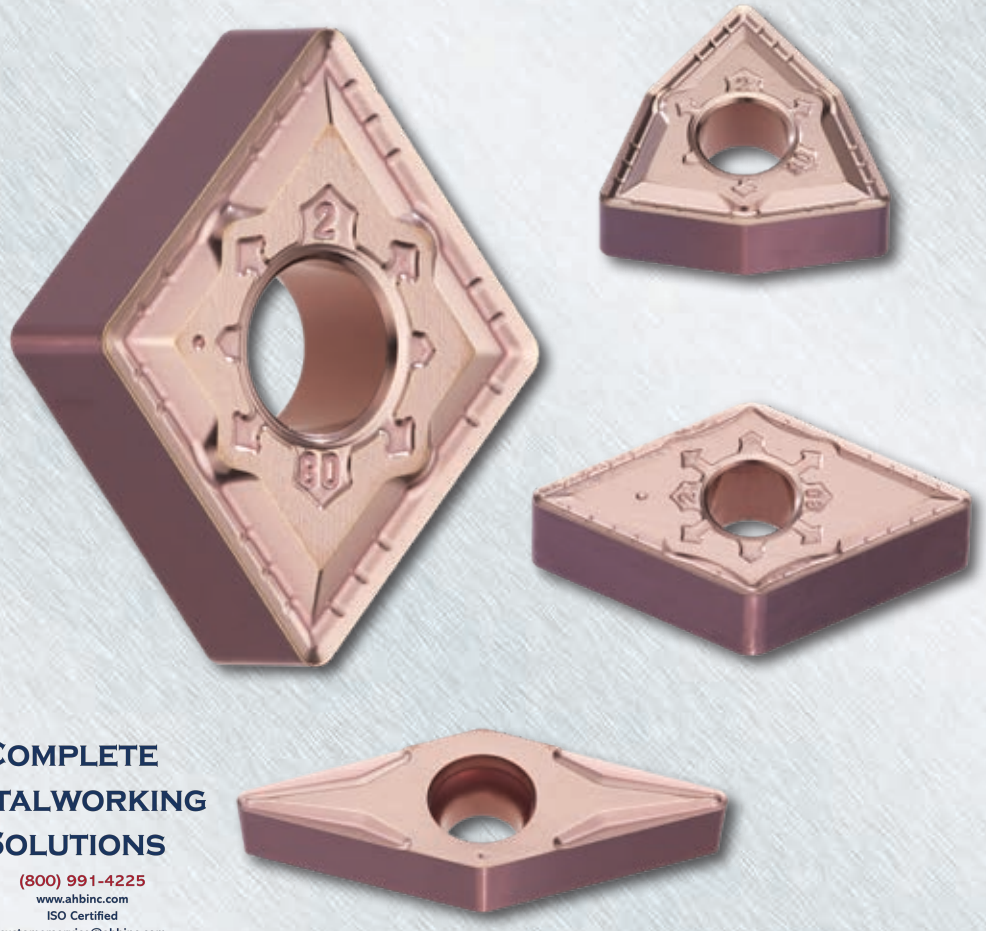
TOTURN™

TT3005, A NEW CVD COATED GRADE FOR HRSA FINISH MACHINING

Insert Shapes & Sizes
- CNMG 432, 433
- DNMG 432, 442, 443
- SNMG 432, 433, 644
- WNMG 432, 433
- RCMT 08, 12
- VBGT 331, 332, 333

Chip Breakers
- MGS – Negative Inserts & RCMT Positive Inserts
- FGS – VBGT Positive Inserts

Grade
- Ultra-Fine Substrate
- Multi-layered CVD Coating
- Surface Treated to Reduce Built-Up Edge



AHB TOOLING & MACHINERY

COMPLETE METALWORKING SOLUTIONS

(800) 991-4225
www.ahbinc.com
ISO Certified
customerservice@ahbinc.com

NEW PRODUCT ANNOUNCEMENT 2019

FEATURES & BENEFITS:

- High abrasion resistant ultra-fine substrate
- Multi-layered CVD coating for very high wear resistance and predictable, machining stability
- Surface treated, smooth coating layer prevents built-up edges and enhances chip evacuation
- Suitable for high-speed finish machining of aerospace materials
- Distinctive purple-colored periphery for easy recognition

Member IMC Group Ingersoll Cutting Tools

KEY POINT

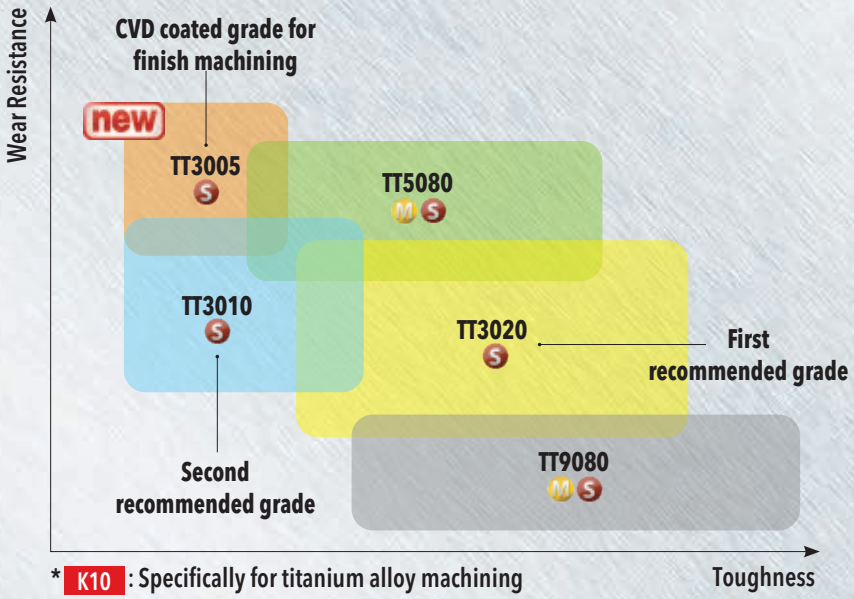
Ingersoll has introduced a new CVD coated grade, TT3005, for finish turning of heat resistant super alloys (HRSA).

The **TT3005** CVD coated grade, easily recognized by its purple periphery, is the latest addition to Ingersoll's ISO turning product line. Characterized by high wear resistance due to the ultra-fine substrate, it also excels at preventing build-up on the cutting edge. It is a grade suitable for high-speed finish machining, but also provides longer tool life at medium cutting speeds.

Ingersoll's introduction of grade **TT3005**, along with the new TT3010 and TT3020 grades introduced last year, provides a very comprehensive range of options for turning heat resistant super alloys (HRSA).

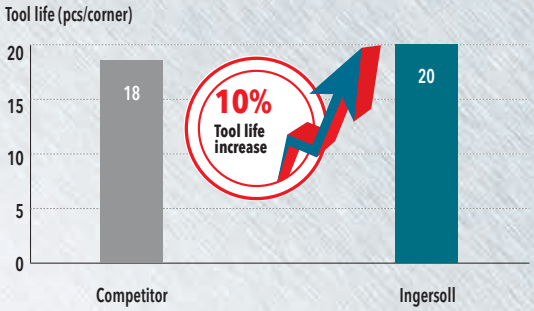
Note: While TT3005, TT3010 and TT3020 grades are suitable for heat resistant super alloys such as Inconel, Hastelloy and Waspalloy, Ingersoll grade K10 remains the first recommended option for turning Titanium.

APPLICATION RANGE

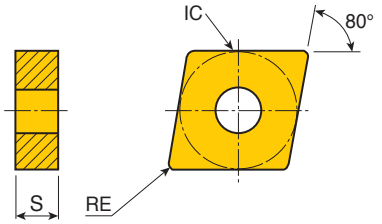


CASE STUDY 1

		Competitor	Ingersoll
Component		Engine Case	
Workpiece material		Inconel 718	
Operation		External Turning, Finishing	
Insert		VBGT 332 CVD coated	VBGT 332 FGS TT3005
Cutting speed	V (sfm)	150	150
Feed rate	f (ipr)	.006	.006
Depth of cut	ap (inch)	.008	.008
Coolant		wet	wet
Tool life (pcs/corner)		18	20



CNMG Negative 80° rhombic inserts

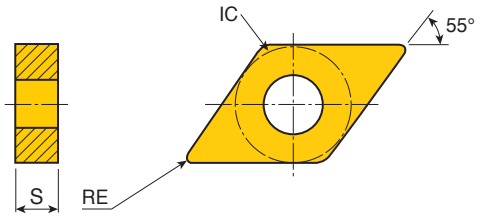


Size	Dimensions (inch)		
	IC Inscribed Circle	S Insert Thickness	RE Corner Radius
432	.500	.187	.031
433	.500	.187	.047

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	CNMG 432 (120408) MGS	.040 - .157	.006 - .016	●	●	●	●
	CNMG 433 (120412) MGS	.060 - .157	.007 - .020	●	●	●	●

●: Standard items

DNMG Negative 55° rhombic inserts

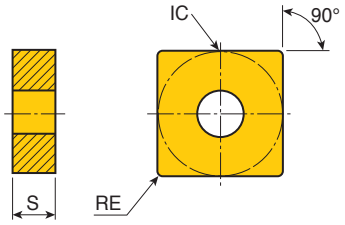


Size	Dimensions (inch)		
	IC Inscribed Circle	S Insert Thickness	RE Corner Radius
432	.500	.187	.031
442	.500	.250	.031
443	.500	.250	.047

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	DNMG 432 (150408) MGS	.040 - .157	.006 - .016	●	●	●	●
	DNMG 442 (150608) MGS	.040 - .157	.006 - .016	●	●	●	●
	DNMG 443 (150612) MGS	.040 - .157	.007 - .016	●	●	●	●

●: Standard items

SNMG Negative square inserts

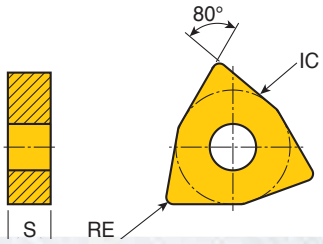


Size	Dimensions (inch)		
	IC Inscribed Circle	S Insert Thickness	RE Corner Radius
432	.500	.187	.031
433	.500	.187	.047
644	.750	.250	.063

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	SNMG 432 (120408) MGS	.040 - .157	.006 - .016	●	●	●	●
	SNMG 433 (120412) MGS	.051 - .157	.007 - .016	●	●	●	●
	SNMG 644 (190616) MGS	.060 - .315	.007 - .016	●	●	●	●

●: Standard items

WNMG Negative 80° trigon inserts

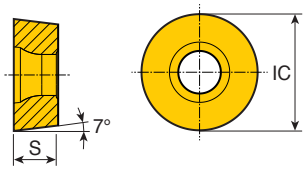


Size	Dimensions (inch)		
	IC Inscribed Circle	S Insert Thickness	RE Corner Radius
432	.500	.187	.031
433	.500	.187	.047

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	WNMG 432 (080408) MGS	.040 - .157	.006 - .016	●	●	●	●
	WNMG 433 (080412) MGS	.051 - .157	.007 - .016	●	●	●	●

●: Standard items

RCMT Positive 7° clearance round inserts

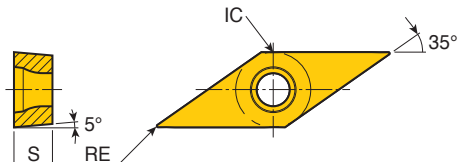


Size	Dimensions (mm)	
	IC Inscribed Circle	S Insert Thickness
08	8	3.18
12	12	4.76

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	RCMT 080300 MGS	.020 - .079	.006 - .012	●	●	●	●
	RCMT 120400 MGS	.040 - .118	.010 - .020	●	●	●	●

●: Standard items

VBGT Positive 5° clearance 35° rhombic inserts



Size	Dimensions (inch)		
	IC Inscribed Circle	S Insert Thickness	RE Corner Radius
331	.375	.187	.016
332	.375	.187	.031
333	.375	.187	.047

Insert	Designation	ap (inch)	Feed (ipr)	PVD coated			Uncoated
				TT3005 new	TT3010	TT3020	K10
	VBGT 331 (160404) MGS	.008 - .100	.001 - .008	●	●	●	●
	VBGT 332 (160408) MGS	.012 - .100	.002 - .008	●	●	●	●
	VBGT 333 (160412) MGS	.012 - .100	.003 - .008	●	●	●	●

●: Standard items

RECOMMENDED CUTTING CONDITIONS

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (sfm)					
							Uncoated	Coated				
							K10	TT3005	TT5080	TT3010	TT3020	TT9080
P	Non-alloy steel, cast steel, free cutting steel	< 0.25%C	Annealed	420	125	1						
		>= 0.25%C	Annealed	650	190	2						
		< 0.55%C	Quenched and tempered	850	250	3						
		>= 0.55%C	Annealed	750	220	4						
			Quenched and tempered	1000	300	5						
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6						
			Quenched and tempered	930	275	7						
				1000	300	8						
				1200	350	9						
	High alloy steel, cast steel and tool steel		Annealed	680	200	10						
			Quenched and tempered	1100	325	11						
M	Stainless steel and cast steel		Ferritic / martensitic	680	200	12			525-1280			395-950
			Martensitic	820	240	13			525-920			395-885
			Austenitic	600	180	14			330-820			295-785
K	Gray cast iron (GG)		Ferritic		160	15						
			Pearlitic		250	16						
	Cast iron nodular (GGG)		Ferritic		180	17						
			Pearlitic		260	18						
	Malleable cast iron		Ferritic		130	19						
			Pearlitic		230	20						
N	Aluminum - wrought alloy		Not cureable		60	21						
			Cured		100	22						
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23						
			Cured		90	24						
		>12% Si	High temp.		130	25						
	Copper alloys	>1% Pb	Free cutting		110	26						
			Brass		90	27						
			Electrolitic copper		100	28						
	Non-metallic		Duroplastics, fiber plastics			29						
			Hard rubber			30						
S	High temp. alloys	Fe based	Annealed		200	31	180-280	195-655	165-590	165-560	130-540	130-525
			Cured		280	32	130-215	165-590	130-525	130-490	100-475	100-425
		Ni or Co based	Annealed		250	33	105-180	180-395	150-330	150-295	115-280	115-260
			Cured		350	34	70-130	150-360	115-295	115-260	100-245	100-230
			Cast		320	35	50-85	130-330	100-260	100-230	100-215	100-195
	Titanium, Ti alloys			Rm 400		36	165-245	395-720	360-655	360-625	330-605	295-590
			Alpha+beta alloys cured	Rm 1050		37	150-230	195-395	165-330	165-295	130-280	130-260
H	Hardened steel		Hardened		55HRC	38						
			Hardened		60HRC	39						
	Chilled cast iron		Cast		400	40						
	Cast iron nodular		Hardened		55HRC	41						

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel