

DURATOMIC™



TP3500 GRADE
COMPLETING THE DURATOMIC CHAIN FOR STEEL TURNING

SECO 



BE DEMANDING.

Working with steel turning? You're the customer – demand a tough insert. Insist on a grade that will give you excellent performance in applications where harder and more wear-resistant grades show unpredictable behaviour and where cutting conditions vary.

Naturally you will insist on Duratomic coating. You know that this technology offers a wider range of applications and greater flexibility in cutting data. You also know that the Duratomic coating gives you higher speeds, increased cutting data, a longer and more predictable tool life, a wider machining window and dramatically increased productivity.

Accept nothing less than a top performer – a highly versatile insert that won't let you down, one that can handle both wet and dry machining and is therefore a good choice for mixed production.

It goes without saying that you should also demand a high quality surface finish. So you're looking for an insert grade that gives you high precision and tolerances.

WE HAVE EXACTLY WHAT YOU'RE LOOKING FOR!

TP3500 – THE TOUGH CHOICE THAT WILL BOOST YOUR PRODUCTIVITY

Presenting the new TP3500 – a highly versatile grade that completes Seco's Duratomic grade chain for steel turning. It's tough and it will meet all your demands. For applications where harder and more wear-resistant grades show unpredictable behaviour, TP3500 is a top performer that will increase your productivity.

TP3500 is the tough choice that makes your choice of inserts easy by fitting precisely into Seco's Duratomic grade chain for steel turning inserts.

SECO SETS THE STANDARD OTHERS FOLLOW

Seco's α -based Duratomic cutting tool coating technology is not available from other suppliers – and it's unique. We don't need to explain why it's unique. As a demanding customer, you know already.

With three grades and a large number of chipbreaker geometries adapted to insert grade, type and size, Seco now has powerful Duratomic solutions for all steel turning applications.



COMPLETING THE DURATOMIC CHAIN FOR STEEL TURNING



WEAR RESISTANCE

TP1500 Specially designed to give long and reliable tool life at high temperatures and speeds during stable conditions. The grade for the highest productivity.



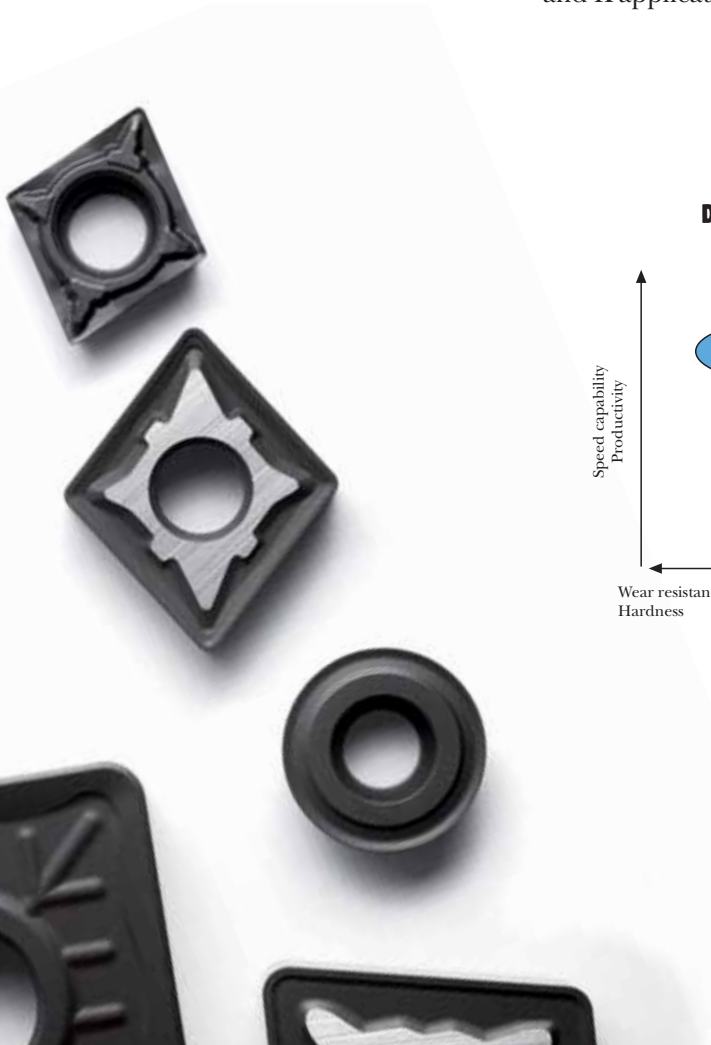
VERSATILITY

TP2500 First choice for general purpose steel turning. Wide working window, capability to handle high speeds as well as moderately interrupted cuts. Also performs well in ISO M and K applications

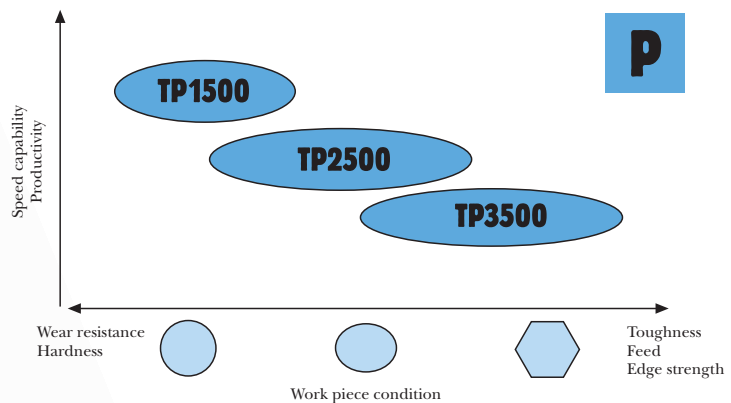


TOUGHNESS

TP3500 Offers long, predictable tool life in unstable conditions where high edge security is needed and harder, more wear resistant grades show unpredictable behaviour. Also offers a level of toughness suitable for ISO M applications.



DURATOMIC SOLUTIONS FOR ALL STEEL TURNING





TP3500 – THE SECURE CHOICE

INCREASED TOUGHNESS

TP3500 offers you increased edge toughness and the increased wear resistance of the Duratomic coating. This improved edge integrity and overall increased toughness make it the secure choice for applications where the cutting conditions may vary over time.

LONG TOOL LIFE

In applications that require toughness, TP3500 offers you longer, more even tool life – an important benefit in unmanned production.

WIDE WORKING WINDOW

TP3500 gives you the same high performance in a range of operations, from finishing to heavy interruptions. Whether you're working with rough and intermittent turning, small part turning or stainless steel turning, the new Duratomic TP3500 grade offers you a level of toughness that will ensure high productivity for your operation, even under severe conditions.

BOOST YOUR BOTTOM LINE

High feeds and speeds mean high metal removal rates. These factors increase your productivity and reduce the need for different inserts, helping you reduce your stock and saving you money. It all adds up to an improved bottom line for your operation.

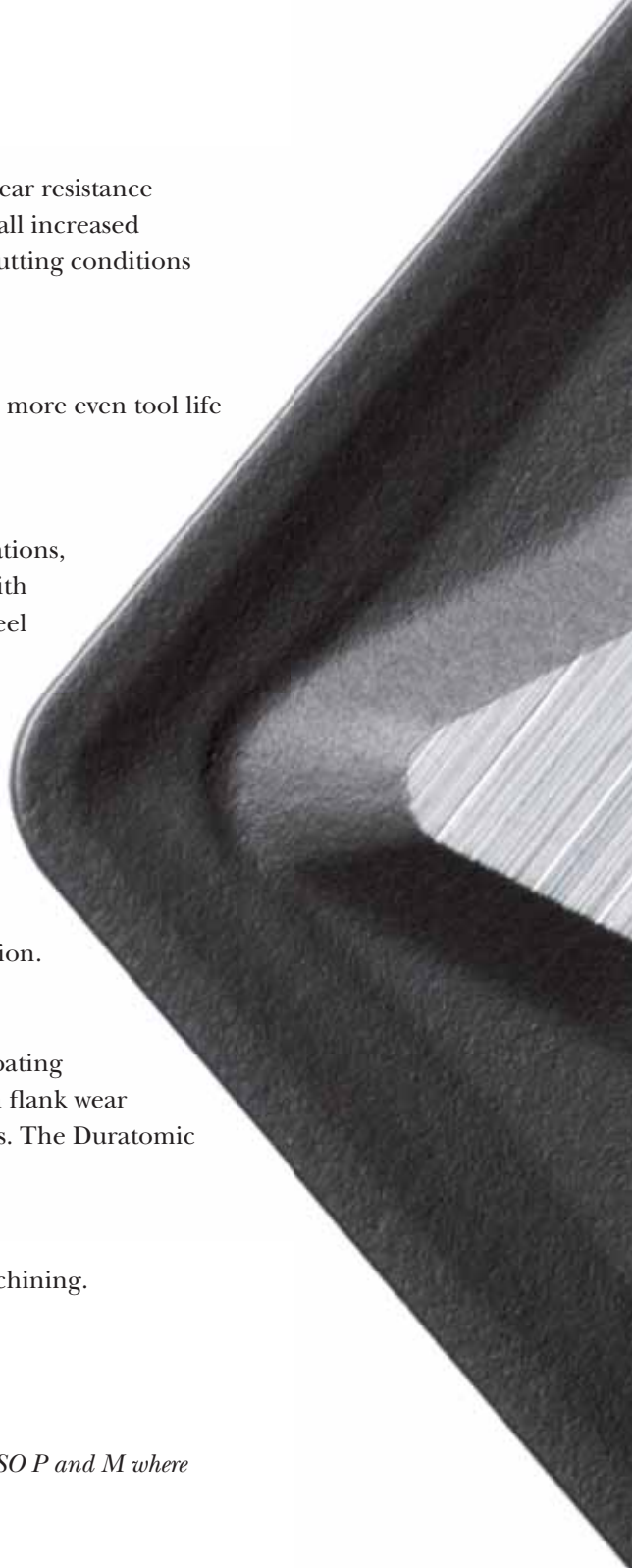
QUALITY IS ASSURED

The reduced built-up edge tendency offered by the Duratomic coating ensures a high surface finish for your machining operation. High flank wear resistance contributes to the finished accuracy of the turned parts. The Duratomic coating gives you higher precision and tolerances.

VERSATILE AND RELIABLE

TP3500 is reliable, versatile and can handle both wet and dry machining. Therefore, it's a good choice if you work with mixed production.

The insert programme for TP3500 covers most turning applications for ISO P and M where toughness and reliability are of primary importance.





TOUGH ON THREE LEVELS

TAKE DURATOMIC COATING

The increased wear resistance of the Duratomic coating makes it possible to widen the application window, utilizing tougher substrates. This effect is predominant when the “time in cut” is short or interrupted.

ADD ADDITIONAL BULK TOUGHNESS

When compared to the earlier grade TP3000 the new substrate of TP3500 has been adjusted for additional bulk toughness.

ADD INCREASED SURFACE ZONE TOUGHNESS

TP3500 has a functionally graded substrate. This results in increased toughness in the surface zone compared to the bulk toughness.

AND THE RESULT IS IMPRESSIVE EDGE TOUGHNESS WITH LONG RELIABLE TOOL LIFE.

THE TP3500 GRADE

COATING:

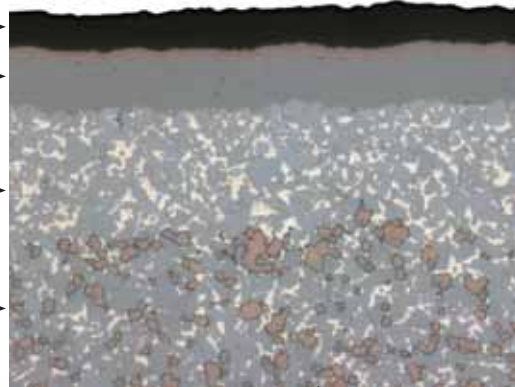
Duratomic Al_2O_3

Ti(C,N)

SUBSTRATE WC + Co BASED:

With binder phase enrichment

With cubic carbides



DURATOMIC WILL NOT LET YOU DOWN AND NEITHER WILL SECO



EFFICIENT DELIVERY

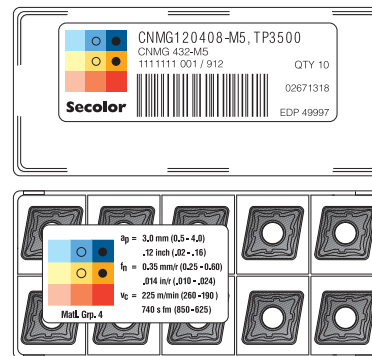
We know that time is money. Therefore, we will make sure that you get your inserts whenever and wherever you need them. Through efficient demand planning, we keep our stock at the levels required to live up to your expectations.

IMPROVED PRODUCT INFORMATION

To assist you with the insert selection process, we are providing even more information on cutting data on the boxes containing the inserts.

Our Secolor Selection Guide* helps you to find the inserts that we recommend for a specific turning application. The Secolor Turning Calculator* is a useful tool for calculating cutting data.

* The software can be downloaded from:
www.secotools.com/service_support



OUR RESEARCH KEEPS YOU AT THE CUTTING EDGE




Intensive R&D activities have made Seco a world leader in the field of cemented carbides. Our R&D engineers conduct ongoing research into cutting processes, metallurgy and related areas with one central aim – to keep you at the cutting edge.

Our tool range is continuously upgraded to keep you ahead of the game. More than 50% of the 22,000 products in our portfolio were introduced during the past five years.

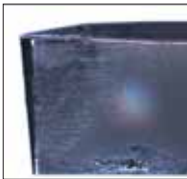
TP3500 TEST RESULTS

LONGITUDINAL TURNING OF CONICAL PART

Component	Pressure pipe stud	
Operation	Longitudinal turning of conical part	
Material	DIN Ck45, SMG 4	
Insert	Seco: VBMT110204-F1, TP3500 Seco: VBMT110204-F1, TP3000	
Cutting data	v_c	100-200 m/min
	f	0,2 mm/rev
	a_p	0,65 mm
Coolant	Oil	
Number of parts	750 pcs	
Criterion	Flank wear	
Result	TP3500 shows better edge integrity and less flank wear compared to TP3000.	



TP3000
Vb = 0,2mm



TP3500
Vb = 0,16mm

DRY FACING SIDE PLATE; HEAVY INTERRUPTION

Component	Crankshaft			
Operation	Dry facing side plate; heavy interruption Wet OD turning of main bearing			
Material	DIN 44MnSiVS 6 BY, 1000 N/mm ² , Forged, SMG 5			
Insert	Seco: CNMG120412-M5, TP3500 Seco: CNMG120412-M5, TP3000			
Cutting data	Facing side plate		Turning main bearing	
	v_c	170 m/min	v_c	170 m/min
	f	0,25 - 0,30 mm/rev	f	0,50 mm/rev
	a_p	2 mm	a_p	4 mm
Coolant	No		Yes	
Time in cut	TP3500: 9,5 min TP3000: 7 min			
Criterion	Flank wear			
Result	TP3500 has 26% longer tool life compared to TP3000			

Tool	Time in cut (min)
TP3000	7
TP3500	9.5


FACING AND LONGITUDINAL

Component	Forged gear wheel	
Operation	Facing and longitudinal	
Material	DIN 20MnCrS5, 200-220HB, SMG 4	
Insert	Seco: CNMG160612-M5, TP3500 Competitor: CNMG160612	
Cutting data	v_c	220 m/min
	f	0,4 mm/rev
	a_p	3-4 mm
Coolant	Yes	
Number of parts	TP3500: 36 pcs Competitor: 30 pcs	
Criterion	Flank wear, Vb = 0,8 mm	


Tool	Number of parts (pcs)
Competitor	30
TP3500	36

INTERNAL LONGITUDINAL TURNING

Component	Synchronisation ring	
Operation	Internal longitudinal turning	
Material	SMG 4	
Insert	Seco: DNMG150612-M3, TP3500 Competitor: DNMG150612	
Cutting data	v_c	280 m/min
	f	0,4 - 0,5 mm/rev
	a_p	2-3 mm
Coolant	Yes	
Number of parts	100 pcs	
Criterion	Plastic deformation	



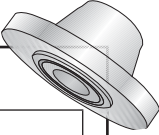


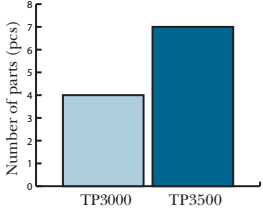
Competitor



TP3500

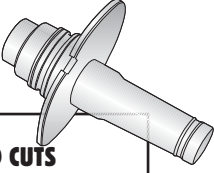


EXTERNAL COPYING AND FACING

Component	16" Flange	
Operation	External copying and facing	
Material	AISI 304L, SMG 8, Forged	
Insert	Seco: CNMG190616-MR7, TP3500 Seco: CNMG190616-MR7, TP3000	
Cutting data	v_c	120 m/min
	f	0,55 mm/rev
	a_p	4 mm
Coolant	Yes	
Number of parts	TP3500: 7 pcs TP3000: 4 pcs	
Criterion	Flank wear $V_b = 0,3$ mm	

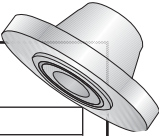
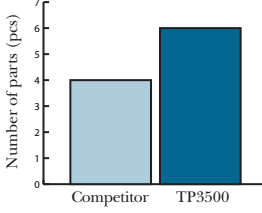
OD TURNING WITH INTERRUPTED CUTS

Component	Eccentric shaft	
Operation	OD turning with interrupted cuts (variation of stock allowance)	
Material	DIN 16MnCr5, 650 N/mm ² , SMG 4, Forged	
Insert	Seco: WNMG080412-M5, TP3500 Competitor: WNMG080412	
Cutting data	v_c	270 m/min
	f	0,35 mm/rev
	a_p	2 – 3 mm
Coolant	No	
Total cutting length	170 mm	
Total cutting time	62 min (200 parts)	
Result	TP3500 shows better edge integrity and more controlled wear. Better reliability!	

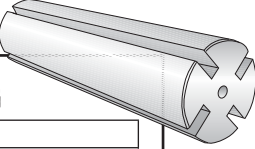


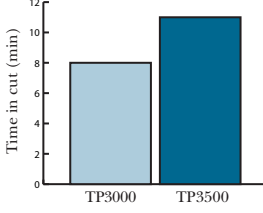
FACING

Component	6" Flange	
Operation	Facing	
Material	AISI 304L, SMG 8, Forged	
Insert	Seco: CNMG160616-MR7, TP3500 Competitor: CNMG160616	
Cutting data	v_c	150 m/min
	f	0,45 mm/rev
	a_p	3,5 mm
Coolant	Yes	
Time in cut	TP3500: 29,5 min Competitor: 19 min	
Criterion	Flank wear $V_b = 0,4$ mm	

LONGITUDINAL TURNING

Component	Cylindrical bar with four slots	
Operation	Longitudinal turning	
Material	DIN Ck45, SMG 4	
Insert	Seco: DNMG150616-M3, TP3500 Seco: DNMG150616-M3, TP3000	
Cutting data	v_c	180 m/min
	f	0,3 mm/rev
	a_p	2,0 mm
Coolant	No	
Time in cut	TP3500: 11 min TP3000: 8 min	
Criterion	Edge chipping	

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