Tungaloy

Keeping the Customer First

Tungaloy Report TE0908-E1

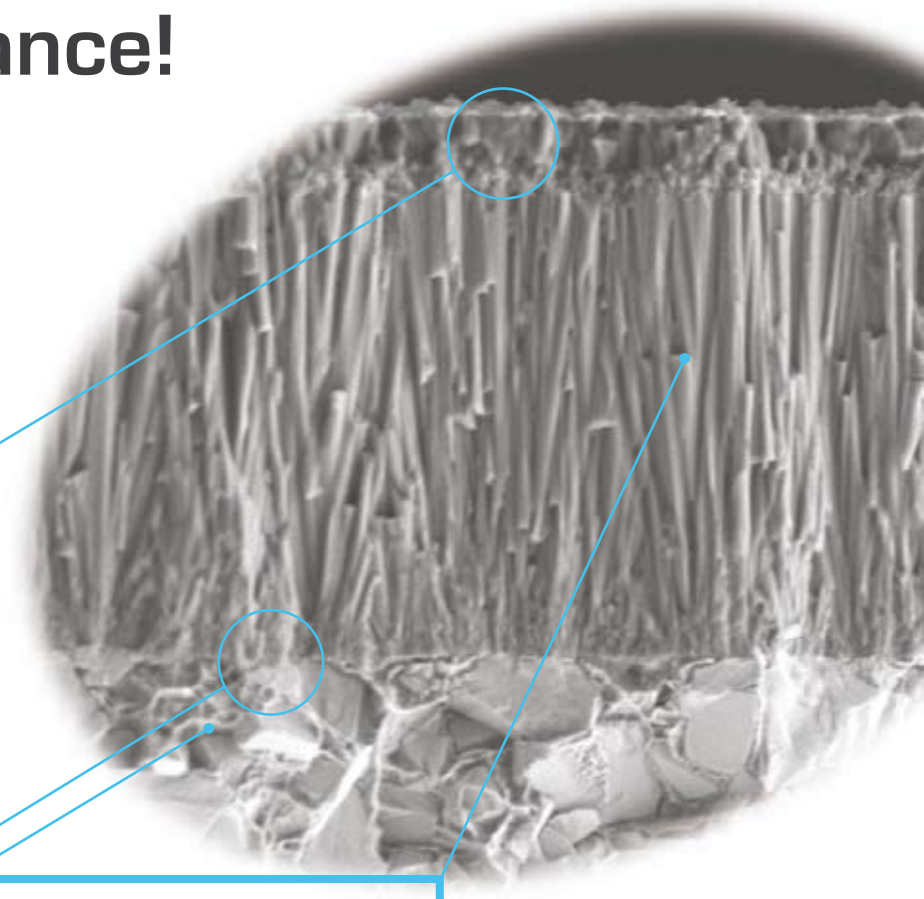
NEW

Milling grade series

T3130

The new generation

Refined combination of new coating and specially designed substrate for excellent wear and impact resistance!



Improved coating strength

Smooth coating surface

- Smooth and refined coating surface improves the uniformity of the coating structure.
- Optimised strength and stability to prevent premature formation of cracks.

Strongly improved adhesion between coating and substrate

Newly developed, sophisticated carbide substrate

- Carbide substrate with excellent affinity to coating.
- Improves adhesion between coating and substrate and suppresses peeling-off of coating, thus realizing longer tool life.

Extremely improved impact resistance

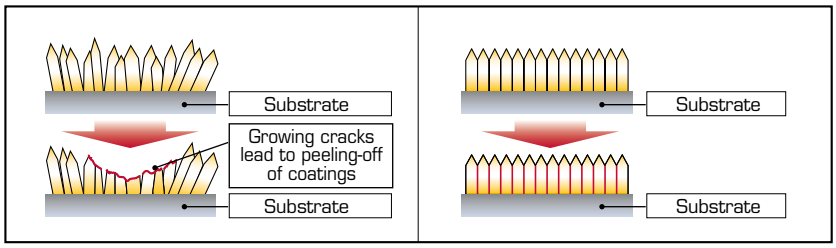
Specially engineered carbide substrate for higher toughness

- Newly developed, cobalt enriched special carbide substrate for improved impact resistance and toughness.

Improved chipping resistance

Continuously formed columnar crystal Ti(C,N) coating

- Longitudinally stabilized columnar structure contributes to strong crystal structure, suppressing cracks and improving chipping resistance.



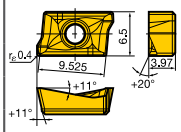
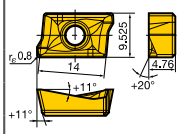
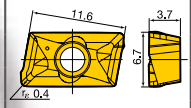
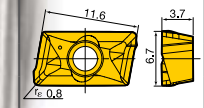
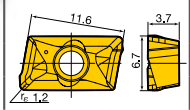
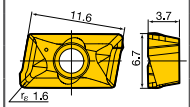
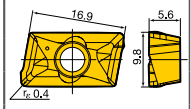
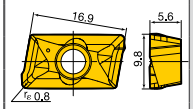
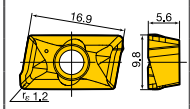
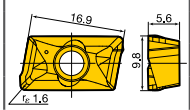
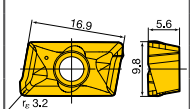
Conventional grade

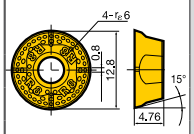
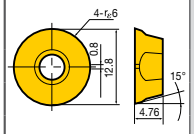
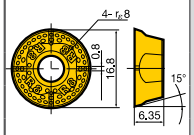
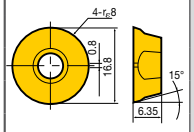
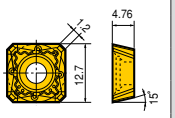
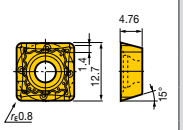
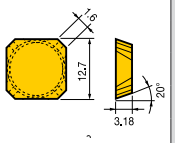
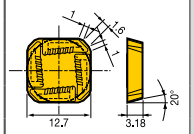
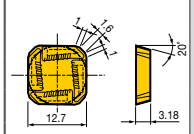
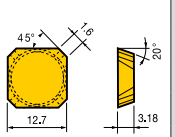
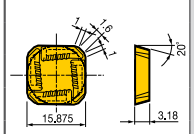
- Irregularly oriented and unequally grown crystals
- Cracks develop in various directions

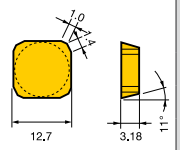
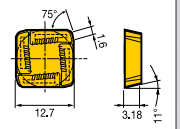
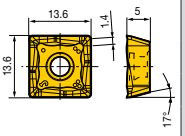
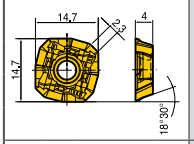
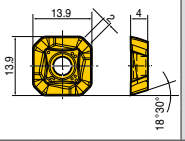
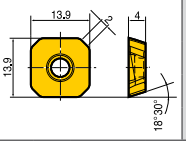
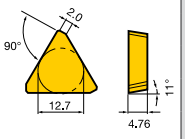
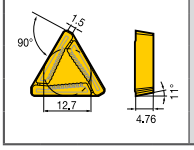
T3130

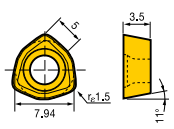
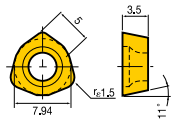
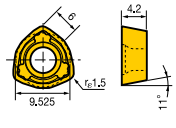
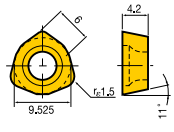
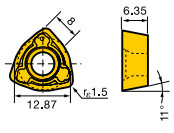
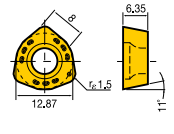
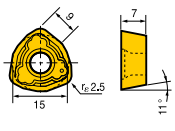
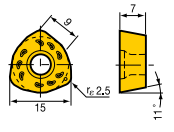
- Regularly oriented equally grown crystals
- Minimal cracks in the direction of crystal growth

The regularly oriented and equally grown columnar crystal coating layer can evenly disperse the stress even und heavy cutting load and suppress randomly developed cracks. The result: extremely long tool life.

Insert Shape and dimension	ISO Cat. No (Metric) Cat. No (Inch)	Accuracy	Honing	Grade T3130	Applicable TAC mills
	**ANMT09T3PPPR-MJ** ANMT09T3PPPR-MJ	**M**	with	●	**EPN09**
	**ANMT1404PPPR-MJ** ANMT1404PPPR-MJ	**M**	with	●	**EPN14 TPN14**
	**ASMT11T304PDPR-MJ** ASMT11T304PDPR-MJ	**M**	with	●	**EPS11 TPS11**
	**ASMT11T308PDPR-MJ** ASMT11T308PDPR-MJ	**M**	with	●	
	**ASMT11T312PDPR-MJ** ASMT11T312PDPR-MJ	**M**	with	●	
	**ASMT11T316PDPR-MJ** ASMT11T316PDPR-MJ	**M**	with	●	
	**ASMT170504PDPR-MJ** ASMT170504PDPR-MJ	**M**	with	●	**EPS17 TPS17**
	**ASMT170508PDPR-MJ** ASMT170508PDPR-MJ	**M**	with	●	
	**ASMT170512PDPR-MJ** ASMT170512PDPR-MJ	**M**	with	●	
	**ASMT170516PDPR-MJ** ASMT170516PDPR-MJ	**M**	with	●	
	**ASMT170532PDPR-MJ** ASMT170532PDPR-MJ	**M**	with	●	

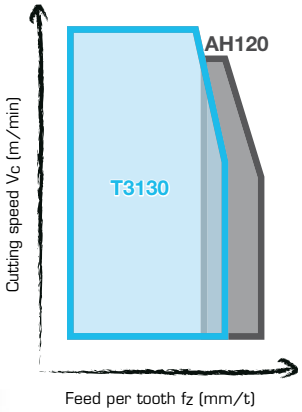
Insert Shape and dimension	ISO Cat. No (Metric) Cat. No (Inch)	Accuracy	Honing	Grade T3130	Applicable TAC mills
	**RDMT1204ZDPN-MJ** RDMT1204ZDPN-MJ	**M**	with	●	**ERD12 TRD12**
	**RDMW1204ZDSN** RDMW1204ZDSN	**M**	with	●	**ERD12 TRD12**
	**RDMT1606ZDPN-MJ** RDMT1606ZDPN-MJ	**M**	with	●	**ERD16 TRD16**
	**RDMW1606ZDSN** RDMW1606ZDSN	**M**	with	●	**ERD16 TRD16**
	**SDMT1204AFPN-MJ** SDMT1204AFPN-MJ	**M**	with	●	**EAD12 TAD12**
	**SDMT1204PDSR-MJ** SDMT1204PDSR-MJ	**M**	with	●	**EPD12 TPD12**
	**SEKN1203AGTN** SEKN1203AGTN	**K**	with	●	**EME4400 TME4400**
	**SEKR1203AGSR-MJ** SEKR1203AGSR-MJ	**K**	with	●	**EME4400 TME4400**
	**SEKR1203AFSR-MJ** SEKR42AFSR-MJ	**K**	with	●	**TGE4400I** old product **EGE4400** old product
	**SEKN1203AFTN-16** SEKN42AFTN16	**K**	with	●	
	**SEKR1504AFSR-MJ** SEKR1504AFSR-MJ	**K**	with	●	

Insert Shape and dimension	ISO Cat. No (Metric) Cat. No (Inch)	Accuracy	Honing	Grade T3130	Applicable TAC mills
	**SPKN1203EDTR** SPKN42STR	K	with	●	**TGP4100**
	**SPKR1203EDSR-MJ** SPKR42SSR-MJ	K	with	●	
	**SWMT1304PDPR-MJ** SWMT1304PDPR-MJ	M	with	●	**EPW13 TPW13**
	**SWMT13T3AFPR-HJ** SWMT13T3AFPR-HJ	M	with	●	**EAW13 TAW13**
	**SWMT13T3AFPR-MJ** SWMT13T3AFPR-MJ	M	with	●	
	**SWMW13T3AFTR** SWMW13T3AFTR	M	with	●	
	**TPKN2204PPTR** TPKN43ZTR	K	with	●	**TSP4000IA TFP4000IA**
	**TPKR2204PDSR-MJ** TPKR43ZSR-MJ	K	with	●	

Insert Shape and dimension	ISO Cat. No (Metric) Cat. No (Inch)	Accuracy	Honing	Grade T3130	Applicable TAC mills
	**WPMT05H315ZPR-ML** WPMT05H315ZPR-ML	M	with	●	**EXP05**
	**WPMW05H315ZPR** WPMW05H315ZPR	M	with	●	
	**WPMT06X415ZPR-ML** WPMT06X415ZPR-ML	M	with	●	**EXP06 TXP06**
	**WPMW06X415ZPR** WPMW06X415ZPR	M	with	●	
	**WPMT080615ZPR-ML** WPMT080615ZPR-ML	M	with	●	**EXP08 TXP08**
	**WPMT080615ZSR** WPMT080615ZSR	M	with	●	
	**WPMT090725ZPR-ML** WPMT090725ZPR-ML	M	with	●	**EXP09 TXP09**
	**WPMT090725ZSR** WPMT090725ZSR	M	with	●	

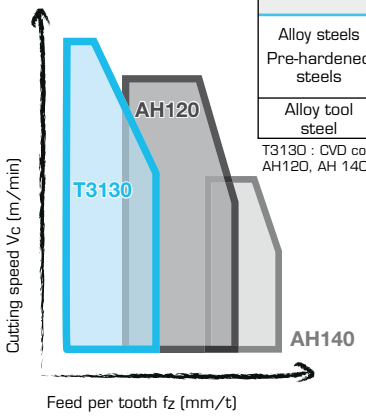
Technical information

Application areas



Work material	DIN	Hardness
Mild steels Low-carbon steels	C10E	110 ~ 180HB
	C15E	
	C25C	
	ST42.3	
Medium-carbon steels (≤ 0.5%C)	C35E	150 ~ 280HB
	C45E	
	C50E	
High-carbon steels (> 0.5%C) Alloy steels	C55E	180 ~ 350HB
	C60E	
	42CrMo4	
	41CrS4	

T3130 : CVD coated grade
AH120 : PVD coated grade

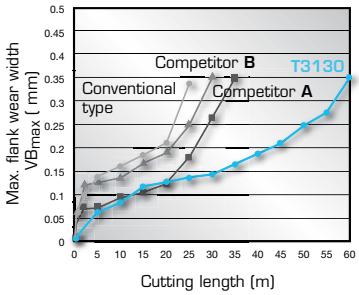


Work material	DIN	Hardness
Alloy steels Pre-hardened steels	36CrNiMo4	~ 40HRC
	NAK80 (JIS)	
	SKD11 (JIS)	
	X40CrMoV5-1	
Alloy tool steel	SKT (JIS)	~ 280HB
	SKS (JIS)	

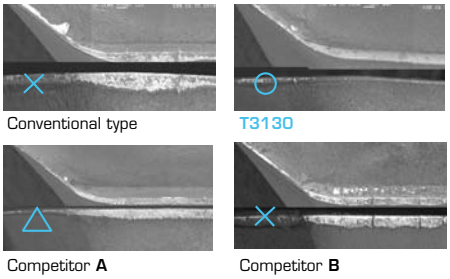
T3130 : CVD coated grade
AH120, AH 140 : PVD coated grade

Comparison of wear resistance

Very slight damage compared to conventional type and competitor's products



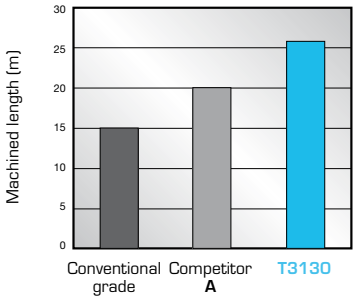
Tool : 45° screw on type cutters ø 100 (5 teeth)
Inserts : Applicable inserts for above cutter
Machine : Vertical M/C (BT50/22kw)
Work material : 42CrMo4 (167HB ~ 172HB)
Cutting speed : V_C = 150 m/min
Depth of cut : a_p = 2.0 mm
Feed per tooth : f_z = 0.25 mm/t
Coolant : without



Both conventional and competitor's grades reached the end of tool life due to heavy wear and chipping. T3130 grade showed less wear and could continue further machining.

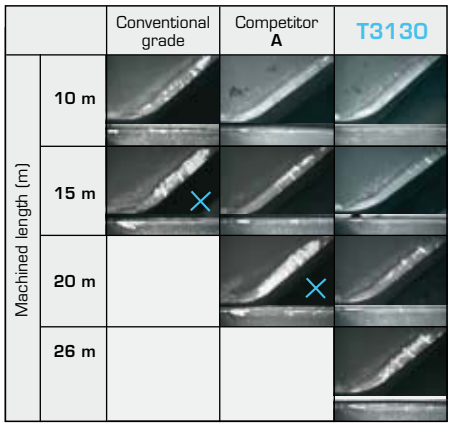
Comparison of tool life

Compared to conventional and competitor's grades, T3130 showed no chipping after 10 m of machined length, proving longer tool life.



Tool : TME4406RI (8 teeth)
Insert type : Equivalent to SEEN type
Machine : Vertical M/C (BT50/15kw)
Work material : C50
Cutting speed : V_C = 250 m/min
Depth of cut : a_p = 1.5 mm
Feed per tooth : f_z = 0.15 mm/t
Coolant : without

Tool life was increased by 70%.



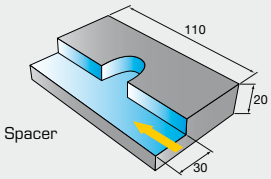
T3130

Standard cutting conditions

Work material	DIN	Hardness	Cutting speed V_c (m/min)
Mild steels Low-carbon steels	C10E	110 ~ 180HB	150 - 300
	C15E		
	C25E		
	ST42.3		
Medium carbon steels (≤ 0.5% C)	C35E	150 ~ 280HB	150 ~ 280
	C45E		
	C50E		
High carbon carbon steels (> 0.5% C) Alloy steels	C55E	180 ~ 350HB	150 ~ 250
	C60E		
	42CrMo4		
	41CrS4		
Alloy steels Pre-hardened steels	36CrNiMo4	~ 40HRC	100 - 200
	NAK80 (JIS)		
Alloy tool steels	SKD11 (JIS)	~ 280HB	100 - 180
	X40CrMoV5-1		
	SKT (JIS)		
	SKS (JIS)		

Practical examples

Work material : C50E
Toolholder : **EPS17032RSB (3 teeth)**
Insert : **ASMT170508PDPR-MJ**
Grade : **T3130**
Cutting speed : V_c = 160 m/min
Depth of cut : a_p = 5 mm x 3 passes
Feed per tooth : f_z = 0.1 mm/t
Coolant : without

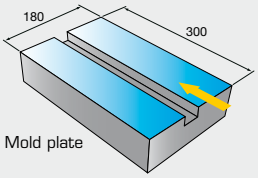


Current tool
Work material : Medium carbon steel (JIS S50C)
Cutter body : **Competitor's square shoulder cutter (3 teeth)**
Insert : **PVD coated**
Cutting speed : V_c = 120 m/min
Depth of cut : a_p = 4 mm x 4 passes
Feed per tooth : f_z = 0.08 mm/t

Result

The previously used tool machined 5 pcs. at most and machining was instable due to insert breakage. T3130 consistently machined 7 pcs., 1.4 times that of previously used tool. Productivity was also drastically increased by 70%.

Work material : ST42.3
Toolholder : **TMD4408RI (10 teeth)**
Insert : **SDEN42ZTN20**
Grade : **T3130**
Cutting speed : V_c = 179 m/min
Depth of cut : a_p = 1 mm
Feed per tooth : f_z = 0.14 mm/t
Coolant : without

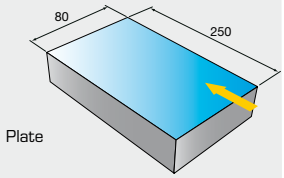


Current tool
Work material : ST42.3
Cutter body : **TMD4408RI (10 teeth)**
Insert : **Conventional types (CVD coated)**
Cutting speed : V_c = 179 m/min
Depth of cut : a_p = 1 mm
Feed per tooth : f_z = 0.14 mm/t

Result

Due to interrupted cutting, conventional type showed unexpected breakage and therefore varied in tool life. T3130 grade stabilized machining and thus minimized insert failure. The machinable number of workpieces was extremely increased.

Work material : 42CrMo4
Toolholder : **TXP08050R (3 teeth)**
Insert : **WPMT080615ZPR-ML**
Grade : **T3130**
Cutting speed : V_c = 260 m/min
Depth of cut : a_p = 1 mm x 2 passes
Feed per tooth : f_z = 1.42 mm/t
Coolant : without



Current tool
Work material : 42CrMo4
Cutter body : **Competitor's cutter (3 teeth)**
Insert : **PVD coated**
Cutting speed : V_c = 260 m/min
Depth of cut : a_p = 1 mm x 2 passes
Feed per tooth : f_z = 1.42 mm/t

Result

With competitor's cutter, only 20 pcs. per cutting edge were machined. T3130 was able to machine 35 pcs. per cutting edge, which is 1.7 times that of competitor's tool.

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