

Tungaloy

Member IMC Group

Keeping the Customer First

Tungaloy Report No. 400-E

ISO TOOL™

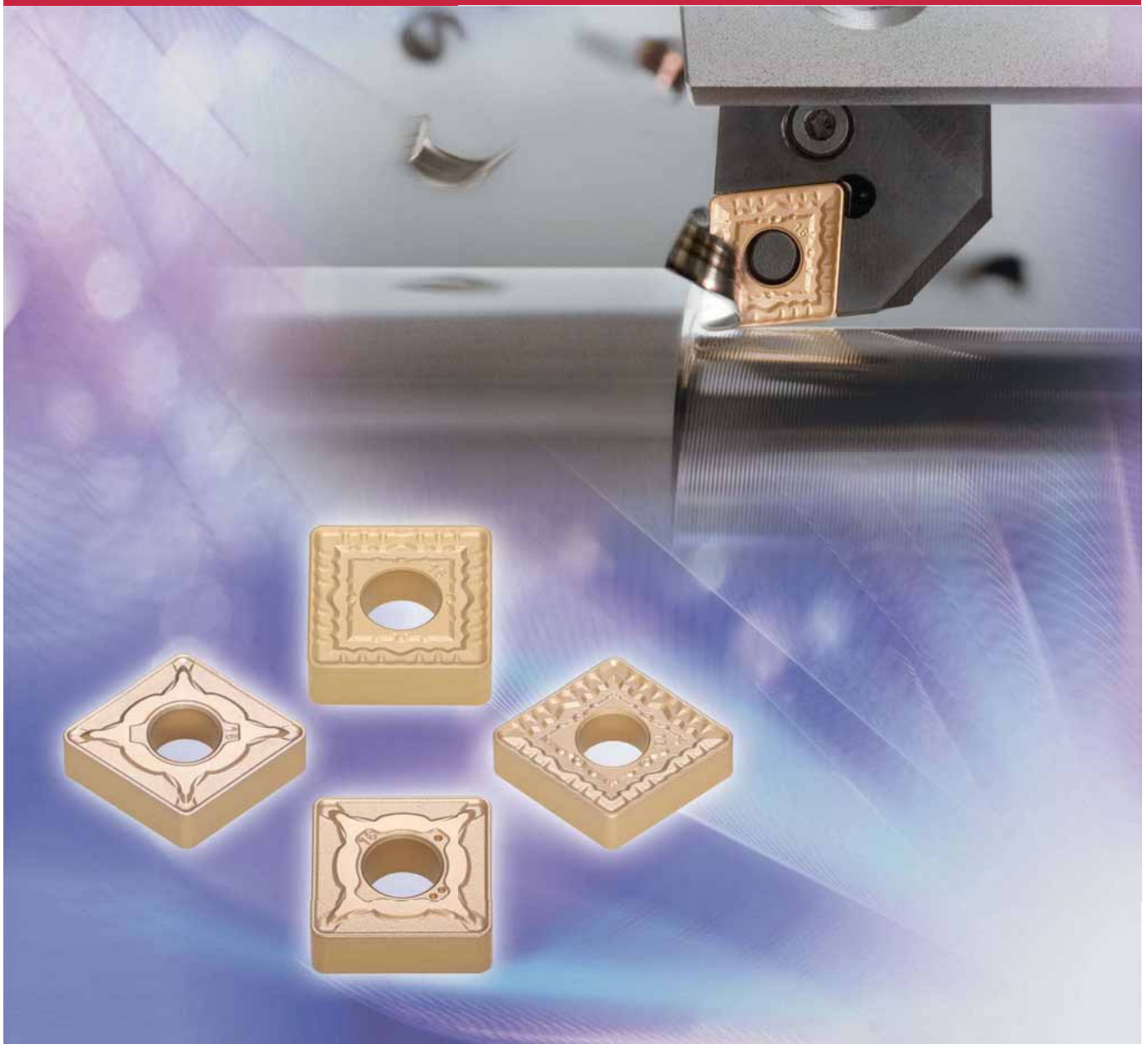
TURNLINE Large inserts for medium to heavy turning

NEW

THS & TUS Chipbreaker

PREMIUMTEC
TUNGALOY

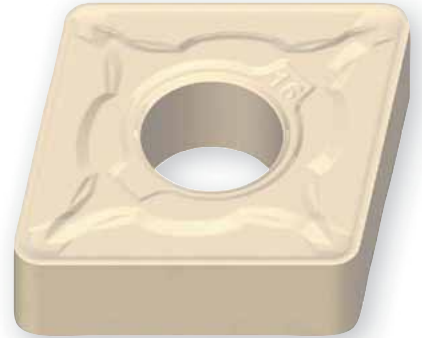
The ultimate chipbreakers for medium to heavy steel turning!



Remarkable reliability in medium to heavy turning of steels!

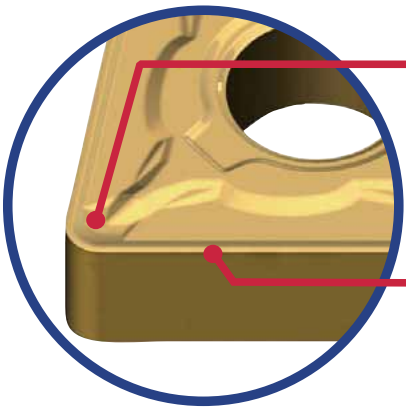
For medium to heavy turning

THS chipbreaker
(Double sided)



Features

Exceptional chip control under a wide range of cutting conditions!!



Newly designed dimples on the insert corner

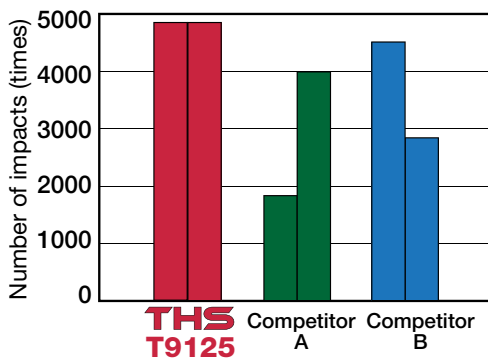
- Excellent chip control even when machining with a small depth of cut
- Suitable for machining with a fluctuating depth of cut

Optimum and tough cutting edge

- Improved fracture resistance
- Provides high strength and low cutting forces

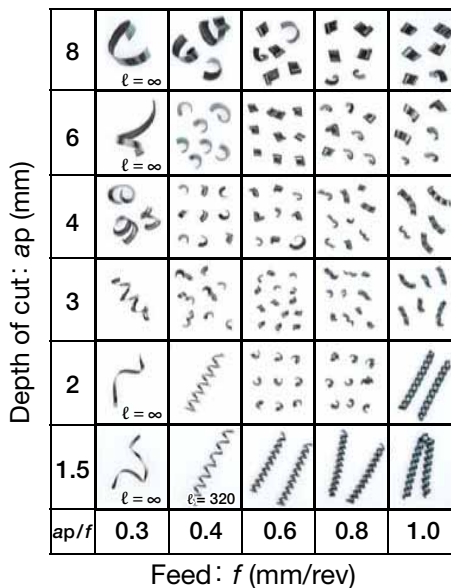
Cutting performance

● Heavy interrupted machining test



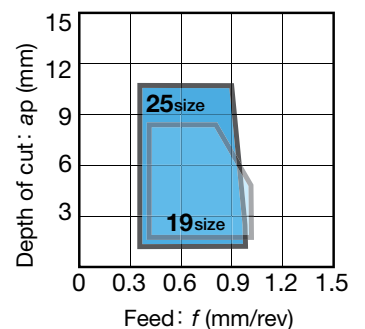
Insert : CNMG190616-THS
 Work material : SCM440 / 42CrMo4 (250HB)
 ø250 mm x L480 mm with 4 slots
 Cutting speed : $V_c = 100$ m/min
 Depth of cut : $a_p = 4$ mm
 Feed : $f = 0.5$ mm/rev
 Machining : Facing, heavy interrupted
 Coolant : Dry
 Machine : NC lathe

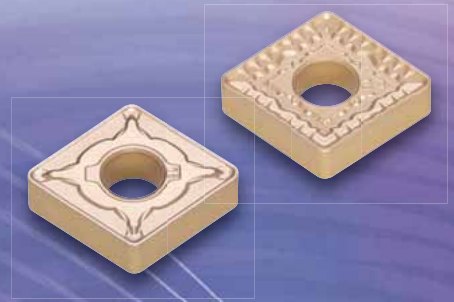
● Chip control



Insert : CNMG190616-THS
 Work material : SCM440 / 42CrMo4
 Cutting speed: $V_c = 100$ m/min
 Coolant : Dry

● Application range





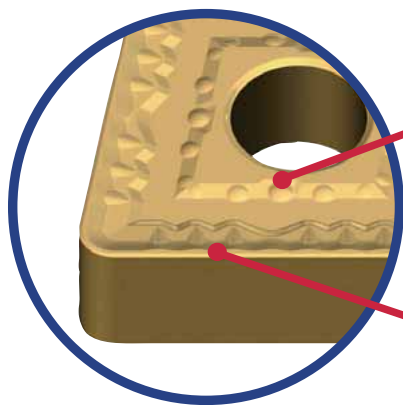
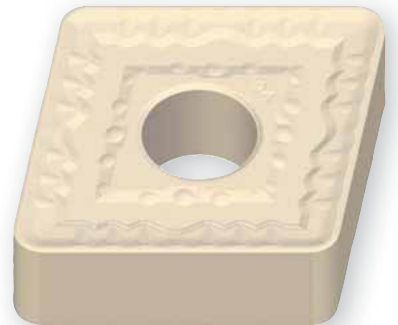
For heavy turning of steels

TUS chipbreaker

(Single sided)

Features

Extremely strong cutting edges prevent fractures!



Newly developed chipbreaker for heavy turning

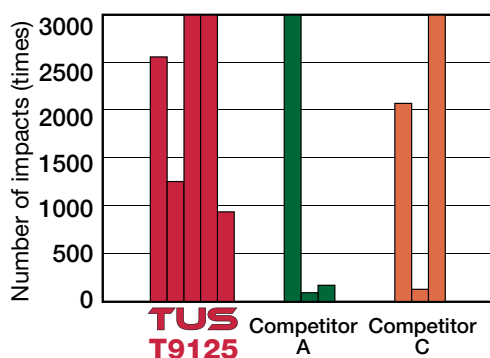
- Uniquely designed protrusions
- Reduction of contact area with chips when machining large depths of cut

Optimum cutting edge design with incredible toughness

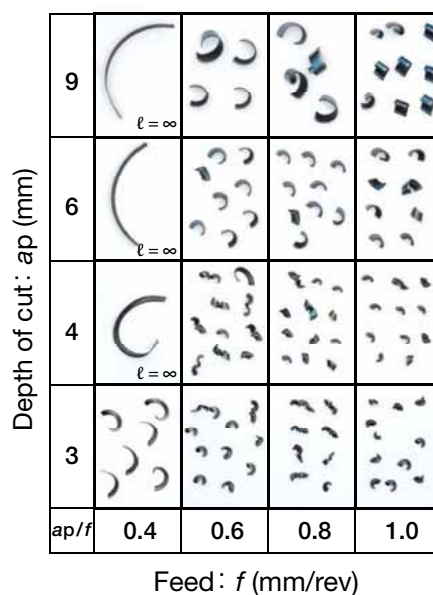
- Improved fracture resistance and reduced notch wear

Cutting performance

● Heavy interrupted machining test



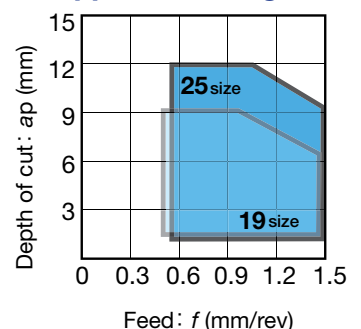
● Chip control



Insert : CNMM190616-TUS
 Work material : SCM440 / 42CrMo4
 Cutting speed: $V_c = 100$ m/min
 Coolant : Dry

Insert : CNMM190616-TUS
 Work material : SCM440 / 42CrMo4 (250HB)
 $\varnothing 250$ mm x L480 mm with 4 slots
 Cutting speed : $V_c = 100$ m/min
 Depth of cut : $a_p = 5$ mm
 Feed : $f = 0.8$ mm/rev
 Machining : Facing, heavy interrupted
 Coolant : Dry
 Machine : NC lathe

● Application range



Grade

T9100 SERIES T9115 and T9125

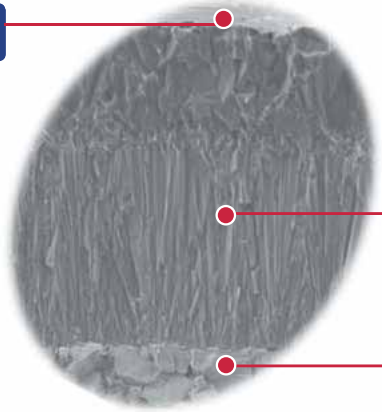
Extremely stable tool life!

Provides a high level of reliability with its excellent fracture resistance!

Special Surface Technology

PREMIUMTEC
TUNGALOY

Smooth insert surface prevents chip adhesion and improves chip flow.



Columnar Stabilization Technology

Prevents randomly developed cracks, providing exceptional fracture resistance.

Adhesion Reinforcement Technology

This specialized treatment enhances the bond between the coating and the substrate.

Applic- ation	Grade	Substrate			Coating layer		Features
	Application code	Specific gravity	Hardness (HRA)	Transverse rupture strength (GPa)	Main Composition	Thickness (μm)	
P Steel	PREMIUMTEC T9115	13.9	91.0	2.5	Continuously formed columnar crystal TiCN + Al ₂ O ₃	16	Highly stable grade for steel turning Special Surface Technology PremiumTec applied T9115 demonstrates a good balance of wear and impact resistance. Applicable for continuous to light interrupted cutting. T9125 demonstrates excellent chipping resistance. Applicable for medium to heavy cutting.
	P10 - P20						
	PREMIUMTEC T9125	13.7	90.0	2.6		16	
	P20 - P30						

Standard cutting conditions

19 size

Work materials	Chip-breaker	Grades	Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed: f (mm/rev)				
					r _ε = 0.8	r _ε = 1.2	r _ε = 1.6	r _ε = 2.4	r _ε = 3.2
Steels S45C, SCM415 / C45, 15CrMo5 etc	THS	T9115	220 (150 - 300)	5.0 (1.5 - 8.0)	0.35 (0.3 - 0.4)	0.5 (0.3 - 0.6)	0.6 (0.4 - 0.8)	0.7 (0.5 - 1.0)	–
		T9125	150 (80 - 200)		0.35 (0.3 - 0.4)	0.5 (0.3 - 0.6)	0.6 (0.4 - 0.8)	0.7 (0.5 - 1.0)	–
	TUS	T9115	220 (150 - 300)	6.0 (3.0 - 9.0)	0.5 (0.45 - 0.6)	0.6 (0.45 - 0.8)	0.8 (0.5 - 1.0)	1.0 (0.6 - 1.4)	1.1 (0.65 - 1.5)
		T9125	150 (80 - 200)		0.5 (0.45 - 0.6)	0.6 (0.45 - 0.8)	0.8 (0.5 - 1.0)	1.0 (0.6 - 1.4)	1.1 (0.65 - 1.5)

25 size

Work materials	Chip-breaker	Grades	Cutting speed Vc (m/min)	Depth of cut ap (mm)	Feed: f (mm/rev)		
					r _ε = 1.6	r _ε = 2.4	r _ε = 3.2
Steels S45C, SCM415 / C45, 15CrMo5 etc	THS	T9115	220 (150 - 300)	6.0 (1.5 - 11.0)	0.6 (0.4 - 0.8)	0.7 (0.5 - 1.0)	–
		T9125	150 (80 - 200)		0.6 (0.4 - 0.8)	0.7 (0.5 - 1.0)	–
	TUS	T9115	220 (150 - 300)	8.0 (3.0 - 12.0)	0.8 (0.55 - 1.1)	1.0 (0.6 - 1.4)	1.1 (0.65 - 1.5)
		T9125	150 (80 - 200)		0.8 (0.55 - 1.1)	1.0 (0.6 - 1.4)	1.1 (0.65 - 1.5)

Inserts Negative type

Rhombic, 80°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades		Dimensions (mm)			
	Appearance (Cross section)			Coated		I.C.dia $\varnothing d$	Thick- ness s	Hole dia $\varnothing d_1$	Corner radius r_E
				T9115	T9125				
Medium to heavy cutting	THS		CNMG190612-THS	●	●	19.05	6.35	7.93	1.2
	*CNMG190616-THS		●	●	1.6				
	CNMG190624-THS		●	●	2.4				
	CNMG250924-THS		●	●	25.4	9.52	9.12	2.4	
Heavy cutting (Single sided)	TUS		CNMM190608-TUS	●	●	19.05	6.35	7.93	0.8
	CNMM190612-TUS		●	●	1.2				
	*CNMM190616-TUS		●	●	1.6				
	CNMM190624-TUS		●	●	2.4				
	CNMM190632-TUS		●	●	3.2				
	CNMM250916-TUS		●	●	25.4	9.52	9.12	1.6	
	CNMM250924-TUS		●	●				2.4	
	CNMM250932-TUS		●	●				3.2	

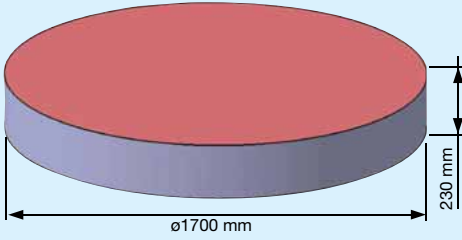
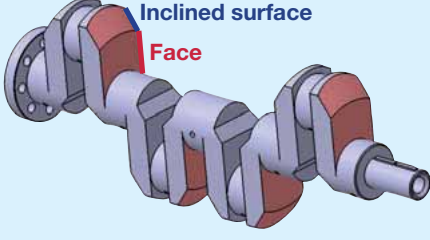
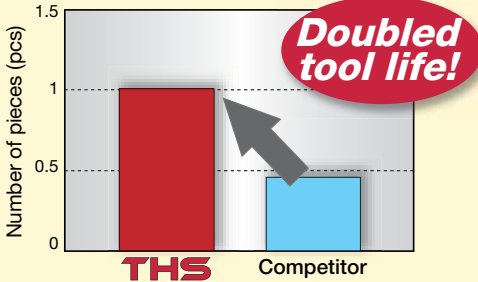
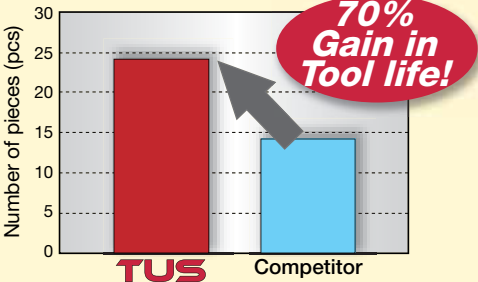
Square, 90°

Application	Chipbreaker	$f - ap$	Cat. No.	Stocked grades		Dimensions (mm)			
	Appearance (Cross section)			Coated		I.C.dia $\varnothing d$	Thick- ness s	Hole dia $\varnothing d_1$	Corner radius r_E
				T9115	T9125				
Medium to heavy cutting	THS		SNMG190608-THS	●	●	19.05	6.35	7.93	0.8
	SNMG190612-THS		●	●	1.2				
	*SNMG190616-THS		●	●	1.6				
	SNMG190624-THS		●	●	2.4				
	SNMG250716-THS		●	●	25.4	7.94	9.12	1.6	
	SNMG250724-THS		●	●				2.4	
Heavy cutting (Single sided)	TUS		SNMM190612-TUS	●	●	19.05	6.35	7.93	1.2
	*SNMM190616-TUS		●	●	1.6				
	SNMM190624-TUS		●	●	2.4				
	SNMM250724-TUS		●	●	25.4	7.94	9.12	2.4	
	SNMM250732-TUS		●	●				3.2	
	SNMM250924-TUS		●	●	25.4	9.52	9.12	2.4	
SNMM250932-TUS	●	●	3.2						

*Note: Chipbreaker cross sections are of the inserts marked *.

● : Stocked items

Practical examples

Work piece type		Turbine disk (raw material)	Crankshaft (for marine engine)
Toolholder		SNMG190616-THS	SNMM190616-TUS
Insert		T9125	T9125
Work material		SNM429 / 41CrNiMo4	SCM440 / 42CrMo4
Work material			
Cutting conditions	Cutting speed: V_c (m/min)	60	160
	Feed: f (mm/rev)	0.7	0.5
	Depth of cut: a_p (mm)	5	3
	Machining	External turning & facing (Continuous machining)	Total 8 places (heavy interrupted)
Coolant		Wet	Wet
Results		 <p>Excellent chip control and stable tool life without sudden fracture, even when cutting with a fluctuating depth of cut.</p>	 <p>No sudden fracture due to very strong cutting edge.</p>



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