

TZ120

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Tungaloy Report No. 532-G

Ceramic inserts for **high speed** turning of cast iron



INDUSTRY 4.0
FEED the SPEED!



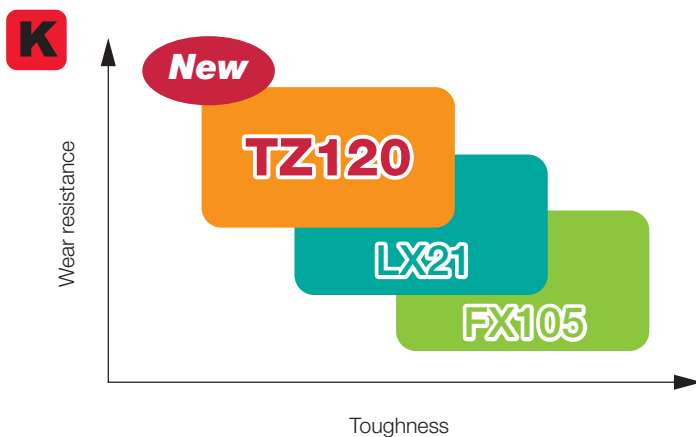
ACCELERATED MACHINING



Ceramic grades for **high speed turning** of cast iron

New ceramic inserts for cast iron high speed machining

APPLICATION RANGE



New

TZ120 ($\text{Al}_2\text{O}_3\text{-ZrO}_2$)

- Excellent wear resistance
- High speed continuous turning of cast iron without coolant

LX21 ($\text{Al}_2\text{O}_3\text{-TiC}$)

- High hardness and moderate fracture toughness
- General turning of cast iron

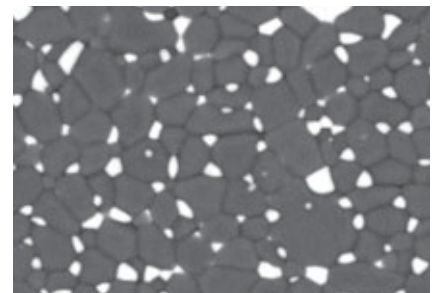
FX105 (Si_3N_4)

- Mechanical and thermal shock resistance
- Interrupted & rough machining

New

TZ120

- TZ120 ceramic grade with high strength and excellent wear resistance by adding ZrO_2 to Al_2O_3 with high oxidation resistance
- Each components are well dispersed to improve fracture resistance and boundary wear resistance
- Suitable for dry roughing and finishing of special cast iron (cylinder liner, etc.)

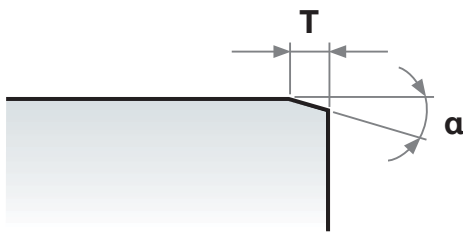


STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Cutting mode	Coolant	Grades	Cutting speed V_c (m/min)	Feed f (mm/rev)	Depth of cut a_p (mm)
K	Gray cast iron	Continuous	Dry	New TZ120	400 - 850	0.1 - 0.3	0.5 - 2
		Continuous, light interrupted	Dry	LX21	400 - 800	0.1 - 0.4	0.5 - 2
		Continuous, interrupted	Dry, Wet	FX105	300 - 600	0.2 - 0.6	0.5 - 4
	Centrifugal cast iron	Continuous	Dry	New TZ120	150 - 400	0.1 - 0.3	0.5 - 2

- TZ120 is suitable for dry continuous turning

STANDARD EDGE PREPARATION



K	Grades	New TZ120	LX21	FX105
	T (mm)	0.1	0.1	0.2
α	20°	30°	25°	

Insert NEGATIVE TYPE

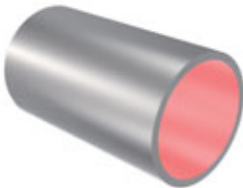

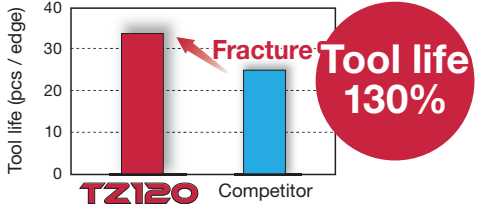
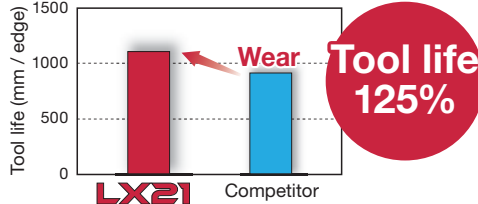

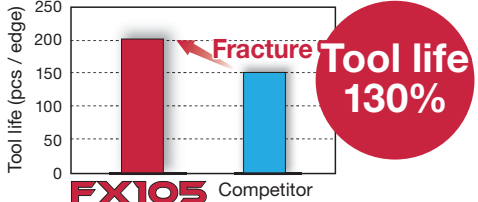
● : Continuous cutting
 ●● : Light interrupted cutting
 ●●● : Heavy interrupted cutting

Application		Chipbreaker	Designation	Ceramic			Dimension (mm)			
				TZ120	LX21	FX105	RE	IC	S	D1
Finishing to medium cutting	-	DNGA150404	●	●●●			0.4	12.7	4.76	5.16
		DNGA150408	●●	●●			0.8	12.7	4.76	5.16
		DNGA150412	●●	●●			1.2	12.7	4.76	5.16
		DNGA150416	●	●			1.6	12.7	4.76	5.16

Application		Chipbreaker	Designation	Ceramic			Dimension (mm)			
				TZ120	LX21	FX105	RE	IC	S	D1
Finishing to medium cutting	-	DNGD150708	●		●		0.8	12.7	7.94	-
		DNGD150712	●		●		1.2	12.7	7.94	-
		DNGD150716	●		●		1.6	12.7	7.94	-
Finishing to medium cutting	-	DNGN150412	●		●		1.2	12.7	4.76	-
		DNGN150416	●		●		1.6	12.7	4.76	-

● : Line up

PRACTICAL EXAMPLES

Workpiece type		Cylinder liner	Roll
Toolholder		Special boring tool	ACLNL2525M12-A
Insert		SNGN120716	CNGA120408
Grade		TZ120	LX21
Workpiece material		Centrifugal cast iron 	Chilled cast iron (40HRC) 
Cutting conditions	Cutting speed : V_c (m/min)	200	80
	Feed : f (mm/rev)	0.2	0.2
	Depth of cut : a_p (mm)	2.0	1
	Machining	Boring	External
	Coolant	No	No
Results		 <p>Fracture Tool life 130%</p> <p>TZ120 is superior in wear resistance for centrifugal cast iron (such as cylinder liner) and extended tool life by 1.3x.</p>	 <p>Wear Tool life 125%</p> <p>LX21 is superior in wear resistance for hardened cast iron rolls turning providing improved tool life by 1.25x over conventional ceramic grade.</p>
Workpiece type		Disc brake rotor	
Toolholder		Special toolholder	
Insert		SNMX120716	
Grade		FX105	
Workpiece material		Gray cast iron 	
Cutting conditions	Cutting speed : V_c (m/min)	450	
	Feed : f (mm/rev)	0.5	
	Depth of cut : a_p (mm)	1.5	
	Machining	Face turning	
	Coolant	Wet	
Results		 <p>Fracture Tool life 130%</p> <p>FX105 decreases the occurrence of sudden breakage providing stable machining.</p>	

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