T-TURN™

Insert Shapes
- 80° (CNG)
- Round (RNG, RCGX, RPGX)
- Square (SNG)

Insert Styles
- Negative
- V-Bottom
  - RCGX (7° side clearance)
  - RPGX (11° side clearance)

Insert Sizes
- .375" IC
- .500" IC

TC3020 & TC3030: New Ceramic Grades for High Temperature Alloy Machining

Ingersoll has launched two new SiAlON ceramic grades, TC3020 and TC3030, that offer superior performance in high temperature alloy machining.

These ceramic grades are characterized by their excellent toughness and anti-chipping capabilities making them the best choice for both interrupted and continuous machining of difficult-to-cut materials such as Inconel and Rene.

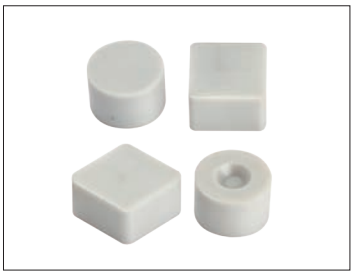
These grades extend the range of Ingersoll's solutions for high temperature alloys beyond the existing whisker reinforced grade TC430 and SiN-based grade AS20. They provide additional toughness that allows heavier feed rates to be applied while providing more stable tool life.

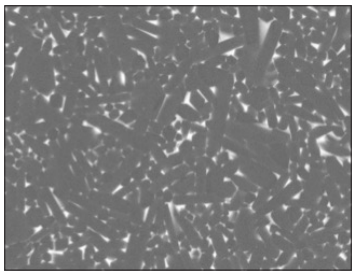
NEW PRODUCT ANNOUNCEMENT ·2016·

Member IMC Group
Ingersoll Cutting Tools

Features - TC3020

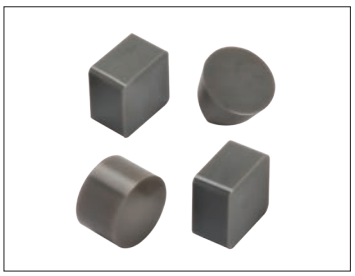
- Ideal for high temperature alloy machining. Runs at parameters similar to whisker reinforced ceramic grades.
- Superior wear resistance due to high chemical stability
- Better flank and notch wear resistance compared to the competition
- Excellent high temperature strength and fracture toughness
- Can be applied in turning, profiling and grooving applications

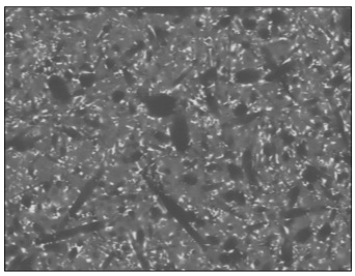




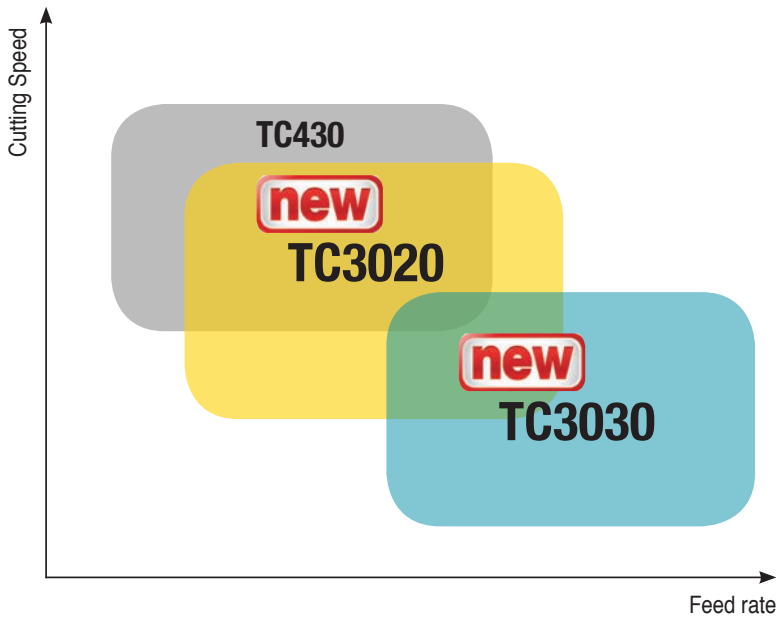
Features - TC3030

- Ideal for high temperature alloy machining. Tougher substrate compared to whisker reinforced ceramic grades
- The grade's extreme toughness enables higher feed and heavier depth of cut machining
- Suitable for scaling and roughing applications
- Excellent thermal shock resistance and thermal conductivity
- Can be applied in turning, profiling, grooving and milling applications.





Application range for high temperature alloy machining



Cutting Conditions

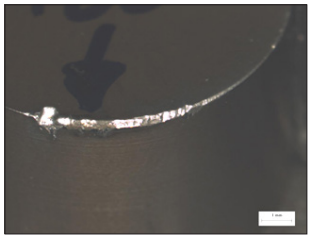
Turning

Workpiece material	TC3020		TC3030	
	Vc (sfm)	f (ipr)	Vc (sfm)	f (ipr)
Super alloys	650-1150	.004-.016	500-820	.008-.020

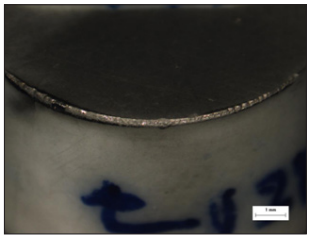
Case study 1

		Competitor	Ingersoll
Component		Engine casing	
Workpiece material		Inconel 718	
Operation		Continuous grooving	
Insert		RNG45 (RNGN 120700) ceramic grade	RNG45 (RNGN 120700) TC3020
Cutting speed	V (sfm)	650	920
Feed rate	f (ipr)	.008	.008
Depth of cut	ap (inch)	.060	.060
Coolant		dry	dry
Tool life (min/corner)		9	9

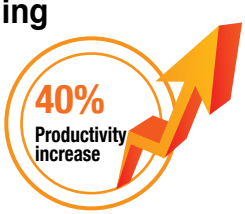
Wear condition after nine minutes of machining



Competitor

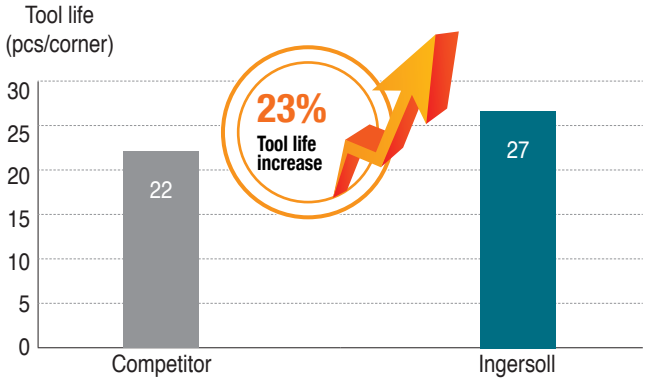


Ingersoll TC3020



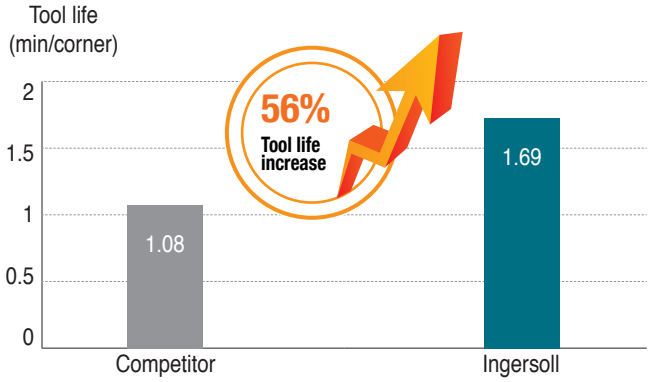
Case study 2

		Competitor	Ingersoll
Component		Engine casing	
Workpiece material		Inconel 718	
Operation		External interrupted turning	
Insert		CNG454 (CNGN 120716) whisker ceramic grade	CNG454 (CNGN 120716) TC3030
Cutting speed	V (sfm)	215-460	215-460
Feed rate	f (ipr)	.004	.004
Depth of cut	ap (inch)	.040	.040
Coolant		dry	dry
Tool life (pcs/corner)		22	27



Case study 3

		Competitor	Ingersoll
Component		Engine casing	
Workpiece material		Inconel 718	
Operation		Interrupted grooving	
Insert		RPGX35 (RPGX 090700) whisker ceramic grade	RPGX35T6 (RPGX 090700 T6) TC3030
Cutting speed	V (sfm)	2400	2400
Feed rate	f (ipr)	.002	.002
Depth of cut	ap (inch)	.050	.050
Coolant		dry	dry
Tool life (min/corner)		1.08	1.69



Grade TC3020, TC3030 Item List

ANSI Description	ISO Description	TC3020	TC3030
CNG432E	CNGN120408E		•
CNG433E	CNGN120412E		•
CNG452T6	CNGN120708T6	•	•
CNG453T6	CNGN120712T6	•	•
CNG454T6	CNGN120716T6	•	
RCGX35E	RCGX090700E	•	•
RCGX35T6	RCGX090700T6	•	•
RCGX45E	RCGX120700E	•	•
RCGX45T6	RCGX120700T6	•	•
RNG45E	RNGN120700E	•	•
RNG45E04	RNGN120700E04	•	•
RNG45T6	RNGN120700T6	•	•
RPGX35E	RPGX090700E	•	•
RPGX35E04	RPGX090700E04	•	•
RPGX35T6	RPGX090700T6	•	•
RPGX45E	RPGX120700E	•	•
RPGX45E04	RPGX120700E04	•	•
RPGX45T6	RPGX120700T6	•	•
SNG453T6	SNGN120712T6	•	•

Edge Prep Designations:
- E: .001" hone
- T6: .004" @ 20 degree T-land
- E04: .0016" hone