TOTURN™

Insert Shapes
- CNGM
- DNGM
- TNGM
- VNGM

Chipbreakers
- CM – For medium applications
- CF – For finishing applications

Grade
- TB2030 – PVD Coated
  Ideal for high hardness or carburized steel

NEW PRODUCT ANNOUNCEMENT •2015•

COATED CBN GRADE WITH CHIP BREAKER For Turning Carburized and Hardened Steel

Ingersoll is pleased to announce the addition of a new series of coated, CBN-tipped inserts for turning carburized and hardened steel in continuous to lightly interrupted cuts.

These negative style CBN inserts contain multiple CBN tips and are offered in several different shapes. Each CBN tip features a chip breaker on the cutting edge which provides excellent chip control in medium to finishing applications, particularly in applications where it's necessary to remove a carburized layer from the work piece. In these cases the hardness can be inconsistent resulting in poor chip control, rapid tip failure and poor surface finish. The chip breaker eliminates these problems while still providing the tool life one would expect from a CBN insert in higher hardness material.

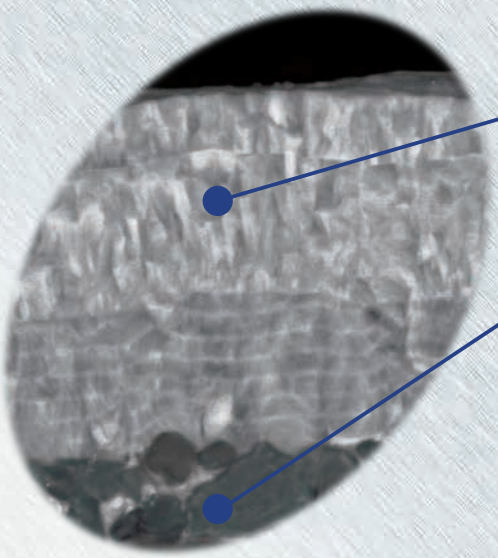
Grade TB2030 contains a tough CBN content substrate which can withstand mild interruptions, plus a PVD-TiN coating that features excellent adhesion strength. This coating provides additional wear resistance, easier wear detection and longer tool life.

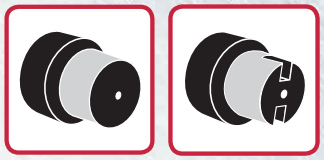
- All inserts are provided with multiple tips to maximize economy.
- All inserts are 100% compatible with ISO turning holders.

Member IMC Group Ingersoll Cutting Tools

NEW CBN GRADE TB2030 FOR STEEL APPLICATIONS

TB2030



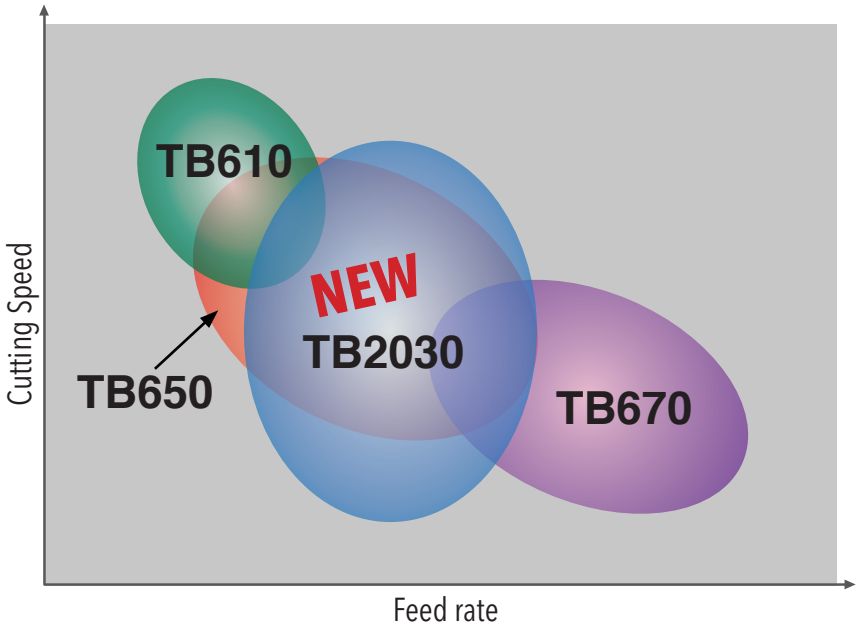


New coating layer
Remarkable adhesion strength

Unique CBN substrate
High chipping resistance!

Tough substrate for continuous to light interruptions!

CBN GRADES & APPLICATION AREA



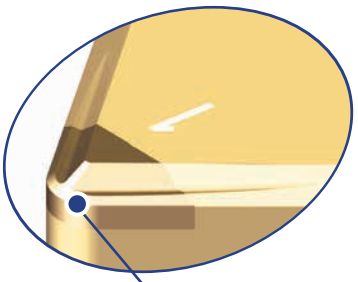
845 South Lyford Road, Rockford, IL 61108
Tel: 815.387.6600, Fax: 815.387.6968

HARD CHIPBREAKERS (for removing the carburized layer)

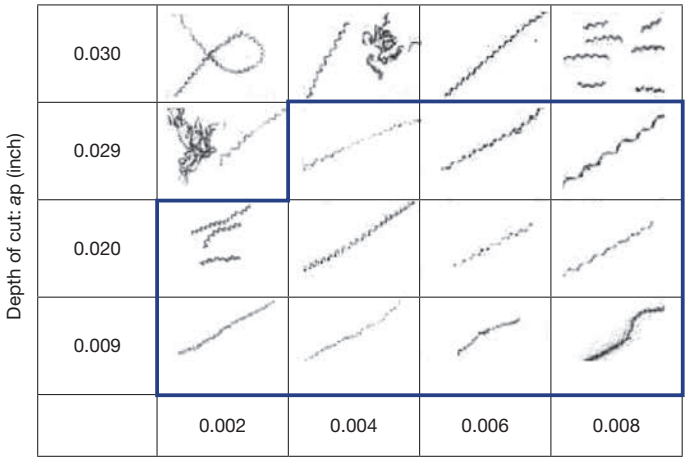
Two types of chipbreaker provide excellent chip control in a wide application range!

CF type

For finishing

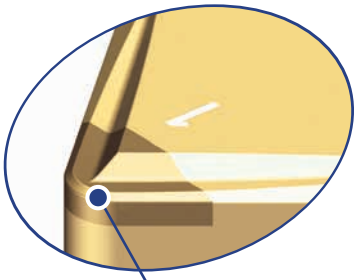


Excellent chip control and surface finish in lighter depth of cut applications

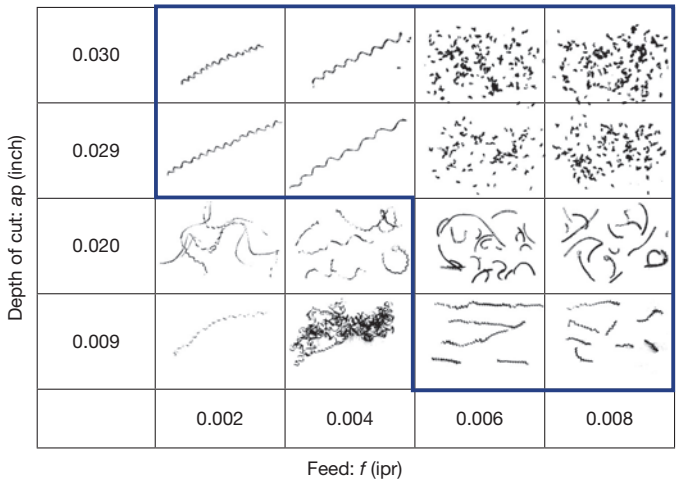


CM type

For medium cutting



For medium to larger depth-of-cut applications at higher feed rates



STANDARD CUTTING CONDITIONS

High hardness steel

Application	Grades	Machining Mode	Cutting speed Vc (sfm)	Depth of cut ap (in)	Feed f (ipr)
H Hard Materials	TB2030	Continuous	490 (230 - 700)	.008 (.002 - .012)	.004 (.002 - .010)
		Interrupted	490 (230 - 700)	.004 (.002 - .012)	.004 (.002 - .006)

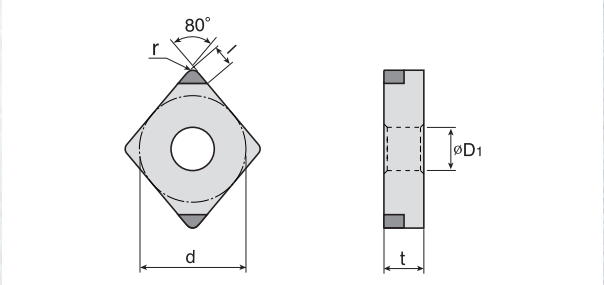
For removing carburized layer

Application	Grades	Chipbreaker	Cutting speed Vc (sfm)	Depth of cut ap (in)	Feed f (ipr)
H Hard Materials	TB2030	CF	490 (230 - 700)	.015 (.008 - .030)	.004 (.002 - .008)
		CM	490 (230 - 650)	.025 (.020 - .040)	.004 (.002 - .008)

CUTTING EXAMPLE (in carburized steel)

HRc 55 → 38, 650 SFM, .020" DOC, .005" ipr

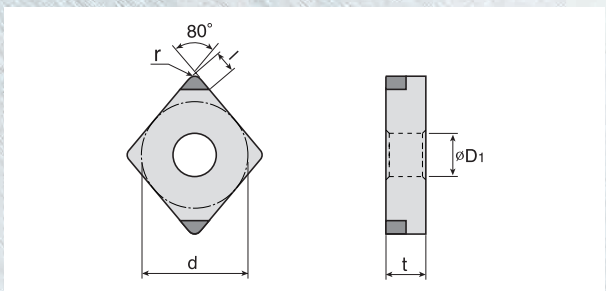
CNGM-CF CBN with Chipbreaker for Finishing Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
CNGM432CF-LS2	CNGM120408CF-LS2	.086	.500	.187	.031	.203	◯
CNGM433CF-LS2	CNGM120412CF-LS2	.094	.500	.187	.047	.203	◯

LS2 - Insert with 2 tips

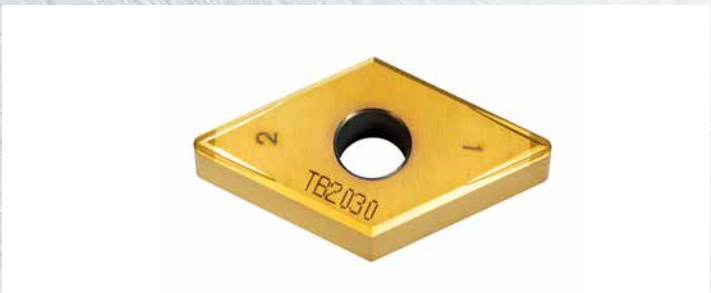
CNGM-CM CBN with Chipbreaker for Medium Applications

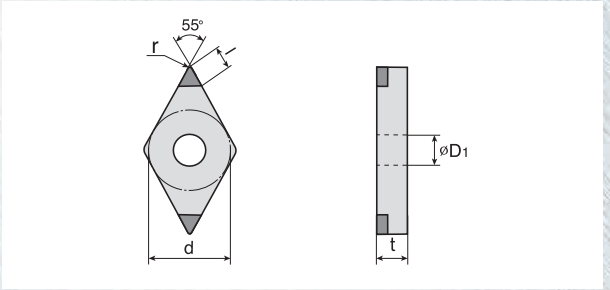


ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
CNGM432CM-LS2	CNGM120408CM-LS2	.086	.500	.187	.031	.203	◯
CNGM433CM-LS2	CNGM120412CM-LS2	.094	.500	.187	.047	.203	◯

LS2 - Insert with 2 tips

DNGM-CF CBN with Chipbreaker for Finishing Applications

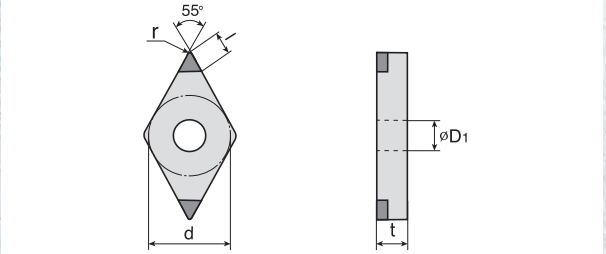




ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
DNGM432CF-LS2	DNGM150408CF-LS2	.082	.500	.187	.031	.203	◯
DNGM433CF-LS2	DNGM150412CF-LS2	.078	.500	.187	.047	.203	◯

LS2 - Insert with 2 tips

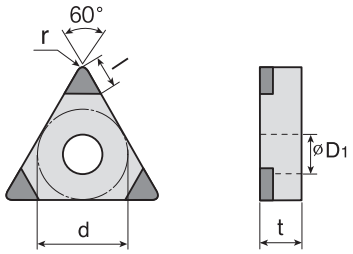
DNGM-CM CBN with Chipbreaker for Medium Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
DNGM432CM-LS2	DNGM150408CM-LS2	.082	.500	.187	.031	.203	◯
DNGM433CM-LS2	DNGM150412CM-LS2	.078	.500	.187	.047	.203	◯

LS2 - Insert with 2 tips

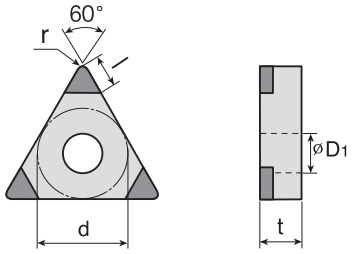
TNGM-CF CBN with Chipbreaker for Finishing Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
TNGM332CF-LS3	TNGM160408CF-LS3	.074	.375	.187	.031	.150	◯
TNGM333CF-LS3	TNGM160412CF-LS3	.094	.375	.187	.047	.150	◯

LS3 - Insert with 3 tips

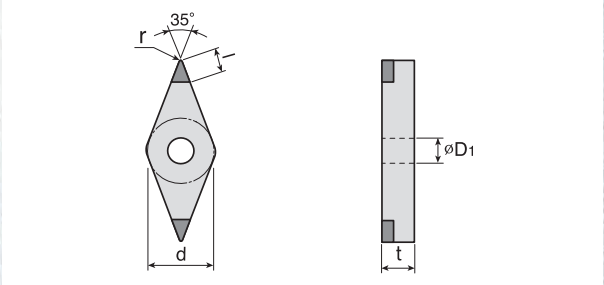
TNGM-CM CBN with Chipbreaker for Medium Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
TNGM332CM-LS3	TNGM160408CM-LS3	.074	.375	.187	.031	.150	◯
TNGM333CM-LS3	TNGM160412CM-LS3	.094	.375	.187	.047	.150	◯

LS3 - Insert with 3 tips

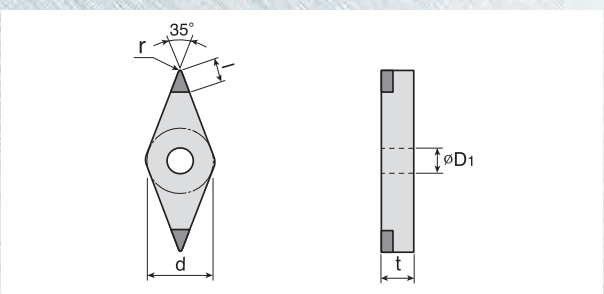
VNGM-CF CBN with Chipbreaker for Finishing Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
VNGM332CF-LS2	VNGM160408CF-LS2	.086	.375	.187	.031	.150	◯

LS2 - Insert with 2 tips

VNGM-CM CBN with Chipbreaker for Medium Applications



ANSI DESIGNATION	ISO DESIGNATION	Dimension (inches)					Grade TB2030
		l	d	t	r	D1	
VNGM332CM-LS2	VNGM160408CM-LS2	.086	.375	.187	.031	.150	◯

LS2 - Insert with 2 tips