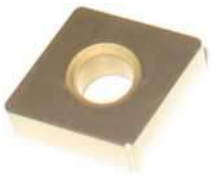
ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY



Where can you run Ceramic and Silicon Nitride?

Silicon Nitride (SiN) In almost all iron applications, such as cast, ductile, nodular, etc., you can do ROUGHING and FINISHING in turning, boring, facing and milling. The SiN will last longer, run faster, and give you a better finish than coated tungsten carbide. Our SiN generally out-performs any other competitor's SiN, especially our CC-516 and CC-514 grades.

Our CC-5477 SiN grade works well in ROUGHING and FINISHING of aerospace metals, such as Iconel, Waspaloy, Hastelloy, etc. We have other grades in this series also.

Our CC-516 and CC-515 SiN grades can also ROUGH in hardened steel above Rc58.

Black/White Ceramics (B/WC) In almost all iron and steel applications, you can use either ceramic to do FINISHING operations. The B/WC can be run at faster speeds, will last longer, and give a better surface finish than coated carbides.

Where B/WC can work for FINISHING in irons, they will, generally, work better than even the SiN and be less expensive.

In steels, most customers are **FINISHING** in coated carbides, but B/WC can be run faster, last longer, and give a much better surface finish than the coated carbides. In many applications, the B/WC have REPLACED GRINDING operations.

In steels above Rc58, you can ROUGH with SiN and FINISH with the black ceramic, or the gold-coated black ceramic. In many cases, you can REPLACE GRINDING operations.

In many powdered metal operations, you can use the B/WC for FINISHING.

For specific examples of our test reports, please visit our website…

www.romaycorp.com

A.N.S.I. Insert Identification System

Shape

A – Parallelogram 85 degrees
B – Parallelogram 82 degrees
C – Diamond 80 degrees
D – Diamond 55 degrees
E – Diamond 75 degrees
H – Hexagon
K – Parallelogram 55 degrees
L – Rectangle
M – Diamond 86 degrees
O – Octagon
P – Pentagon
R – Round
S – Square
T – Triangle
V – Diamond 35 degrees
W--Triangle 80 degrees

Tolerance

Cutting Point	Thickness
A +/ – .0002	+/ – .001
B +/ – .0002	+/ – .005
C +/ – .0005	+/ – .001
D +/ – .0005	+/ – .005
E +/ – .001	+/ – .001
G +/ – .001	+/ – .005
M +/ – .002 to +/ – .005	+/ – .005
U +/ – .005 to +/ – .012	+/ – .005

R = Blank with grind stock on all surfaces

S = Blank with grind stock on periphery, ground top and bottom only

* Exact tolerance determined by size of insert

Size

Regular Polygons and Diamonds

Number of 1/8ths of an inch in I.C. when I.C. is 1/4 inch and over

For I.C. of less than 1/4 inch, the number of 1/32nds inch in I.C.

Rectangles and Parallelograms use two digits to size:

1st Digit – Number of 1/8ths inch in width

2nd Digit – Number of 1/4 inch in length

Radius or Chamfer

0 – Sharp corner
1 – 1/64 Inch Radius
2 – 1/32 Inch Radius
3 – 3/64 Inch Radius
4 – 1/16 Inch Radius
6 – 3/32 Inch Radius
8 – 1/8 Inch Radius
A – Square insert 45 degrees

TNGA-432T

Clearance

N – 0 degrees
A – 3 degrees
B – 5 degrees
C – 7 degrees
P – 11 degrees
D – 15 degrees
E – 20 degrees
F – 25 degrees
G – 30 degrees

Type

A – With hole
B – With hole and countersink
C – With hole and countersinks
D – Smaller than 1/4inch I.C. with hole
E – Smaller than 1/4inch I.C.
F – Chip grooves on top rake surfaces, without hole
G – Chip groves on top rake surfaces, with hole
H – With hole, one countersink, and chip grooves on one top rake surface
J – With hole, two countersinks, and chip grooves on top rake surfaces
M – With hole and chip grooves on one top rake surface
P – With hole and 10 degrees positive chipbreaker on both sides
S – With hole and 20 degrees chipbreaker on one side
N – Without hole

Thickness

Regular Polygons and Diamonds

Number of 1/16ths of an inch in thickness for I.C. of 1/4 inch and over

For less than 1/4 inch I.C., the number of 1/32nds inch in I.C.

Rectangles and Parallelograms use with dimension in place of I.C.

Edge preparation or chipbreaker style

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

Ceramic Machining Recommendations

Turning and Boring:

Material	Operation	C	I	Recommended Grade	Speed (FSM)	Feed (IPR)	DOC (Max)
Low-carbon Steels <Rc56	R, SR	X		CC-10 CC-20	300 - 2,300	.006 - .015	.060
	F, SF	X		CC-33	600 - 4,000	.003 - .020	.020
Alloy Steels <Rc56	R, SR	X		CC-10 CC-20	200 - 2,000	.006 - .015	.060
	F, SF	X		CC-33	600 - 4,000	.003 - .020	.020
Hardened Steels, Chilled Cast Iron >Rc56	R, SR	X		CC-30, CC-33	200 - 700	.003 - .010	.020
	F, SF	X		CC-30-SC, CC-33-SC	200 - 700	.003 - .010	.040
Cast Iron	R, SR	X	X	CC-5XX	500 - 5,000	.010 - .025	.250
	F, SF	X	X	CC-20, CC-33, CC-5XX	800 - 5,000	.003 - .025	.050
Ductile & Nodular Iron	R, SR	X	X	CC-5XX	500 - 2,000+	.010 - .025	.150
	F, SF	X	X	CC-20, CC-33, CC-5XX	500 - 2,500	.003 - .025	.040
Ni-Based Alloys Non-Ferrous Metals	R, SR	X	X	CC-5477, CC-60	500 - 850	.008 - .016	.150
	F, SF	X	X	CC-5477, CC-60	500 - 1,500	.004 - .008	.040

Milling:

Material	Operation	Recommended Grade	Speed (FSM)	Feed (IPR)
Cast Iron	R, SR	CC-5XX	300 - 4,000	.004 - .008
	F, SF	CC-20, CC-33, CC-5XX	500 - 5, 000	.002 - .004
Ductile & Nodular Iron	R, SR	CC-5XX	300 - 2,500	.002 - .006
	F, SF	CC-5XX	650 - 5,000	.002 - .004

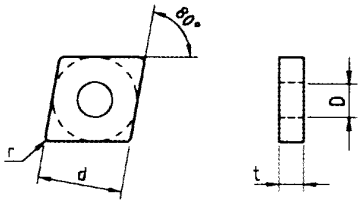
R = Roughing
F = Finishing
C = Continuous Cut
I = Interrupted Cut

SR = Semi-Roughing
SF = Semi-Finishing

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

CNGA Ceramic

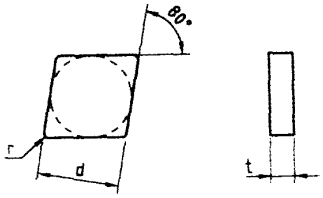
80 degree diamond negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNGA 120404	**CNGA 431**			1/64		+	+	+	+		+	+	+	+	
CNGA 120408	**CNGA 432**	1/2	3/16	1/32	.203	+	+	+	+	+	+	+	+	+	+
CNGA 120412	**CNGA 433**			3/64		+	+	+	+	+	+	+	+	+	+
CNGA 120416	**CNGA 434**			1/16		+	+	+	+	+	+	+	+	+	+
CNGA 160404	**CNGA 541**			1/64		+	+	+	+						
CNGA 160408	**CNGA 542**	5/8	1/4	1/32	.250	+	+	+	+	+	+	+	+	+	+
CNGA 160412	**CNGA 543**			3/64		+	+	+	+	+	+	+	+	+	+
CNGA 160416	**CNGA 544**			1/16		+	+	+	+	+	+	+	+	+	+
CNGA 190604	**CNGA 641**			1/64		+	+	+	+						
CNGA 190608	**CNGA 642**	3/4	1/4	1/32	.312	+	+	+	+		+	+	+	+	+
CNGA 190612	**CNGA 643**			3/64		+	+	+	+		+	+	+	+	+
CNGA 190616	**CNGA 644**			1/16		+	+	+	+						

CNGN Ceramic

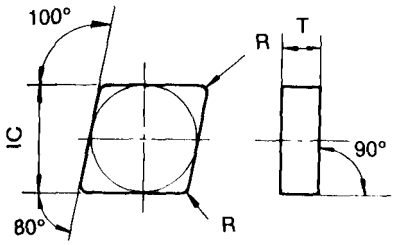
80 degree diamond negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNGN 120404	**CNGN 431**			1/64		+	+	+	+						
CNGN 120408	**CNGN 432**	1/2	3/16	1/32	—	+	+	+	+	+	+	+	+	+	+
CNGN 120412	**CNGN 433**			3/64		+	+	+	+	+	+	+	+	+	+
CNGN 120416	**CNGN 434**			1/16		+	+	+	+	+	+	+	+	+	+
CNGN 120704	**CNGN 451**			1/64		+	+	+	+						
CNGN 120708	**CNGN 452**	1/2	5/16	1/32	—	+	+	+	+	+	+	+	+	+	+
CNGN 120712	**CNGN 453**			3/64		+	+	+	+	+	+	+	+	+	+
CNGN 120716	**CNGN 454**			1/16		+	+	+	+	+	+	+	+	+	+
CNGN 160604	**CNGN 541**			1/64		+	+	+	+		+	+	+	+	+
CNGN 160608	**CNGN 542**	5/8	1/4	1/32	—	+	+	+	+		+	+	+	+	+
CNGN 160612	**CNGN 543**			3/64		+	+	+	+	+	+	+	+	+	+
CNGN 160616	**CNGN 544**			1/16		+	+	+	+	+	+	+	+	+	+

CNGN Ceramic

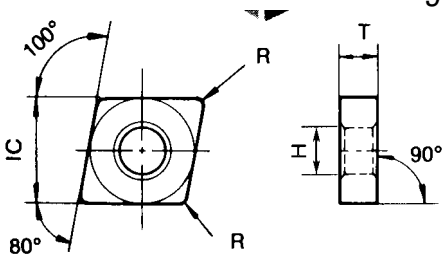
80 degree diamond negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNGN 190604	**CNGN 641**	3/4	1/4	1/64	—	+	+	+	+						
CNGN 190608	**CNGN 642**			1/32		+	+	+	+						
CNGN 190612	**CNGN 643**			3/64		+	+	+	+	+	+	+	+	+	
CNGN 190616	**CNGN 644**			1/16		+	+	+	+	+	+	+	+	+	
CNGN 190704	**CNGN 651**	3/4	5/16	1/64	—	+	+	+	+						
CNGN 190708	**CNGN 652**			1/32		+	+	+	+						
CNGN 190712	**CNGN 653**			3/64		+	+	+	+						
CNGN 190716	**CNGN 654**			1/16		+	+	+	+						

CNMA Ceramic

80 degree diamond negative rake inserts

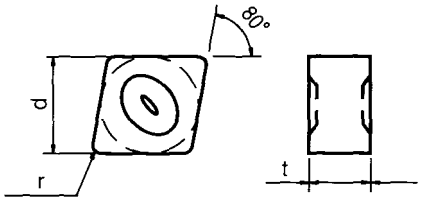


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNMA 120408	**CNMA 432**	1/2	3/16	1/32	.203					+	+		+		
CNMA 120412	**CNMA 433**			3/64						+	+	+	+		
CNMA 120416	**CNMA 434**			1/16						+	+	+	+		
CNMA 160616	**CNMA 544**	5/8	1/4	1/16	.250					+	+	+	+		

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

CNGX Ceramic

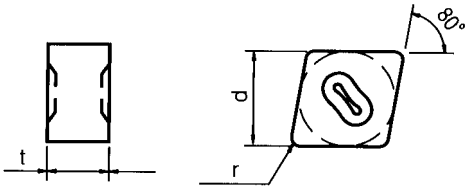
80 degree diamond, dimpled negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE			SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNGX 120708	**CNGX 452**	1/2	5/16	1/32	—	+	+	+	+	+	+	+	+	+	
CNGX 120712	**CNGX 453**			3/64		+	+	+	+	+	+	+	+	+	
CNGX 120716	**CNGX 454**			1/16		+	+	+	+	+	+	+	+	+	
CNGX 160708	**CNGX 552**	5/8	5/16	1/32	—					+	+	+	+		
CNGX 160712	**CNGX 553**			3/64						+	+	+	+		
CNGX 160716	**CNGX 554**			1/16						+	+	+	+		

CNVX Ceramic

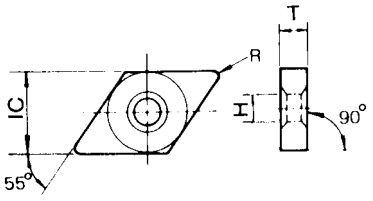
80 degree diamond, dimpled negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE			SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
CNVX 150404	**CNVX 452**	1/2	5/16	1/32	—	+	+	+	+	+	+	+	+	+	
CNVX 150408	**CNVX 453**			3/64		+	+	+	+	+	+	+	+	+	
CNVX 150412	**CNVX 454**			1/16						+	+	+	+	+	

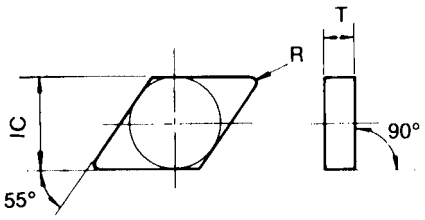
ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

DNGA Ceramic *55 degree diamond negative rake inserts*



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
DNGA 150404	**DNGA 431**	1/2	3/16	1/64	.203	+	+	+	+	+	+	+	+	+	
DNGA 150408	**DNGA 432**			1/32		+	+	+	+	+	+	+	+	+	
DNGA 150412	**DNGA 433**			3/64		+	+	+	+	+	+	+	+	+	
DNGA 150416	**DNGA 434**			1/16		+	+	+	+	+	+	+	+	+	
DNGA 190604	**DNGA 541**	5/8	1/4	1/64	.250	+	+	+	+						
DNGA 190608	**DNGA 542**			1/32		+	+	+	+	+	+	+	+	+	
DNGA 190612	**DNGA 543**			3/64		+	+	+	+	+	+	+	+	+	
DNGA 190616	**DNGA 544**			1/16		+	+	+	+	+	+	+	+	+	

DNGN Ceramic *55 degree diamond negative rake inserts*

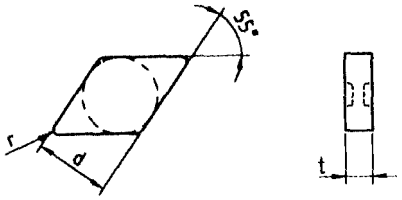


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
DNGN 150404	**DNGN 431**	1/2	3/16	1/64	—	+	+	+	+						
DNGN 150408	**DNGN 432**			1/32		+	+	+	+	+	+	+	+	+	
DNGN 150412	**DNGN 433**			3/64		+	+	+	+	+	+	+	+	+	
DNGN 150416	**DNGN 434**			1/16		+	+	+	+	+	+	+	+	+	
DNGN 190604	**DNGN 541**	5/8	1/4	1/64	—	+	+	+	+						
DNGN 190608	**DNGN 542**			1/32		+	+	+	+						
DNGN 190612	**DNGN 543**			3/64		+	+	+	+						
DNGN 190616	**DNGN 544**			1/16		+	+	+	+						

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

DNGX Ceramic

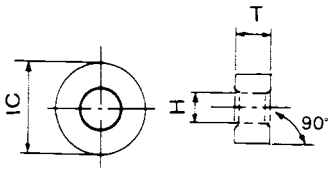
55 degree diamond, dimpled negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE		SILICON NITRIDE					
		IC	T	R	H	CC-10 CC-20 CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
DNGX 120708	**DNGX 352**	3/8	5/16	1/32	—			+	+	+	+	+	
DNGX 120712	**DNGX 353**			3/64				+	+	+	+	+	
DNGX 120716	**DNGX 354**			1/16				+	+	+	+	+	
DNGX 150708	**DNGX 452**	1/2	5/16	1/32	—								+
DNGX 150712	**DNGX 453**			3/64				+	+	+	+	+	+
DNGX 150716	**DNGX 454**			1/16				+	+	+	+	+	+

RNGA Ceramic

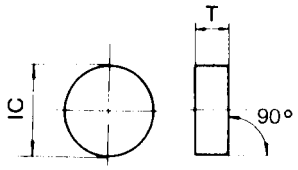
round negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE		SILICON NITRIDE					
		IC	T	R	H	CC-10 CC-20 CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
RNGA 090300	**RNGA 32**	3/8	1/8	—	.150	+ + +	+						
RNGA 120400	**RNGA 43**	1/2	3/16	—	.203	+ + +	+						

RNG Ceramic

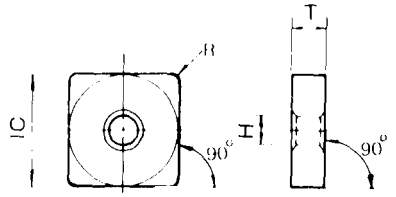
round negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE		SILICON NITRIDE					
		IC	T	R	H	CC-10 CC-20 CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
RNGN 090300	**RNGN 32**	3/8	1/8	__	__	+ + +	+		+	+	+	+	
RNGN 090400	**RNGN 33**	3/8	3/16	__	__	+ + +	+	+	+	+	+	+	+
RNGN 120400	**RNGN 43**	1/2	3/16	__	__	+ + +	+	+	+	+	+	+	+
RNGN 120700	**RNGN 45**	1/2	5/16	__	__	+ + +	+	+	+	+	+	+	+
RNGN 190600	**RNGN 64**	3/4	1/4	__	__	+ + +	+						+
RNGN 250700	**RNGN 86**	1	3/8	__	__	+ + +	+						+

SNGA Ceramic

square negative rake inserts

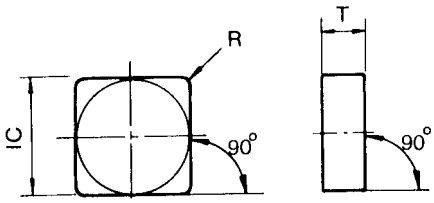


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE		SILICON NITRIDE					
		IC	T	R	H	CC-10 CC-20 CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
SNGA 090304	**SNGA 321**			1/64		+ + +	+						
SNGA 090308	**SNGA 322**	3/8	1/8	1/32	.150	+ + +	+						
SNGA 090312	**SNGA 323**			3/64		+ + +	+						
SNGA 090316	**SNGA 324**			1/16		+ + +	+						
SNGA 120404	**SNGA 431**			1/64		+ + +	+	+					
SNGA 120408	**SNGA 432**	1/2	3/16	1/32	.203	+ + +	+	+	+	+	+	+	
SNGA 120412	**SNGA 433**			3/64		+ + +	+	+	+	+	+	+	
SNGA 120416	**SNGA 434**			1/16		+ + +	+	+	+	+	+	+	
SNGA 190604	**SNGA 641**			1/64		+ + +	+						+
SNGA 190608	**SNGA 642**	3/4	1/4	1/32	.312	+ + +	+						+
SNGA 190612	**SNGA 643**			3/64		+ + +	+		+	+	+	+	+
SNGA 190616	**SNGA 644**			1/16		+ + +	+		+	+	+	+	+

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

SNGN Ceramic

square negative rake inserts

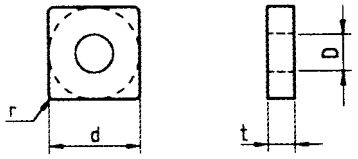


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE		SILICON NITRIDE					
		IC	T	R	H	CC-10 CC-20 CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
SNGN 090304	**SNGN 321**	3/8	1/8	1/64	—	+ + +	+						+
SNGN 090308	**SNGN 322**			1/32		+ + +	+	+					+
SNGN 090312	**SNGN 323**			3/64		+ + +	+	+					+
SNGN 090316	**SNGN 324**			1/16		+ + +	+						
SNGN 090304	**SNGN 331**	3/8	3/16	1/64	—	+ + +	+						
SNGN 090308	**SNGN 332**			1/32		+ + +	+	+	+	+	+	+	
SNGN 090312	**SNGN 333**			3/64		+ + +	+	+	+	+	+	+	
SNGN 090316	**SNGN 334**			1/16		+ + +	+						
SNGN 120404	**SNGN 431**	1/2	3/16	1/64	—	+ + +	+						+
SNGN 120408	**SNGN 432**			1/32		+ + +	+	+	+	+	+	+	+
SNGN 120412	**SNGN 433**			3/64		+ + +	+	+	+	+	+	+	+
SNGN 120416	**SNGN 434**			1/16		+ + +	+	+	+	+	+	+	+
SNGN 120424	**SNGN 436**			3/32		+ + +	+						
SNGN 120432	**SNGN 438**			1/8		+ + +	+						
SNGN 120704	**SNGN 451**	1/2	5/16	1/64	—	+ + +	+	+	+	+	+	+	+
SNGN 120708	**SNGN 452**			1/32		+ + +	+	+	+	+	+	+	+
SNGN 120712	**SNGN 453**			3/64		+ + +	+	+	+	+	+	+	+
SNGN 120716	**SNGN 454**			1/16		+ + +	+	+	+	+	+	+	+
SNGN 150604	**SNGN 541**	5/8	1/4	1/64	—	+ + +	+						
SNGN 150608	**SNGN 542**			1/32		+ + +	+						
SNGN 150612	**SNGN 543**			3/64		+ + +	+						
SNGN 150616	**SNGN 544**			1/16		+ + +	+						
SNGN 190404	**SNGN 631**	3/4	3/16	1/64	—	+ + +	+						
SNGN 190408	**SNGN 632**			1/32		+ + +	+						
SNGN 190412	**SNGN 633**			3/64		+ + +	+						
SNGN 190416	**SNGN 634**			1/16		+ + +	+						
SNGN 190604	**SNGN 641**	3/4	1/4	1/64	—	+ + +	+						+
SNGN 190608	**SNGN 642**			1/32		+ + +	+						+
SNGN 190612	**SNGN 643**			3/64		+ + +	+	+	+	+	+	+	
SNGN 190616	**SNGN 644**			1/16		+ + +	+						+

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

SNMA Ceramic

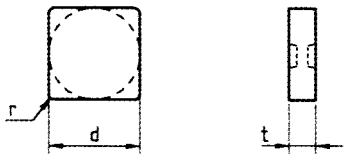
square negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
SNMA 120708	**SNMA 433**	1/2	3/16	3/64	—					+	+	+	+		
SNMA 120712	**SNMA 434**	1/2	3/16	1/16						+	+	+	+		
SNMA 150616	**SNMA 544**	5/8	1/4	1/16	—					+	+	+	+		

SNGX Ceramic

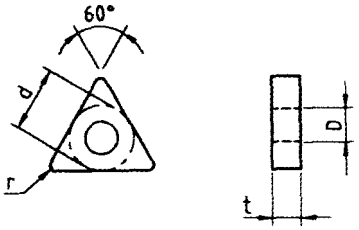
square, dimpled negative rake inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
SNGX 120708	**SNGX 452**	1/2	5/16	1/32	—	+	+	+	+	+	+	+	+	+	+
SNGX 120712	**SNGX 453**			3/64		+	+	+	+	+	+	+	+	+	+
SNGX 120716	**SNGX 454**			1/16		+	+	+	+	+	+	+	+	+	+
SNGX 150708	**SNGX 552**	5/8	5/16	1/32	—	+	+	+	+	+	+	+	+	+	
SNGX 150712	**SNGX 553**			3/64		+	+	+	+	+	+	+	+	+	
SNGX 150716	**SNGX 554**			1/16		+	+	+	+	+	+	+	+	+	

TNGA Ceramic

triangle negative rake inserts

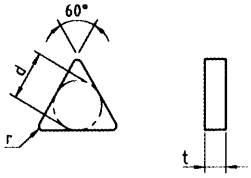


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
TNGA 160304	**TNGA 321**	3/8	1/8	1/64	.150	+	+	+	+						
TNGA 160308	**TNGA 322**			1/32		+	+	+	+						
TNGA 160312	**TNGA 323**			3/64		+	+	+	+						
TNGA 160316	**TNGA 324**			1/16		+	+	+	+						
TNGA 160404	**TNGA 331**	3/8	3/16	1/64	.150	+	+	+	+	+	+	+	+	+	
TNGA 160408	**TNGA 332**			1/32		+	+	+	+	+	+	+	+	+	
TNGA 160412	**TNGA 333**			3/64		+	+	+	+	+	+	+	+	+	
TNGA 160416	**TNGA 334**			1/16		+	+	+	+		+	+	+	+	
TNGA 220404	**TNGA 431**	1/2	3/16	1/64	.203	+	+	+	+						+
TNGA 220408	**TNGA 432**			1/32		+	+	+	+	+	+	+	+	+	+
TNGA 220412	**TNGA 433**			3/64		+	+	+	+	+	+	+	+	+	+
TNGA 220416	**TNGA 434**			1/16		+	+	+	+	+	+	+	+	+	+
TNGA 270604	**TNGA 541**	5/8	1/4	1/64	.250	+	+	+	+						
TNGA 270608	**TNGA 542**			1/32		+	+	+	+						
TNGA 270612	**TNGA 543**			3/64		+	+	+	+						
TNGA 270616	**TNGA 544**			1/16		+	+	+	+						

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

TNGN Ceramic

triangle negative rake inserts

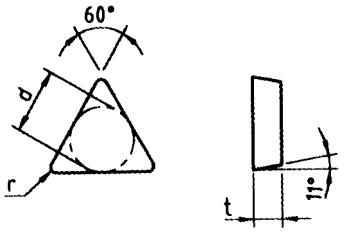


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
TNGN 110304	**TNGN 221**	1/4	1/8	1/64	—	+	+	+	+						
TNGN 110308	**TNGN 222**			1/32		+	+	+	+						
TNGN 110312	**TNGN 223**			3/64		+	+	+	+						
TNGN 110316	**TNGN 224**			1/16		+	+	+	+						
TNGN 160304	**TNGN 321**	3/8	1/8	1/64	—	+	+	+	+						
TNGN 160308	**TNGN 322**			1/32		+	+	+	+						
TNGN 160312	**TNGN 323**			3/64		+	+	+	+						
TNGN 160316	**TNGN 324**			1/16		+	+	+	+						
TNGN 160404	**TNGN 331**	3/8	3/16	1/64	—	+	+	+	+	+					+
TNGN 160408	**TNGN 332**			1/32		+	+	+	+	+	+	+	+	+	+
TNGN 160412	**TNGN 333**			3/64		+	+	+	+	+	+	+	+	+	+
TNGN 160416	**TNGN 334**			1/16		+	+	+	+		+	+	+	+	+
TNGN 220404	**TNGN 431**	1/2	3/16	1/64	—	+	+	+	+						+
TNGN 220408	**TNGN 432**			1/32		+	+	+	+	+	+	+	+	+	+
TNGN 220412	**TNGN 433**			3/64		+	+	+	+	+	+	+	+	+	+
TNGN 220416	**TNGN 434**			1/16		+	+	+	+	+	+	+	+	+	+
TNGN 270604	**TNGN 541**	5/8	1/4	1/64	—	+	+	+	+						
TNGN 270608	**TNGN 542**			1/32		+	+	+	+						
TNGN 270612	**TNGN 543**			3/64		+	+	+	+						
TNGN 270616	**TNGN 544**			1/16		+	+	+	+						

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

TPGN Ceramic

triangle positive rake inserts

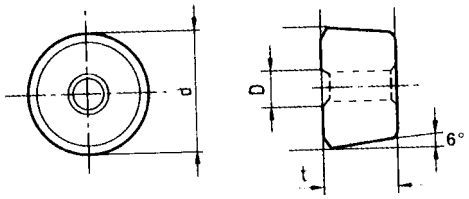


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE					
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-SC (COATED)	CC-510	CC-513	CC-514	CC-515	CC-516	CC-5477
TPGN 110304	**TPGN 221**	1/4	1/8	1/64	—	+	+	+	+	+	+	+	+		
TPGN 110308	**TPGN 222**			1/32		+	+	+	+	+	+	+	+		
TPGN 110312	**TPGN 223**			3/64		+	+	+	+						
TPGN 110316	**TPGN 224**			1/16		+	+	+	+						
TPGN 160304	**TPGN 321**	3/8	1/8	1/64	—	+	+	+	+	+	+	+	+	+	
TPGN 160308	**TPGN 322**			1/32		+	+	+	+	+	+	+	+	+	
TPGN 160312	**TPGN 323**			3/64		+	+	+	+	+	+	+	+	+	
TPGN 160316	**TPGN 324**			1/16		+	+	+	+						
TPGN 220404	**TPGN 431**	1/2	3/16	1/64	—	+	+	+	+	+	+	+	+	+	
TPGN 220408	**TPGN 432**			1/32		+	+	+	+	+	+	+	+	+	
TPGN 220412	**TPGN 433**			3/64		+	+	+	+	+	+	+	+	+	
TPGN 220416	**TPGN 434**			1/16		+	+	+	+						

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY

CDH / RCMA Ceramic

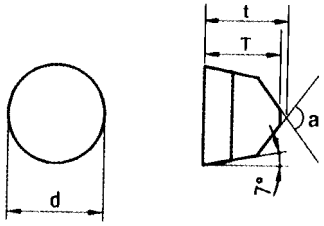
round positive rake button insert



DESIGNATION	INSERT STYLE	DIMENSIONS			BLACK / WHITE			SILICON NITRIDE
		IC	T	H	CC-10 CC-20 CC-30		CC-30-SC (COATED)	CC-5477
RCMA 41	**CDH 22**	1/2	1/4	.125	+ +		+	
RCMA 63	**CDH 315**	3/4	3/16	.125	+ +		+	
RCMA 66	**CDH 33**	3/4	3/8	.250	+ +		+	
RCMA 68	**CDH 34**	3/4	1/2	.250	+ +		+	
RCMA 88	**CDH 42**	1	1/2	.266	+ +		+	+
RCMA 812	**CDH 43**	1	3/4	.266	+ +		+	
RCMA 106	**CDH 515**	1-1/4	3/8	.390	+ +		+	+
RCMA 1012	**CDH 53**	1-1/4	3/4	.390	+ +		+	

RCGX Ceramic

round positive rake V-bottom inserts



ISO DESIGNATION	INSERT STYLE	DIMENSIONS			BLACK / WHITE			SILICON NITRIDE
		IC	T	ANGLE	CC-10 CC-20 CC-30		CC-30-SC (COATED)	CC-5477
RCGX 060400	**RCGX 102**	1/4	3/16	120 degrees	+ +		+	
RCGX 060600	**RCGX 102**	1/4	1/4	120 degrees	+ +		+	
RCGX 060700	**RCGX 102**	1/4	5/16	120 degrees	+ +		+	
RCGX 090700	**RCGX 103**	3/8	.313	120 degrees	+ +		+	+
RCGX 120700	**RCGX 104**	1/2	.313	120 degrees	+ +		+	+
RCGX 151000	**RCGX 105**	5/8	.394	120 degrees	+ +		+	+
RCGX 191000	**RCGX 106**	3/4	.394	120 degrees	+ +		+	
RCGX 251200	**RCGX 108**	1	.473	140 degrees	+ +		+	

ROMAY CORP
SETTING NEW STANDARDS IN PRODUCTIVITY