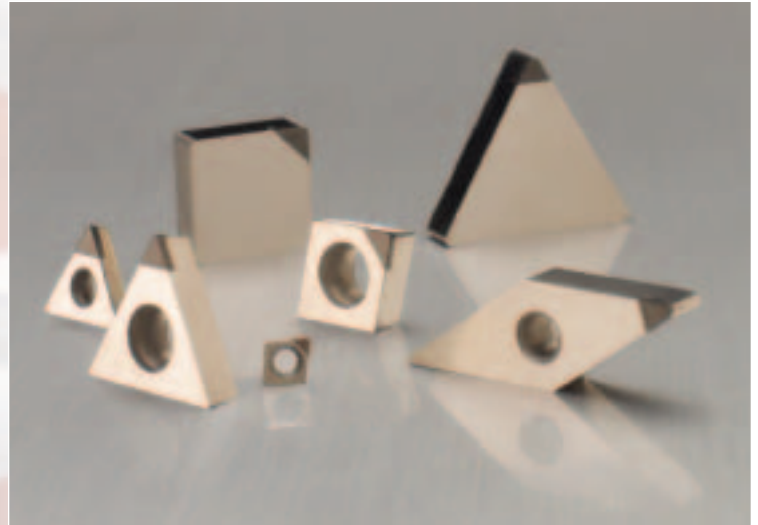


**Made in the U.S.A.**

# **PCD & CBN Tipped Inserts**



**American Carbide Tool Company**

**PRECISION TOOL DIVISION**

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**Cutting Tools of Uncompromising Quality  
Delivering the Ultimate  
In Performance and Value.**

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**CATALOG NO. 10-04  
SUPERCEDES ALL PREVIOUS CATALOGS**



American Carbide Tool Company (ACT) is a leading manufacturer of single point brazed carbide tipped tools.

Known for the uncompromising excellence of our products, we have applied our years of tool manufacturing expertise to our Precision Tool Division. ACT's Precision Tool Division produces the most advanced cutting tools including PCD (polycrystalline diamond) & CBN (cubic boron nitride) tipped inserts and tools, as well as precision ground cutting tools and flat form tools made from carbide and other materials. The result is precision cutting tools which are unsurpassed in quality.

## **AMERICAN CARBIDE TOOL COMPANY GIVES YOU THE EDGE!**

- **Over 50 years of toolmaking experience**
- **PCD & CBN Tipped Inserts and Tools**
- **Special Precision Ground and Wire-EDM Flat Form Tools**
- **Made in the U.S.A.**

### **BENEFITS OF PCD AND CBN**

- Potentially hundreds of times the tool life of carbide with PCD.
- Up to 50 times tool life of carbide with CBN.
- High material removal rates decrease operation cycle times, providing more parts per shift.
- Cutting speeds two to three times those of conventional tools.
- Longer tool life resulting in excellent dimensional control and consistent surface finishes. Together these provide improved workpiece quality and minimize scrap rates.
- Increased machine tool uptime as a result of longer tool life provides greater production capacity without investment in new equipment.
- PCD & CBN provide significant productivity and cost savings in manufacturing operations.
- The full potential and value of superabrasive tools over conventional tooling can be evaluated by tracking gains in productivity.

**We have developed our own unique grinding process for PCD & CBN giving ACT's cutting tools a superior edge.**

**The ACT edge gives you increased tool life and improved finish, while providing you with increased productivity and lower cost.**



**Prove it for yourself with a trial order! American made PCD & CBN tipped tooling from American Carbide Tool Company can outperform the competition.**

## RECOMMENDED SUPERABRASIVE APPLICATIONS

There are significant differences between PCD and CBN which make the two products suitable for distinct applications. PCD reacts chemically with ferrous materials, so it is usually recommended only for nonferrous and nonmetallic materials. CBN resists chemical reaction with iron and is therefore specified for use with ferrous materials.

### PCD APPLICATIONS

#### Abrasive Nonmetallics

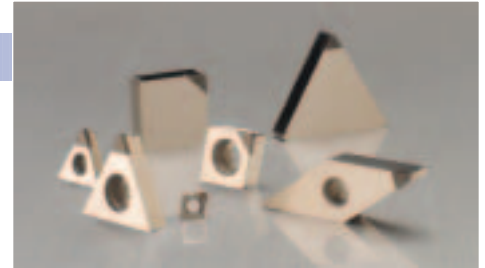
Carbon  
Ceramics  
Fiberglass Composites  
Graphite  
Plastics  
Rubber

#### Nonferrous Metals

Aluminum  
Aluminum Alloys  
Brass Alloys  
Bronze Alloys  
Copper  
Copper Alloys  
Lead Alloys  
Manganese Alloys  
Metal Matrix Composites  
Sintered Tungsten Carbide

#### Primary PCD Markets

- Automotive** Transmission Housings and Valve Bodies; Manifolds; Cylinder Heads; Wheels; Pistons; Oil, Water, Power Steering and Fuel Pumps; Brake Cylinders; Carburetors; Engine Blocks; Alternator, Starter and Air Conditioning Housings
- Pumps/Valves** Housings, Moving Parts
- Home Appliances** Housings/Compressor Pistons
- Aircraft/Aerospace** Cowling, Wing Tips, Ducts, Floor Posts, Structural Components, Trim Panels
- Electrical Machinery** Commutator Shafts/Housings
- Computer and Electronic** Moving Discs; Mirrors/Lenses



### CBN APPLICATIONS

Hardened Steels  
Gray Cast Iron  
Hard Cast Iron  
Powder Metal Materials  
Hard Facing Alloys  
Thermal Spray Ni Based  
Thermal Spray Co Based  
Superalloys

#### Primary CBN Markets

- Automotive** Gears, Axles, Shafts, Bearings, Engine Blocks, Valve Seats, Brake Rotors, Brake Drums, Clutch Plates, Transfer Housings
- Aerospace** Combustion Case, Shafts, Landing Gear, Bolts, Struts, Cylinders, Turbine Disk, Turbine Blades, Turbine, Shrouds, Engine Shafts, Turbine Vanes
- Other** Pumps, Impellers, Shafts, Rolls



# PCD STOCK INSERTS

## PCD DIAMOND

	STYLE	GRADE PCD13	GRADE PCD15		STYLE	GRADE PCD13	GRADE PCD15
	CCMW 21.51	60000	60004		SPG 321		63404
	CCMW 21.52	60050	60054		SPG 322		63454
	CCMW 32.51	60100	60104		SPG 421		63604
	CCMW 32.52	60150	60154		SPG 422		63654
	CDCD 51*		60254		TCMW 21.51	64000	64004
	CNGA 431	60300	60304		TNG 321		64504
	CNGA 432	60450	60454	TNG 322		64554	
	CPMW 21.51	61200	61204		TPG 221		65154
	CPMW 21.52	61250	61254		TPG 222		65204
	CPMW 32.51	61300	61304		TPG 321	65250	65254
	CPMW 32.52	61350	61354		TPG 322	65300	65304
	DCMW 21.51	61400	61404		TPG 431		65604
	DCMW 32.52	61450	61454		TPG 432		65654
	DNGA 431	61500	61504		TPMW 21.51		66054
	DNGA 432	61650	61654		VNGA 331		66754
	DPMW 21.51	61950	61954		VNGA 332	66900	66904
	DPMW 32.52	62150	62154				

\* .060" PCD edge

NOTE: Standard PCD edge for all stock inserts is .125" unless otherwise indicated.

**ACT can rebuild or relap your used PCD or CBN inserts.  
Please call for pricing.**

## PCD Application Guidelines

PCD 13		PCD 15 / PCD 18			
General Purpose Applications Aluminums <12% Silicon Copper Alloys		Interrupted Cuts Aluminums >12% Silicon Composite Graphite Epoxy Metal Matrix Composites			
Material	Operation	Grade	Surface Speed (ft./min.)	Feed Rate (in./rev.)	
Aluminum/Aluminum Alloys <12% Silicon	Rough Turning	13	2000-6000	.005 -.020	
Aluminum/Aluminum Alloys <12% Silicon	Finish Turning	15/18	2000-6000	.003 -.008	
Aluminum/Aluminum Alloys >12% Silicon	Rough Turning	15/18	1000-2000	.005 -.015	
Aluminum/Aluminum Alloys >12% Silicon	Finish Turning	15/18	1000-3000	.003 -.008	
Copper/Copper Alloys/Zinc	Rough Turning	13	800-1200	.005 -.010	
Copper/Copper Alloys/Zinc	Finish Turning	13	1000-2000	.004 -.010	
Plastics/Composites	Rough Turning	13/15	650-2600	.004 -.016	
Plastics/Composites	Finish Turning	13	1000-5000	.004 -.016	
Sintered Tungsten Carbide <16 Cobalt	Finish Turning	15	50-100	.004 -.010	

**ROUGH TURNING: >.025" D.O.C.; FINISH TURNING: <.025" D.O.C.**

**WARNING: PCD DEPTH OF CUT SHOULD NOT EXCEED 60% OF TOTAL CUTTING EDGE AVAILABLE.**

# CBN STOCK INSERTS

## CBN INSERTS

	STYLE	GRADE CBN6	GRADE CBN8		STYLE	GRADE CBN6	GRADE CBN8
	CCMW 21.51	60012	60028		TCMW 21.51	64012	64028
	CCMW 21.52	60062	60078		TCMW 21.52	64062	64078
	CCMW 32.51	60112	60128		TCMW 32.51	64112	64128
	CCMW 32.52	60162	60178		TCMW 32.52	64162	64178
	CDCD 505*		60228		TNG 432	64612	64628
	CDCD 51*		60278		TNGA 431	64712	64728
	CNGA 431	60312	60328		TNGA 432	64762	64778
	CNGA 432	60462	60478		TPG 221	65162	65178
	CNGA 433	60612			TPG 222	65212	65228
	CPMW 21.51	61212	61228		TPG 321	65262	65278
	CPMW 21.52	61262	61278		TPG 322	65312	65328
	CPMW 32.51	61312	61328		TPG 431		65628
	CPMW 32.52	61362	61378		TPG 432	65662	65678
	DNGA 431	61512	61528		TPMW 21.51	66062	66078
	DNGA 432	61662	61678		VNGA 331	66762	66778
	RNG32	62362	62378		VNGA 332	66912	66928
	RNG42	62412	62428		VNGA 333	67062	
	SNG 432 FULL TOP	62862	62878				
	SNG 433 FULL TOP	62912	62928				
	SNG 432	63012	63028				

\* .060" CBN edge

- All stock CBN inserts have a T-land of 20° x .004"
- Standard CBN edge for all stock inserts is .125" unless otherwise indicated.
- Interrupted cut may require an additional hone. If applicable, please indicate when ordering.

## CBN Application Guidelines

Material	Operation	Grade	Surface Speed (ft./min.)	Feed Rate (in./rev.)
Hardened High Carbon Steel	Rough Turning	CBN8	300-450	.004 -.012
	Finish Turning	CBN8/CBN30	400-600	.004 -.008
Hardened Alloy Steels	Rough Turning	CBN8	300-400	.004 -.012
	Finish Turning	CBN8/CBN30	400-500	.004 -.008
Hardened Tool and Die Steels	Rough Turning	CBN8	200-300	.004 -.008
	Finish Turning	CBN8/CBN30	250-350	.004 -.008
Pearlitic Gray Cast Iron <240HBN	Rough Turning	CBN6	1500-3500	.010 -.020
	Finish Turning	CBN6	1500-3500	.010 -.020
Pearlitic Gray Cast Iron >240HBN	Rough Turning	CBN6	1000-2000	.010 -.020
	Finish Turning	CBN6	1000-2000	.010 -.020
White Alloy Cast Iron (Ni-hard, Cr-Mo, HiCr)	Rough Turning	CBN6	200-400	.010 -.030
	Finish Turning	CBN6	300-600	.010 -.030
Superalloys	Rough Turning	CBN6	500-1000	.004 -.010
	Finish Turning	CBN6	500-1000	.004 -.010
Thermal Spray Nickel Based	Rough Turning	CBN6	200-600	.003 -.008
	Finish Turning	CBN6	300-1000	.003 -.008
Thermal Spray Cobalt Based	Rough Turning	CBN6	400-700	.002 -.006
	Finish Turning	CBN6	500-1000	.002 -.006
Powder Metal	Rough Turning	CBN6	300-800	.004 -.010
	Finish Turning	CBN6	300-1000	.003 -.008

**ROUGH TURNING: >.025" D.O.C.; FINISH TURNING: <.025" D.O.C.**

**WARNING: CBN DEPTH OF CUT SHOULD NOT EXCEED 35% OF TOTAL CUTTING EDGE AVAILABLE.**

## PCD TURNING TOOLS

STYLE	GRADE PCD18
AL-6 AL-8	67408 67458
AR-6 AR-8	67658 67708
BL-6 BL-8	67908 67958
BR-6 BR-8	68158 68208
D-6 D-8	68408 68458
E-6 E-8	68658 68708



- Superior Life Over Carbide Tools
- Higher Speed and Feed Capabilities

## CBN MINI TIP INSERTS

	STYLE	GRADE CBN30
	CNGA 431 MT	60359
	CNGA 431 DE MT	60409
	CNGA 432 MT	60509
	CNGA 432 DE MT	60559
	DNGA 431 MT	61559
	DNGA 431 DE MT	61609
	DNGA 432 MT	61709
	DNGA 432 DE MT	61759
	VNGA 331 MT	66809
	VNGA 331 DE MT	66859
	VNGA 332 MT	66959
	VNGA 332 DE MT	67009



- For Finishing of Hardened Steel
- Continuous or Interrupted Cut
- Single Use Insert Eliminates Regrinding
- Low Cost Per Insert

# IMPORTANT CONSIDERATIONS

**When you need cutting tools, depend on the company that provides you with the very best in quality and service:**



## When Using Superabrasive Cutting Tools:

- Use rigid machining system and minimize insert overhang.
- Clean seat of tool holder prior to use and changing of insert.
- Tool holder and seat must be in good condition, free of wear.
- Machining system must be capable of running at the recommended speeds.
- Do not exceed depth of cut as recommended in the applications guidelines.
- Do not stop machine in cut as insert breakage may occur.
- Interrupted cut may require an additional hone. If applicable, please indicate when ordering.
- Use care in inspecting... only use optical inspection equipment.

## REQUEST FOR QUOTATION

**(COPY AND FAX TO 330-453-8498)**

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: (    ) \_\_\_\_\_ FAX: (    ) \_\_\_\_\_

QUANTITY: \_\_\_\_\_ DESCRIPTION (P/N): \_\_\_\_\_

WORKPIECE MATERIAL: \_\_\_\_\_ HARDNESS: \_\_\_\_\_  
(PLEASE BE AS SPECIFIC AS POSSIBLE)

OPERATION: \_\_\_\_\_ INTERRUPTION: YES \_\_\_\_\_ NO \_\_\_\_\_  
(i.e.: TURNING, FACING, BORING, etc.)

COOLANT: YES \_\_\_\_\_ NO \_\_\_\_\_ PRESENTLY USING: \_\_\_\_\_  
(BRAND, GEOMETRY, SIZE, GRADE)

EQUIPMENT ON WHICH PART IS BEING MACHINED: \_\_\_\_\_

CNC: YES \_\_\_\_\_ NO \_\_\_\_\_ SPEED: \_\_\_\_\_ FEED: \_\_\_\_\_ D.O.C.: \_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_



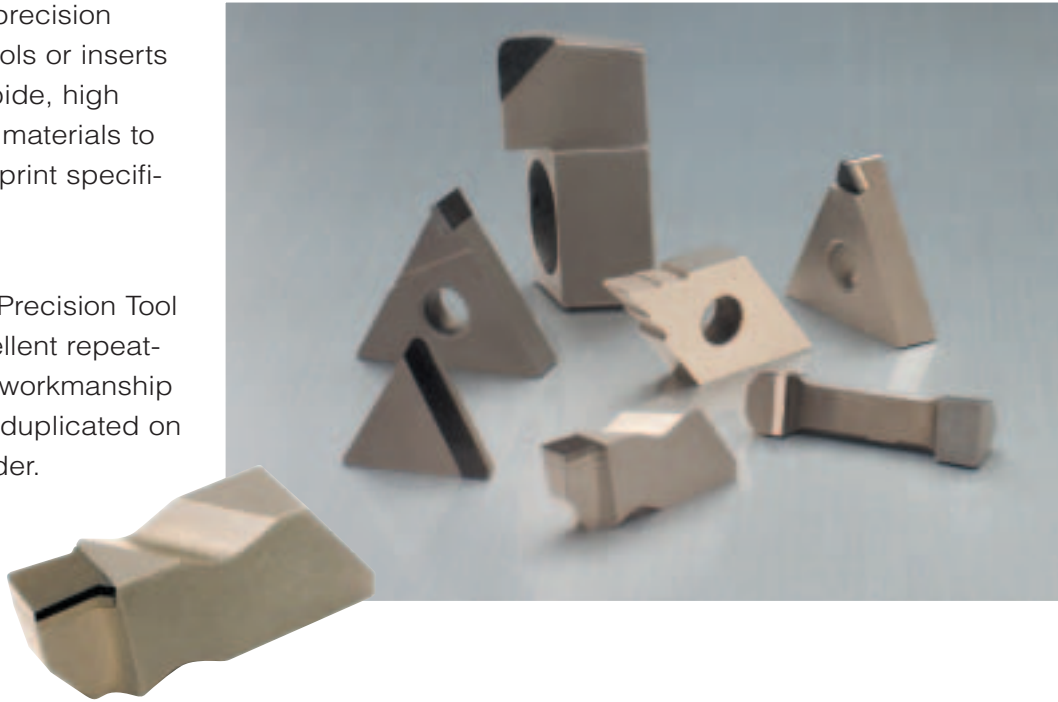
**Please answer all questions applicable to your inquiry so that we may expedite your quotation.**



## PRECISION SPECIALS

ACT can make your precision ground or flat form tools or inserts from PCD, CBN, carbide, high speed steel, or other materials to your samples or blueprint specifications.

Specials from ACT's Precision Tool Division provide excellent repeatability. The precision workmanship of each order will be duplicated on every subsequent order.



**Prove it for yourself with a trial order! American made PCD & CBN tipped tooling from American Carbide Tool Company can outperform the competition.**



*Please use the form on the previous page to request a quotation. To expedite quoting, please provide a detailed print or an unused sample tool. Samples will be returned to you upon completion of your quotation.*

**DISTRIBUTED BY:**



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[www.americancarbidetool.com](http://www.americancarbidetool.com)