

Borazon Grinding Pins



1/4" Shank Borazon Grinding Pin



1/8" Shank Borazon Grinding Pin



3/8" Shank Borazon Grinding Pin

Titan Borazon Grinding Pins are made from **General Electric's CBN 570**. This abrasive offers unique advantages. Because 75% of the individual grain size is exposed for grinding purposes, and directly proportional to grinding life. They never need dressing for wear, enabling the pins to cut faster and cooler with minimal clogging. These features, together with the rigid concentricity, size and hardness control of Titan's steel shanks, permit faster feeds a capability which can be utilized to the fullest with Titan's COARSER 60/80 GRIT PINS.

STEEL SHANKS IN THREE DIAMETERS

All standard shanks are hardened to 42-55 Hrc and are center-less ground, to ensure a rigid, accurate, concentric and parallel pin blank. Maximum rigidity and safety are thus provided for the work to be performed. All shanks are centerless ground to .0005" concentricity + .0000" to - .0002".

THREE GRIT SIZES WITH FASTER CUTTING 60/80

All 48 Borazon Grinding Pin models are available in either **100/120 or 230/270 Grit** and 12 models are stocked in the TIME-SAVING, FASTER CUTTING **60/80 GRIT**, as shown in the table on the following page. Their characteristics and recommended applications are as follows: **60/80 Grit** for roughing and chop grinding. Feed and stock removal capabilities are unbelievable, can be compared to a roughing end mill and eliminate the step of precision-boring before hardening and grinding on many applications. The workpiece can be drilled, hardened and then ground; **100/120 GRIT** is utilized for most every day grinding operations; **230/270 GRIT** is for finishing work. Because of Titan's exposed grain-bonding method, a superior abrasive grain concentration of 150 or more is assured on all pins.

54 MODELS, 110 COMBINATIONS FOR NUMEROUS APPLICATIONS

The Titan line is available in 54 models consisting of 27 different abrasive section diameters from .020" to 1.500", 11 abrasive section lengths from .079" to .394", three grits and three shank diameters, as mentioned above, as well as extra long pins for small deep holes, for a total of 110 different mandrel combinations. This broad assortment permits selections best suited to your particular applications, depending upon the materials to be ground, diameter or contour of the hole, depth of hole, desired finish and capabilities of the grinder to be used. If external "chop" grinding is to be performed, this must be given additional consideration in making your selection. Applications extend over a very broad range, from dies to die buttons, special punches, drill bushings and cutting tools, as well as numerous parts of stainless steel, exotic super alloys, cast iron, and beryllium copper, stellite and etc. Titan Borazon Pins are known to be well suited also for work on high-carbon, high-chrome steel, high speed steels such as M2, M3, M4, M7, T1 and T15, and die steels such as D2, D3, D7 and A & O series. Various super alloys which are regarded as "difficult", also responds favorably to Titan's Borazon abrasive. The benefits of using Titan Borazon Grinding Pins in your shop are worth investigating.

DISTINCT ADVANTAGES OF THE TITAN BRAND

1. FEEDS INCREASED 30% to 80% with 100/120 and 230/270 grits and 300% to 500% with 60/80 grit. This utilizes to the fullest the natural capabilities of internal grinders such as Ex-Cello and Heald and jig grinders such as Moore and Hauser. Jig grinding attachments such as Precise, Vulcan Air and Onsrund will last much longer because minimum outfeed pressure is necessary for fast stock removal, resulting in longer bearing life.

2. NO DEFLECTION because of the natural cutting ability of the CBN abrasive and its full exposed abrasive grain structure. By proper selection of the right diameter shank, you will obtain a **truer hole with perfect concentricity, size, and lack of taper**. The amount of stock removed is directly proportional to the pre-selected outfeeds. Because of this unique capability, extra rigid shanks are not necessary.

3. HOLE SIZE, AND ACCURACY

The geometric accuracies of the bore which can be ground with all electro-plated pins, since they are not trueable, is in a direct relationship, of the concentricity of the abrasive, to the shank, to the collet in which they are mounted. Titan CBN pins are carefully and precisely controlled for the accuracies of the pin abrasive section to the outside diameter of the shank. This makes for 50% to 100% longer grinding life and even wear of the abrasive.

4. LOWER GRINDING COSTS.

Higher stock removal ratios result in less time spent on the job and less downtime through elimination of dressing and uneven stock removal.

PROPER FEED RATE

Recommended feed rate depends on several factors, such as material to be ground, diameter and depth of hole, shank size and grit of pin, and RPM of grinder. Therefore, it is not practical to furnish a feed chart. However an operator can easily "feel" the pin as it is advanced into the work. Usually the feed rate with 60/80 grit "roughers" can be 10 to 20 times greater than with 100/200 and 15 to 30 times greater than with 230/270 finishing grit.

WHEN TO USE COOLANTS

Titan Borazon Pins should be used without coolant whenever possible. The abrasive "cuts" more than "grinds". When the chips are examined microscopically, a definite curl, characteristic of cutting tool action, is apparent. This results in much cooler grinding with a less dusty grinding condition. If wet grinding becomes necessary, only sulfochlorinated oil-based coolants should be used.

Thickness of Layer for Electro Plated Pins:

60/80 Grit	0.0118"
100/120 Grit	0.0068"
230/270 Grit	0.0039"

Minimum clamping length = Half of total length: $L_c = 0.5 \times L$.

 Tolerance: D: $<0.079" = \pm 0.002"$, D: $\geq 0.079" = \pm 0.006"$, T: $\pm 0.040"$, L1: $\pm 0.040"$, Y: $h6$
 L: $\pm 0.040"$.

Order #	Ø D	T	L1	L	Ø Y	230/270 Grit	100/120 Grit	60/80 Grit
6900	0.020"	0.079"	0.250"	2.156"	1/8"	\$10.40		
6900A	0.029"	0.079"	0.250"	2.156"	1/8"	\$8.90		
6901	0.039"	0.079"	0.250"	2.156"	1/8"	\$8.90	\$8.90	
6901B	0.049"	0.079"	0.250"	2.156"	1/8"	\$8.90	\$8.90	
6901A	0.059"	0.118"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6901C	0.069"	0.118"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6902	0.079"	0.157"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6902A	0.089"	0.157"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6902B	0.099"	0.157"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6902C	0.109"	0.157"	0.500"	2.156"	1/8"	\$8.90	\$8.90	
6903	0.118"	0.157"	0.625"	2.156"	1/8"	\$10.70	\$10.70	
6903XL	0.118"	0.157"	0.625"	2.156"	1/4"	\$18.00	\$18.00	
6903XLY	0.118"	0.157"	1.500"	3.500"	1/4"	\$18.00	\$18.00	
6903A	0.130"	0.197"	0.625"	2.156"	1/8"	\$11.40	\$11.40	
6903AXL	0.130"	0.197"	0.625"	2.156"	1/4"	\$11.40	\$11.40	
6903AXLY	0.130"	0.197"	1.500"	3.500"	1/4"	\$14.70	\$14.70	
6903B	0.140"	0.197"	0.625"	2.156"	1/8"	\$11.40	\$11.40	
6903BXL	0.140"	0.197"	0.625"	2.156"	1/4"	\$11.40	\$11.40	\$16.90
6903BXY	0.140"	0.197"	1.500"	3.500"	1/4"	\$15.00	\$15.00	
6904	0.157"	0.197"	N/A	2.156"	1/8"	\$11.40	\$11.40	
6904XL	0.157"	0.197"	0.625"	2.156"	1/4"	\$11.40	\$11.40	\$17.80
6904XLY	0.157"	0.197"	1.500"	3.500"	1/4"	\$15.00	\$15.00	
6904A	0.177"	0.236"	N/A	2.156"	1/8"	\$12.70	\$12.70	
6904AXL	0.177"	0.236"	0.625"	2.156"	1/4"	\$12.70	\$12.70	\$17.60
6904AXLY	0.177"	0.236"	1.500"	3.500"	1/4"	\$15.00	\$15.00	
6905	0.197"	0.236"	N/A	2.156"	1/8"	\$15.00	\$15.00	
6905XL	0.197"	0.236"	0.625"	2.156"	1/4"	\$16.10	\$16.10	\$18.60
6905XLY	0.197"	0.236"	1.500"	3.500"	1/4"	\$17.30	\$17.30	
6908	0.236"	0.275"	N/A	2.156"	1/8"	\$15.00	\$15.00	
6908XL	0.236"	0.275"	1.000"	3.000"	1/4"	\$16.10	\$16.10	\$20.70
6908A	0.256"	0.275"	1.000"	3.000"	1/4"	\$17.20	\$17.20	
6909	0.315"	0.315"	N/A	3.000"	1/4"	\$22.50	\$22.50	
6910F	0.335"	0.315"	N/A	3.000"	1/4"	\$22.50	\$22.50	\$27.80
6911	0.394"	0.197"	N/A	3.000"	1/4"	\$27.70	\$27.70	
6911XL	0.394"	0.197"	N/A	3.500"	3/8"	\$27.70	\$27.70	
6912	0.394"	0.394"	N/A	3.000"	1/4"	\$27.70	\$27.70	
6912XL	0.394"	0.394"	N/A	3.500"	3/8"	\$27.70	\$27.70	\$33.00
6913D	0.473"	0.394"	N/A	3.000"	1/4"	\$34.30	\$34.30	
6913DXL	0.473"	0.394"	N/A	3.500"	3/8"	\$37.00	\$37.00	\$37.90
6914	0.591"	0.197"	N/A	3.000"	1/4"	\$42.30	\$42.30	
6914XL	0.591"	0.197"	N/A	3.500"	3/8"	\$46.20	\$46.20	
6915	0.591"	0.394"	N/A	3.000"	1/4"	\$42.30	\$42.30	
6915XL	0.591"	0.394"	N/A	3.500"	3/8"	\$46.20	\$46.20	\$51.50
6917	0.730"	0.394"	N/A	3.000"	1/4"	\$50.20	\$50.20	
6917XL	0.730"	0.394"	N/A	3.500"	3/8"	\$50.20	\$50.20	\$57.30
6919XL	1.000"	0.394"	N/A	3.500"	3/8"	\$71.30	\$71.30	\$76.50
6920XL	1.250"	0.394"	N/A	3.500"	3/8"	\$81.80	\$81.80	
6921XL	1.500"	0.394"	N/A	3.500"	3/8"	\$102.90	\$102.90	\$105.60



**1/8" & 1/4"
Shank**



**3/8"
Shank**