

# DIAMOND & CBN WHEELS

**NORTON  
ADVANTAGE**

## Diamond & CBN Grinding Wheels

*Diamond and CBN (Cubic Boron Nitride) grinding wheels are available in a wide range of Resin, Vitrified and Metal bonds.*



Diamond and CBN wheels are designed to grind very hard materials like Tungsten Carbide, HSS, Hardened Steel, Aero space alloys, Ceramics, Glass and Refractory materials to a high level of precision and quality. Various factors affect selection of the right superabrasive grinding wheel. Application/ Product Engineers from Grindwell Norton will help you select the right product fine-tuned to meet the exact application need. Grindwell Norton also offers a wide range of Resin bond, Metal bond, vitrified bond and Electro-plated wheels for tool regrinding and for job working applications on Carbides, Tool Steels, HSS, Ceramics, Glass, and Refractory materials. These wheels have been optimised in design for various wheel factors like Diamond & CBN type, grit, concentration, bond, and grade to suit a variety of jobs.

### TYPICAL APPLICATIONS

#### Diamond Wheels

- ▶ Tungsten Carbide
- ▶ Hard alloys
- ▶ Ferrites & Ceramics
- ▶ Wear resistant Coatings
- ▶ Glass
- ▶ Gem stones
- ▶ Plastics
- ▶ Graphite
- ▶ Cast Iron

### TYPICAL APPLICATIONS

#### CBN Wheels

- ▶ High Speed Steel
- ▶ Alloy Tool Steels
- ▶ Super Alloys
- ▶ Case hardened Steels

## NORTON DIAMOND & CBN WHEELS

### FEATURES

- ▶ Best manufacturing techniques
- ▶ Optimised specifications
- ▶ Full range of wheels
- ▶ Stocked in variety of shapes, sizes & bonds

### BENEFITS

- ▶ Best performance
- ▶ Superior value
- ▶ Affordable price
- ▶ Low inventories
- ▶ Overall economy

**SUPER  
ABRASIVES**

# DIAMOND & CBN WHEELS



## STOCK AVAILABILITY

### Norton Range Diamond & CBN Wheels

|      | S.S.  | BOND  | TYPE | DIAM | WIDTH | DI  | BORE  | DIA/CBN | CONC. | BOND |
|------|-------|-------|------|------|-------|-----|-------|---------|-------|------|
|      | CODE  |       |      | D    | W     | X   | H     | GRIT    |       |      |
|      | SA15  | Resin | 11V9 | 90   | 10    | 1.5 | 31.75 | ASD126  | R50   | B1   |
|      | SA13  | Resin | 11V9 | 100  | 10    | 1.5 | 31.75 | ASD91   | R50   | B1   |
|      | SA131 | Resin | 11V9 | 100  | 10    | 1.5 | 31.75 | SD107   | R50   | B1   |
|      | SA1   | Resin | 11V9 | 100  | 10    | 2   | 31.75 | ASD126  | R50   | B1   |
|      | SA17  | Resin | 11V9 | 100  | 10    | 2   | 31.75 | ASD64   | R50   | B1   |
|      | SA36  | Resin | 11V9 | 100  | 10    | 2   | 31.75 | ASD126  | R75   | B1   |
|      | SA37  | Resin | 11V9 | 125  | 10    | 2   | 31.75 | ASD126  | R75   | B1   |
|      | SA49  | Resin | 11V9 | 125  | 10    | 3   | 31.75 | ASD126  | R75   | B1   |
|      | SA44  | Resin | 11V9 | 125  | 6     | 2   | 31.75 | ASD91   | R75   | B1   |
|      | SA11  | Resin | 11V9 | 100  | 10    | 2   | 31.75 | CB126   | R75   | B1   |
|      | SA71  | Metal | 1A1R | 100  | 0.8   | 5   | 31.75 | D151    | C100  | MB   |
|      | SA72  | Metal | 1A1R | 125  | 1     | 5   | 31.75 | D151    | C100  | MB   |
|      | SA73  | Metal | 1A1R | 125  | 1.5   | 5   | 31.75 | D151    | C100  | MB   |
|      | SA74  | Metal | 1A1R | 150  | 1     | 5   | 31.75 | D151    | C100  | MB   |
|      | SA75  | Metal | 1A1R | 150  | 1.5   | 5   | 31.75 | D151    | C100  | MB   |
|      | SA76  | Metal | 1A1R | 200  | 1     | 5   | 31.75 | D151    | C100  | MB   |
|      | SA77  | Metal | 1A1R | 200  | 1.5   | 5   | 31.75 | D151    | C100  | MB   |
|      | SA78  | Metal | 1A1R | 300  | 3     | 3   | 50    | D151    | C100  | MB   |
|      | SA83  | Resin | 1A8  | 15   | 10    | 3   | 6     | SD126   | R100  | B2   |
|      | SA84  | Resin | 1A8  | 18   | 10    | 3   | 10    | SD126   | R100  | B2   |
|      | SA85  | Resin | 1A8  | 20   | 10    | 3   | 10    | SD126   | R100  | B2   |
|      | SA86  | Resin | 1A8  | 25   | 10    | 3   | 10    | SD126   | R100  | B2   |
|      | SA87  | Resin | 1A8  | 30   | 10    | 3   | 10    | SD126   | R100  | B2   |
|      | SA88  | Resin | 1A8  | 40   | 10    | 3   | 10    | SD126   | R100  | B2   |
|      | SA50  | Resin | 6A9  | 125  | 7     | 3   | 31.75 | ASD64   | R75   | B1   |
|      | SA51  | Resin | 6A9  | 125  | 6     | 1.5 | 31.75 | ASD91   | R75   | B1   |
|      | SA7   | Resin | 12V9 | 75   | 6     | 2   | 20    | ASD76   | R50   | B1   |
|      | SA41  | Resin | 12V9 | 100  | 6     | 1.5 | 31.75 | ASD107  | R75   | B1   |
|      | SA42  | Resin | 12V9 | 100  | 6     | 2   | 31.75 | ASD107  | R75   | B1   |
|      | SA52  | Resin | 1A1  | 100  | 4     | 3   | 20    | ASD30   | R100  | B4   |
|      | SA54  | Resin | 1A1  | 100  | 5     | 2   | 31.75 | ASD126  | R75   | B2   |
|      | SA23  | Resin | 1A1  | 150  | 12    | 3   | 31.75 | ASD126  | R75   | B2   |
|      | SA3   | Resin | 1A1  | 150  | 12    | 3   | 31.75 | ASD126  | R50   | B2   |
|      | SA38  | Resin | 1A1  | 150  | 12    | 3   | 31.75 | ASD30   | R50   | B2   |
|      | SA12  | Resin | 1A1  | 150  | 12    | 3   | 31.75 | CB126   | R75   | B4   |
|      | SA25  | Resin | 1A1  | 150  | 6     | 3   | 31.75 | ASD126  | R75   | B2   |
|      | SA79  | Metal | 1A1  | 150  | 10    | 5   | 31.75 | D126    | R50   | MB   |
|      | SA56  | Resin | 1A1  | 250  | 25    | 4   | 76.2  | ASD151  | R75   | B2   |
|      | SA4   | Resin | 1A1  | 300  | 12    | 3   | 127   | ASD126  | R75   | B2   |
|      | SA24  | Resin | 1A1  | 300  | 12    | 3   | 127   | ASD126  | R50   | B2   |
|      | SA55  | Resin | 1A1  | 300  | 12    | 3   | 127   | ASD126  | R100  | B4   |
|      | SA57  | Resin | 1A1  | 300  | 15    | 3   | 127   | ASD126  | R75   | B2   |
|      | SA58  | Resin | 1A1  | 350  | 12    | 3   | 127   | ASD126  | R100  | B2   |
|      | SA35  | Metal | 1A1  | 300  | 12    | 3   | 127   | D126    | C50   | MB   |
| SA70 | Metal | 1A1   | 300  | 12   | 5     | 127 | D126  | C50     | MB    |      |
|      | SA27  | Resin | 11A2 | 100  | 10    | 2   | 31.75 | ASD126  | R75   | B2   |
|      | SA80  | Resin | 11A2 | 100  | 10    | 2   | 31.75 | SD107   | R50   | B2   |
|      | SA8   | Resin | 11A2 | 100  | 10    | 2   | 31.75 | ASD126  | R50   | B2   |
|      | SA59  | Resin | 11A2 | 125  | 10    | 2   | 31.75 | ASD126  | R50   | B2   |

SUPER ABRASIVES

# DIAMOND & CBN WHEELS

## Grinding Parameters For Resin Bond Diamond & CBN Wheels

| Grinding Process                     | Parameter                |                             | For Diamond               | For CBN                  |
|--------------------------------------|--------------------------|-----------------------------|---------------------------|--------------------------|
| <b>Surface Grinding</b>              | Cutting speed (m/s)      |                             | 23-36                     | 28-33                    |
|                                      | Oscillation (m/min)      |                             | 8-15                      | 10-20                    |
|                                      | Depth of cut (mm)        | Roughing<br>Finishing       | 0.05-0.08<br>0.002-0.02   | 0.06-0.1<br>0.005-0.03   |
| <b>External Cylindrical Grinding</b> | Cutting speed (m/s)      |                             | 23-36                     | 28-33                    |
|                                      | Oscillation (m/min)      |                             | 5-15                      | 10-20                    |
|                                      | Workpiece speed (m/min)  | 10-20                       | 10-20                     |                          |
|                                      | Depth of cut/Infeed (mm) | Roughing<br>Finishing       | 0.03-0.05<br>0.003-0.02   | 0.04-0.08<br>0.004-0.03  |
| <b>Internal Grinding</b>             | Cutting speed (m/s)      | Resin Bond<br>Electroplated | 15-20<br>5-10             | 18-25<br>8-15            |
|                                      | Oscillation (m/min)      |                             | 2-3                       | 3-5                      |
|                                      | Workpiece speed (m/min)  | 25-30                       | 30-35                     |                          |
|                                      | Depth of cut/Infeed (mm) | Roughing<br>Finishing       | 0.003-0.02<br>0.003-0.008 | 0.003-0.03<br>0.003-0.05 |
| <b>Tool &amp; Cutter Grinding</b>    | Cutting speed (m/s)      | Wet<br>Dry                  | 18-25<br>15-18            | 25-35<br>18-30           |
|                                      | Table Speed (m/min)      |                             | 2-3                       | 3-5                      |
|                                      | Depth of cut/Infeed (mm) | 0.02-0.2                    | 0.02-0.3                  |                          |
| <b>Creepfeed Grinding</b>            | Cutting speed (m/s)      |                             | 25-30                     | 30-45                    |
|                                      | Feed Rate (mm/min)       |                             | 25-250                    | 50-750                   |
|                                      | Depth of cut             |                             | Total Allowance           | Total Allowance          |

## Guidelines For Dressing And Truing

| Bond             | Abrasive          | Dressing Method                                  |                                      | Remarks          |
|------------------|-------------------|--|--------------------------------------|------------------|
|                  |                   | Good   | Best                                 |                  |
| Resin Bond       | Diamond           | Dressing Stick<br>37C 220                        | Brake Truing Device<br>37C 220 Wheel | Always dress wet |
| Resin Bond       | CBN               | Dressing Stick<br>38A 220                        | Brake Truing Device<br>38A 220       | Always dress wet |
| Metal Bond       | Diamond and CBN   | Dressing Stick on vice                           | Profile or T/C grinder with wheel    | Wet or dry       |
| Vitrified Wheels | Diamond Low Conc. | Dressing Stick<br>39C - 2 grits finer than wheel | Nibs with traverse Dressing          | Always dress wet |
| Vitrified Wheels | CBN Low. Conc.    | Gem Dressers or nibs                             | Rotary Dressing                      | Always dress wet |
| Vitrified Wheels | CBN High Conc.    | —  | Rotary Truing                        | Always dress wet |
| CVSG Wheels      | CBN               | Single Pt.Gem quality Dressers                   | Rotary Truing                        |                  |

## Different Dressing Ratios for Bond Types

| Wheel Type       | Truing Operation | Truing Mode         | Wheel/Truer speed ratio<br>$q=V_r/V_s$ | Depth of Truing Pass | Truer Traverse Feed (mm/rev) |
|------------------|------------------|---------------------|--|----------------------|------------------------------|
| Resin Bond Wheel | Roughing         | Counter-directional | -0,5 to -0,75                          | 0,005 (max)          | 0,1 to 0,2                   |
| Resin Bond Wheel | Roughing         | Uni-directional     | 0,5 to 0,75                            | 0,003 (max)          | 0,1 to 0,2                   |