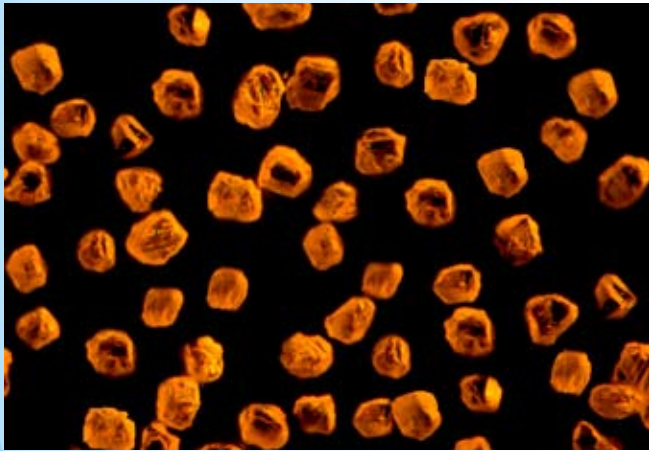


NEW METAL BOND MICRON



Shape

Enhanced Blocky

Recommended Bond Systems

| Resin | Vitrified | Metal | Single Layer |
|-------|-----------|-------|--------------|
| | • | | • |

MB-M1B Micron Size Availability

| Micron Sizes | 2-4 | 3-5 | 4-6 | 4-8 | 6-10 | 8-12 | 8-15 | 10-20 | 15-25 | 20-30 | 25-35 | 30-40 | 40-60 |
|--------------|-----|-----|-----|-----|------|------|------|-------|-------|-------|-------|-------|-------|
| MB-M1B | • | • | • | • | • | • | • | • | • | • | • | • | • |

WWSA Product Type

MB-M1B

Competitive Product

MBM*

Description

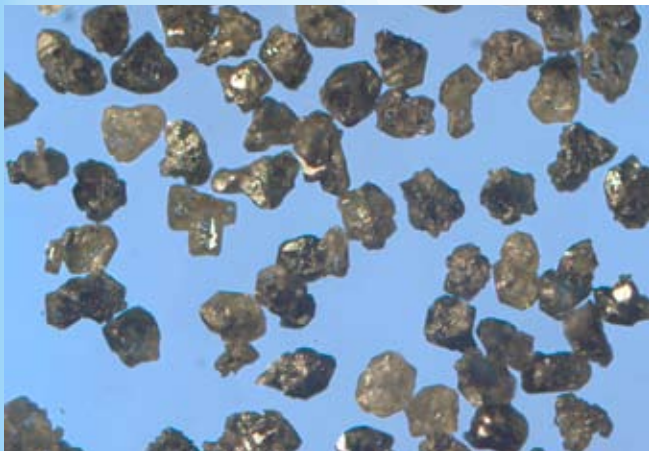
An enhanced blocky shaped metal bond micron that delivers a tightly controlled size, shape and surface properties. The presence of consistent uniform crystals makes the MB-M1B a superior micron product.

Applications

The MB-M1B provides excellent results for polishing or lapping glass, PCD, ceramics and chamfered grinding PCD/PCBN where surface finish quality is a critical factor.



NEW RESIN BOND MESH



Friability Strength

Very High

Shape

Semi Blocky

Recommended Bond Systems

| Resin | Vitrified | Metal | Single Layer |
|-------|-----------|-------|--------------|
| • | • | | |

RB-50 Mesh Size Availability

| US Mesh (FEPA) | 60/80 (D252) | 80/100 (D181) | 100/120 (D151) | 120/140 (D126) | 140/170 (D107) | 170/200 (D91) | 200/230 (D76) | 230/270 (D64) | 270/325 (D54) | 325/400 (D46) | 400/500 (D32) |
|----------------|--------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| RB-50 | | • | • | • | • | • | • | • | • | • | |
| RB-50 N56 | | • | • | • | • | • | • | • | • | • | |

WWSA Product Type

RB-50

Competitive Products

RVG-810*, PDA-211†

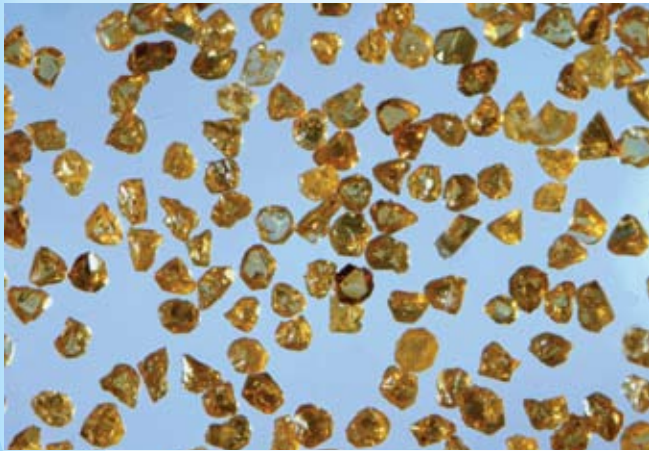
Description

WWSA's highest friability resin bond diamond. The crystal structure promotes microfracturing which is very effective in high precision grinding applications where surface finish and form retention are critical factors.

Applications

The RB-50 is recommended for ceramic grinding (such as bioceramics ie: knee and hip joint replacements), grinding cermets, grinding tungsten carbide and grinding technical ceramics with low grinding forces thereby increasing tool life.

NEW CUBIC BORON NITRIDE (cBN)



WWSA Product Type

cBN-AMB

Competitive Product

BZN-500*

Description

This gold color cBN has a very high strength and thermal stability with a blocky morphology. The AMB's micro-fracturing characteristics, very high thermal integrity and fracture strength collectively produce an aggressive cutting action while retaining the crystal in the bond as long as possible.

Applications

The AMB is recommended for single layer bonds and Nickel coated (60% by weight) for resin bond grinding systems. The AMB is widely used in single layer bond systems for grinding hardened tool steels, carbon based steels and Nickel based alloys.

Friability Strength

Very Low

Shape

Blocky

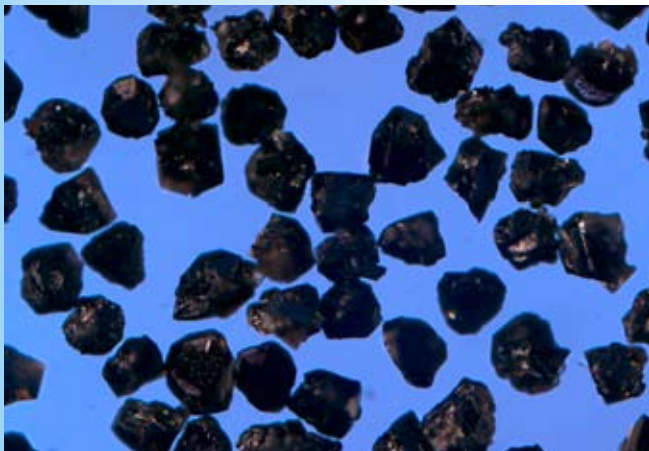
Recommended Bond Systems

| Resin | Vitrified | Metal | Single Layer |
|-------|-----------|-------|--------------|
| • | | • | • |

cBN-AMB Mesh Size Availability

| US Mesh (FEPA) | 60/80 (D252) | 80/100 (D181) | 100/120 (D151) | 120/140 (D126) | 140/170 (D107) | 170/200 (D91) | 200/230 (D76) | 230/270 (D64) | 270/325 (D54) | 325/400 (D46) | 400/500 (D32) |
|----------------|-----------------|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| cBN-AMB | • | • | • | • | • | • | • | • | • | • | |
| cBN-AMB N60 | • | • | • | • | • | • | • | • | • | • | |

NEW CUBIC BORON NITRIDE (cBN)



WWSA Product Type

cBN-BMO

Competitive Products

TYPE-I*, ABN-200†

Description

Black, friable, with an irregular shaped morphology. The BMO's semi blocky morphology produces controlled micro fracturing particles along with free cutting characteristics to enhance wheel life and surface finish.

Applications

The BMO is widely used in vitreous bond systems for automotive applications such as camshaft and crankshaft grinding, as it provides a consistent tool life and surface finish. When Nickel coated (60% by weight) the BMO is also very effective in grinding high speed steel.

Friability Strength

High

Shape

Blocky

Recommended Bond Systems

| Resin | Vitrified | Metal | Single Layer |
|-------|-----------|-------|--------------|
| • | • | | • |

cBN-AMB Mesh Size Availability

| US Mesh (FEPA) | 60/80 (D252) | 80/100 (D181) | 100/120 (D151) | 120/140 (D126) | 140/170 (D107) | 170/200 (D91) | 200/230 (D76) | 230/270 (D64) | 270/325 (D54) | 325/400 (D46) | 400/500 (D32) |
|----------------|-----------------|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| cBN-BMO | • | • | • | • | • | • | • | • | • | • | • |
| cBN-BMO N60 | • | • | • | • | • | • | • | • | • | • | • |