

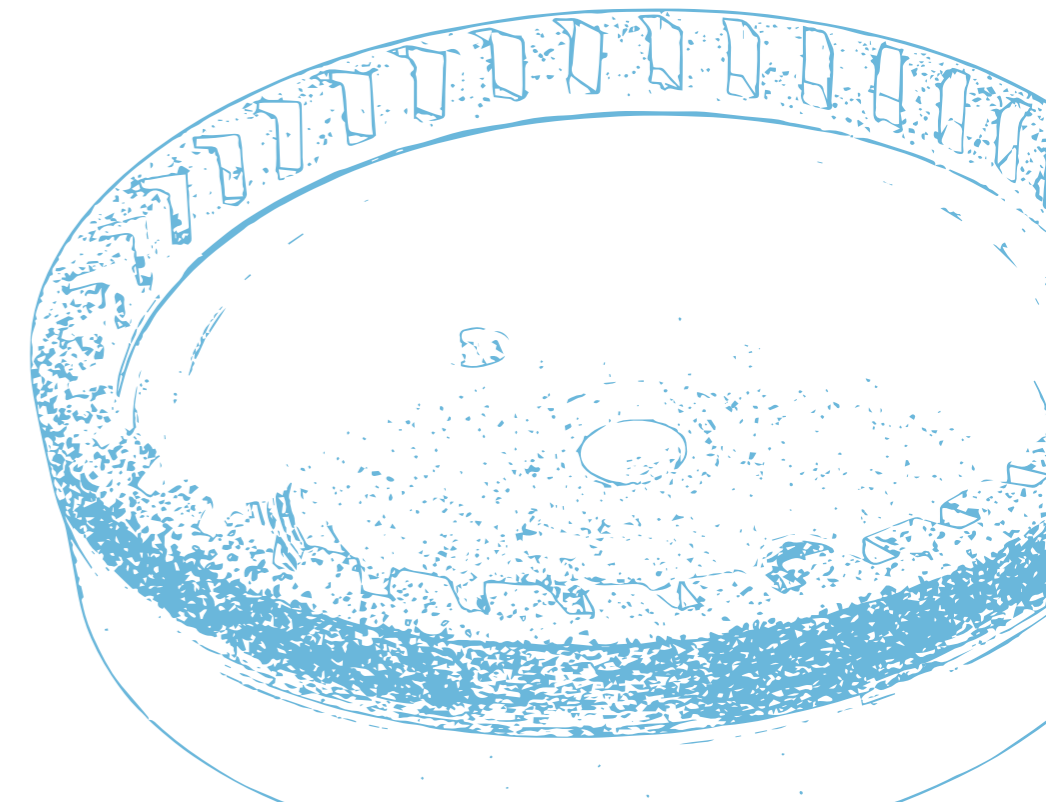
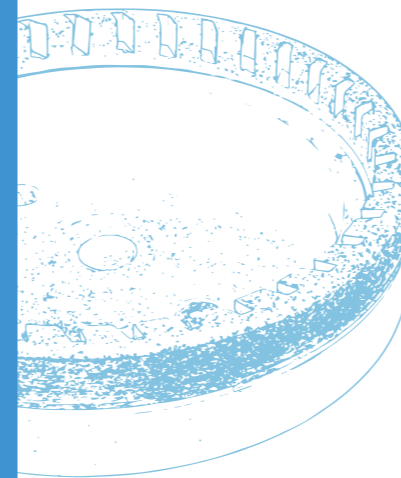


G M D  
G R D  
G M T  
G M D P



## ■ WHEEL GRIT

Details Make Perfect



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## CR GEMS

CR GEMS specializes in the development and manufacturing of quality superabrasives and PCD. Our main products, such as diamond grit, micro diamond powder, PDC cutters/PCD blanks, big mono crystal diamond, are widely used in the industries of construction, machinery, photovoltaic, semiconductor, optics, jewelry, aerospace, and oil & gas, etc. Customer oriented product and solution could be available.



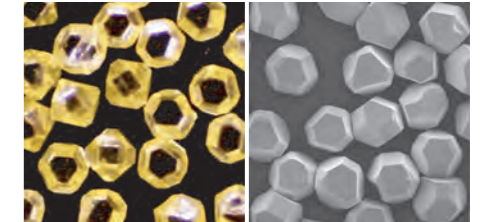
# GMD Series

GMD series diamonds are produced from selected raw material, and self-developed synthesis technology. Nine grades are available for metal bond tool processing glass, semiconductor. etc.



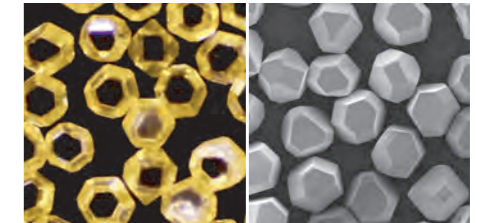
## GMD 650

Hexa-octahedral shape. Excellent transparency, purity, impact resistance and thermal stability. It is applicable for grinding of strong impact and precision surface requirement, for example, the grinding of precision Zirconia, Sic, etc.



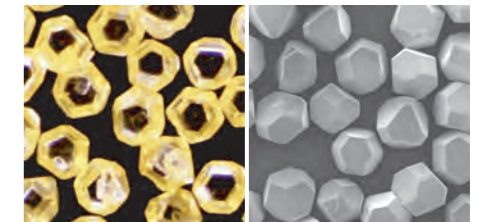
## GMD 630

Regular shape, relatively high transparency and purity, great impact resistance and thermal stability. It is applicable for high impact and material removal rate, such as car glass drilling.



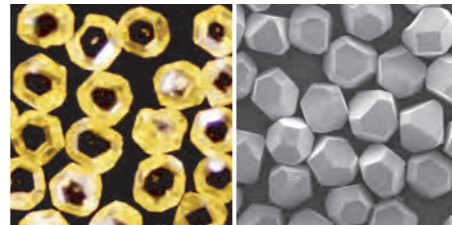
## GMD 610

Relatively regular shape, high purity, thermal stability and sharpness. It is applicable for relatively high material removal rate, such as car glass edge grinding.



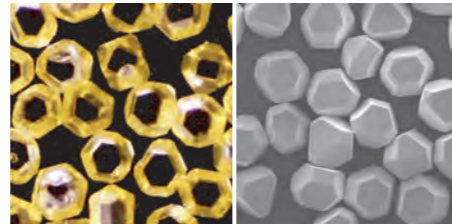
### GMD 450

GMD450 is crystal of medium high toughness, and relatively regular shape. The crystal crushing strength is moderate, which ensures good life span and high sharpness. It could be widely used for glass processing.



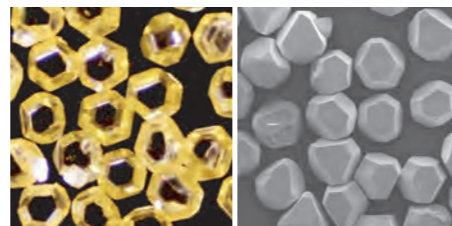
### GMD 430

GMD430 is of medium toughness, its impact resistance is relatively lower than GMD450, but sharper than GMD450. With excellent life span and sharpness, it is applicable for glass and crystal grinding.



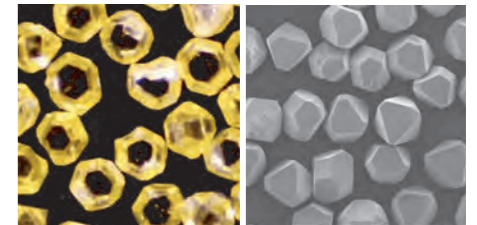
### GMD 410

It consists of large portion of blocky diamond, and some rate of angular crystals. It is applicable for relatively low impact resistance, such as the grinding of glass, crystal, and magnetic material.



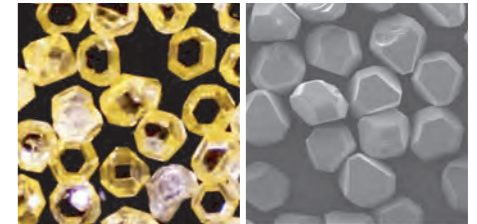
### GMD 250

GMD250 is a combination of blocky and angular grits. The angular shape it contains could help to improve the retention and sharpness.



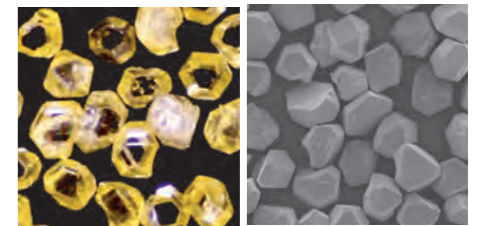
### GMD 230

GMD230 contains more angular crystal than that of GMD250. Its impact resistance is also lower than GMD250, but with higher sharpness. It is applied in the condition of stricter request on sharpness, such as vitrified and electroplated grinding wheel.

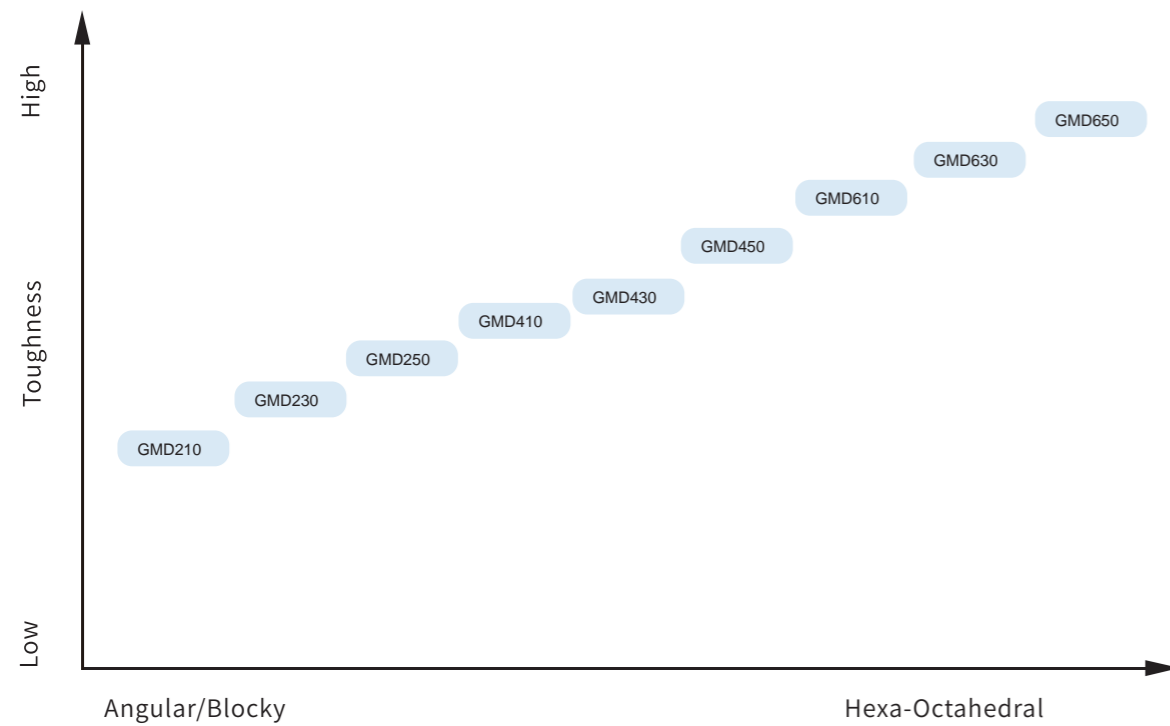
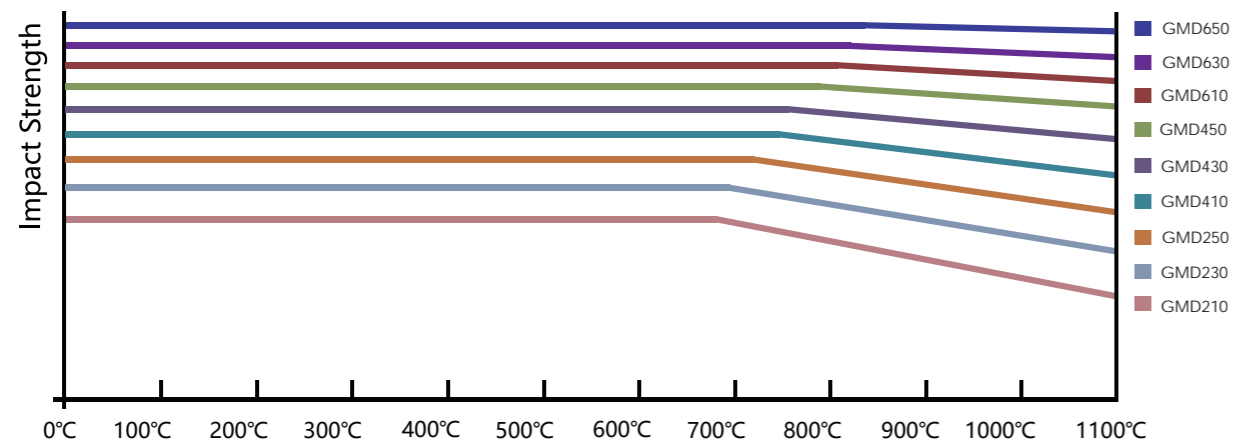


### GMD 210

GMD210 has lots of sharp edges, it is suitable for the lower load grinding and large area contact processing applications.



### Impact Strength & Thermal Stability.



### Available Specifications

Size Grade	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	500/600
GMD210	*	*	*	*	*	*	*	*	*	*	*
GMD230	*	*	*	*	*	*	*	*	*	*	*
GMD250	*	*	*	*	*	*	*	*	*	*	*
GMD410	*	*	*	*	*	*	*	*	*	*	*
GMD430	*	*	*	*	*	*	*	*	*	*	*
GMD450	*	*	*	*	*	*	*	*	*	*	*
GMD610	*	*	*	*	*	*	*	*	*	*	*
GMD630	*	*	*	*	*	*	*	*	*	*	*
GMD650	*	*	*	*	*	*	*	*	*	*	*

Note: Customized specifications can be designed on request.

### Application Recommend

Type	Tools	Application
GMD610-GMD650	Grinding wheel for precision cutting and grooving, Drill bit, Edging wheel for automobile glass	Semiconductor, Glass, Carbide alloy, Magnetic material
GMD410-GMD450	Edging wheel for glass, Metal bond grinding wheel, Grinding disc	glass, ceramic, gemstone, carbide alloy, magnetic material
GMD210-GMD230	Metal bond grinding wheel, Electroplated drill bit, Bevel polishing wheel	Glass, Ceramic, Magnetic material

## Coatings Brief

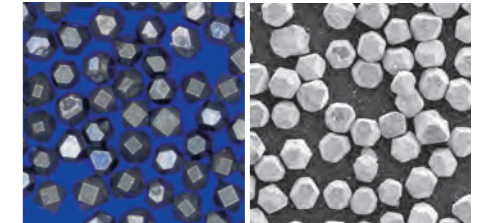
Coating generally improves the wettability of the diamond, making the retention between the diamond and the bond stronger. At the same time, the coating can also protect the diamond from the corrosion of materials such as metal powder in the formulation, thereby prolong the life of the tool.

Coating Types	Description	Coating Level
Ti	Titanium	1%-6%
Tc	Titanium	3%-8%
Cr	Chromium	2%-6%
Si	Silicon	2%-6%
Cu	Copper	30%、50%、56%
Co	Cobalt	
TNE	Nickel Alloy (smooth)	
TNA	Nickel Alloy (rough)	

Note: The coating and coating level can be customized.

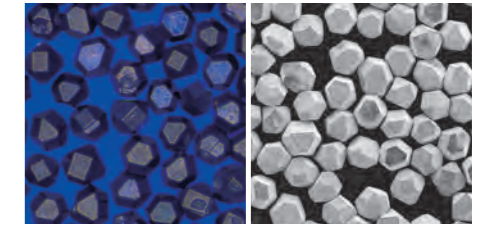
### GMD-Ti

Titanium coated products. A dense carbonized layer-TiC is formed on its surface to prevent the corrosion of Fe, Cr and W at high temperatures during the diamond tool manufacturing process, thereby providing a wider sintering range. This coating can improve the retention between the diamond and the bond, prevent the diamond from peeling off, and extend the life of the diamond tools.



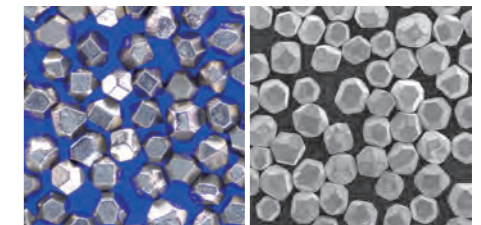
### GMD-TC

TC coating is similar to Ti, but the coating level is increased so as to expand the sintering scope.



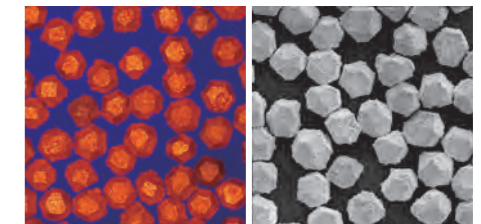
### GMD-TNE

TNE is a product coated with nickel alloy. The surface of this kind of coated diamond is smooth. The tool service life could be improved by the strong retention between the nickel layer and the bond. The coating can well protect the diamond from being eroded, and increase the working height of the grits at the same time, so as to improve cutting efficiency and reduce power consumption.



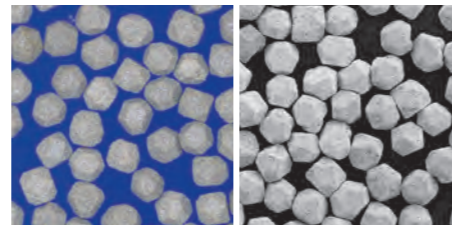
### GMD-Cu

GMD-Cu, the Copper coating can enhance retention between diamond and bond, as well as improve the tools' heat emission property. It is applicable for soft bonded tools.



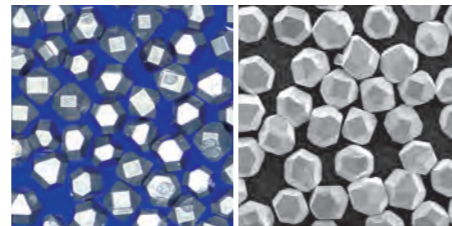
### GMD-TNA

Another product coated by nickel alloy. Because of gully structured surface, the specific surface would be enlarged, and the retention between diamond and bond will be improved. The tool life and cutting efficiency could also be improved, then power consumption could be reduced.



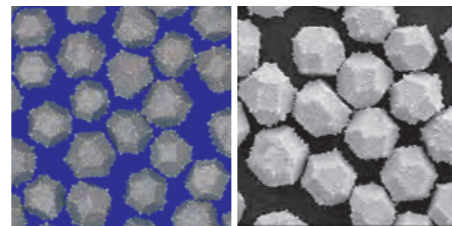
### GMD-Cr

GMD-Cr is chromium coating. Chromium has excellent surface wettability and affinity on diamond. During sintering, a layer of  $Cr_3C_2$  is formed between diamond and metal bond, which significantly strengthens the retention. Chromium coating is applicable for high demanding metal bond tools.



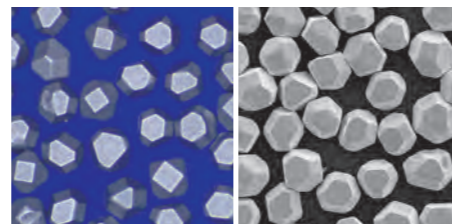
### GMD-Co

The coating of cobalt could increase the retention between diamond and bond, improve the sharpness of the tools effectively and extend the tool's life.



### GMD-Si

GMD-Si, silicon coating improves diamond's thermal stability, wear resistance, and protects the diamond against iron corrosion. Furthermore, Si coating can strengthen the retention between the bond and the diamond, and improve tools' heat emission property. Hence it can greatly expand diamond's application conditions and extend the tools' life.



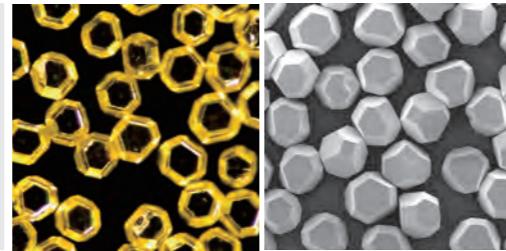
## GMDP Series

The GMDP series is designed to meet customers' stricter request, especially in the industry of high precision application. Such kind of industry is very critical on the abrasives. To meet such demand, GMDP is manufactured by material of very high purity, and sorted with rigorous procedure. GMDP has 9 grades to meet various applications.





The negative influence caused by the impurity content could be greatly reduced and thus to bring a longer tool life span, while to keep good outline of the tools. Diamond of uniform shape ensures uniform grinding effect during processing, and thus to ensure the processing accuracy.



## GRD Series

GRD series diamond consists of mono-crystal diamond and poly-crystalline diamond. GRD10 and GRD20 are mono-crystalline diamond of great sharpness. They are applicable for resin and vitrified bond tools. GRD40 and GRD60 are polycrystalline diamond consists of numbers of fine grits. Such kind of structure ensures fantastic sharpness.

### Available Specifications

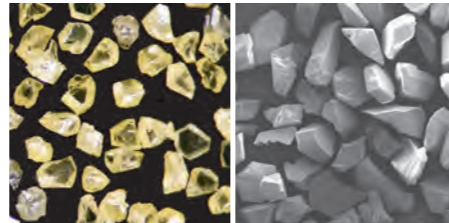
Size Grade	80/100 (D181)	100/120 (D151)	120/140 (D126)	140/170 (D107)	170/200 (D91)	200/230 (D76)	230/270 (D64)	270/325 (D54)	325/400 (D46)	400/500	500/600
GMDP210	*	*	*	*	*	*	*	*	*	*	*
GMDP230	*	*	*	*	*	*	*	*	*	*	*
GMDP250	*	*	*	*	*	*	*	*	*	*	*
GMDP410	*	*	*	*	*	*	*	*	*	*	*
GMDP430	*	*	*	*	*	*	*	*	*	*	*
GMDP450	*	*	*	*	*	*	*	*	*	*	*
GMDP610	*	*	*	*	*	*	*	*	*	*	*
GMDP630	*	*	*	*	*	*	*	*	*	*	*
GMDP650	*	*	*	*	*	*	*	*	*	*	*

Note: Customized specifications can be designed on request.



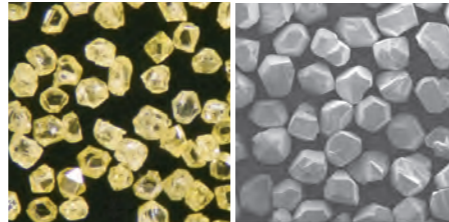
### GRD10

It is mono crystal of needle shaped and angular diamond, and thus very sharp. The grits are applicable for low impact and high material removal rate, such as the grinding of hardened alloy.



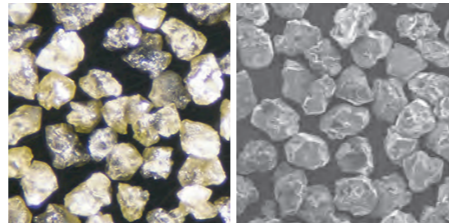
### GRD20

The grits are mainly mono crystal of blocky shape. The relatively high impact resistance makes it more suitable for higher impact than GRD10. It could be applicable for resin and vitrified bond tools.



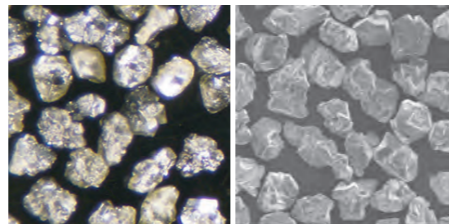
### GRD40

Poly-crystalline, blocky shape, outstanding fragility, micro fractured structure. Suitable for grinding of low load, fast speed and precision.



### GRD60

Poly crystalline, blocky shape, tougher than GRD40. Fresh cutting edges could be created during grinding. It is applicable for application of high efficiency and wide contact area.



## Available Specifications

Size	Grade	GRD10	GRD20	GRD40	GRD60
40/45	(D426)	*	*	-	-
45/50	(D356)	*	*	-	-
50/60	(D301)	*	*	-	-
60/70	(D251)	*	*	-	-
70/80	(D213)	*	*	-	-
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		*	*	*	*
500/600		*	*	*	*

**Note:** Customized specifications can be designed on request.

## Application Recommend

Type	Tools	Application
GRD10, GRD20	Cutting blade, Resin bond grinding wheel	Semiconductor, Glass, Ceramic, Carbide alloy, Magnetic material
GRD40, GRD60	Great sharpness resin grinding wheel	Gemstone, Semiconductor, Glass, Ceramic

## Coatings Brief

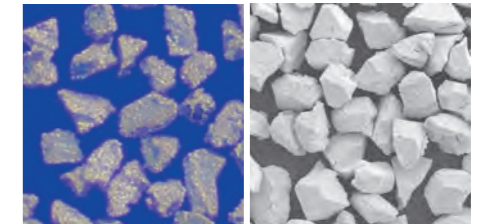
GRD abrasives exhibit better performance with different coatings. Generally, the wettability of the diamond can be improved, so that the retention between the diamond and the bond is stronger. Meanwhile, the coatings improve heat dissipation, and reduce workpiece surface heat damage.

Coating Types	Description	Coating Level
NA	Nickel (Rough)	30%、56%、60% ...
NE	Nickel (Smooth)	30%、56%
Cu	Copper	50%

**Note:** The coating and coating level can be customized.

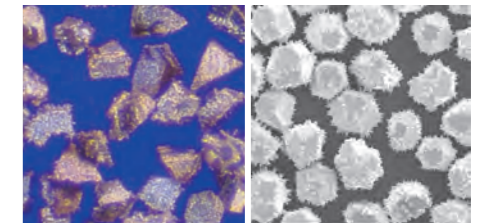
### GRD-NA

Nickel coated product, with coating level of 30%, 56% and 60%, it is suitable for resin bond. Such kind of coating improves retention and thermal dissipation. These two improvements help to extend the life of tools. Coating level could be customer-oriented.



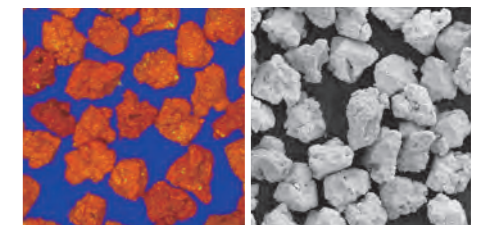
### GRD-NE

It is nickel coating with coating level of 30%, 56%, which will help to improve the retention of abrasives and bond. With the improvement of the retention, life of the tools would be extended in accordance. Great thermal conductivity helps to improve the surface finish.



### GRD-CU

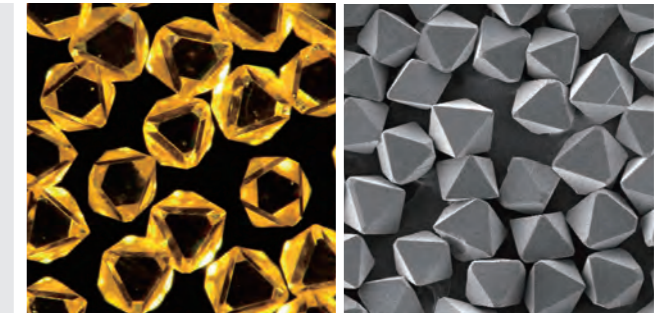
A chemical copper coated product with high sharpness, it greatly improves the heat dissipation of wheel, offers prolonged tool life. It is suitable for general dry grinding application.



# GMT Series

The GMT series triangle diamond is characterized with octahedral crystal shape, with eight {111} faces, sharp edges and sharp tips. Meanwhile, GMT diamond has high purity, very low magnetism, regular and uniform crystal shape as well as highly-centralized grain size. Therefore, it has relatively high SCT & impact toughness.

GMT diamond is ideal for high efficiency and high precision applications, especially for orderly arraying tools. It brings accurate and uniform dimension, as well as fine surface finish to the processed objects. For example: cutting blade and CMP pad conditioner for sapphire, LED glass wafer and silicon, etc.



## Available Specifications

GMT-5+ octahedral diamond has stable quality, its performance is highly praised by customers. By further special treatment of diamonds, GMT-5P minimizes static electricity and magnetism, meeting the stringent requirements of electronics and other industries.

Size	Grade	GMT-5+	GMT-5P
60/70	(D251)	*	*
70/80	(D213)	*	*
80/100	(D181)	*	*
100/120	(D151)	*	*
120/140	(D126)	*	*
140/170	(D107)	*	*
170/200	(D91)	*	*

**Note:** Customized specifications can be designed on request.

