



RVG* Diamond Products

REAL VALUE GRINDING



RVG* Diamonds – Six Sigma Controlled Quality

The RVG diamond family is engineered to provide optimum performance in a wide range of nonferrous materials. Its properties extend from defined tough blocky crystals to highly friable irregular shapes. These characteristics coupled with a proprietary Six Sigma controlled manufacturing process, provide the most comprehensive and consistent series of diamond grinding products on today's market.

Superior Performance in All Bond Systems – Proven Success on Hard-to-Grind Materials

RVG diamond achieves optimum performance in all bond systems: from phenolic resin to high temperature polyimide resin and vitreous bonds. Challenging materials such as tungsten carbides, glass and technical ceramics are no match for RVG diamonds. Due to its ability to achieve considerably higher material removal rates in either wet or dry grinding modes as well as excellent surface finishes, RVG diamond proves to be highly cost effective. Significant increases in product-

ivity and workpiece quality can be achieved, if RVG diamond products are utilized following the recommended application guidelines.

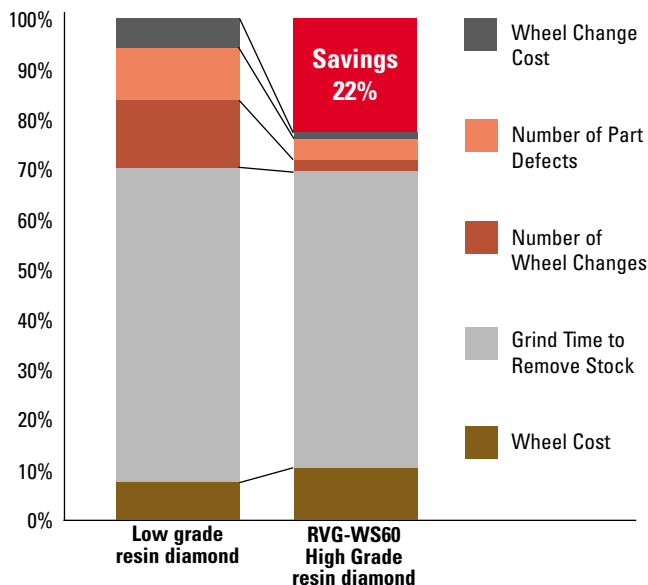
Real Value Grinding

Even today the price to performance value measurement often is simply calculated as wheel cost per part. Even by utilizing such a simple measure, RVG diamond often shows an advantage. However, it does not fully depict the total cost benefit achieved. Many other hidden costs are directly impacted by the performance of superabrasive diamond. Some are direct grinding costs, others are downline process or simply indirect grinding costs. Real Value Grinding with RVG diamond maximizes productivity within the entire grinding process:

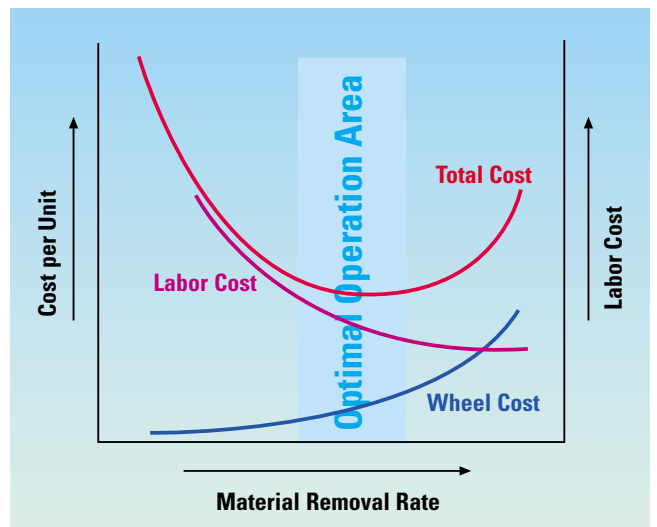
Advantages of Real Value Grinding

- Increased parts per hour / cycle time reduction
- Reduced scrap rate
- Less tool changes
- Reduced machine maintenance / higher machine uptime
- Labor cost savings
- Increased production capacity without capital investment
- Enhanced overall productivity

Total Manufacturing Cost Comparison



Optimized Total Grinding Costs



One of the most significant cost factors in a grinding operation is the relationship between wheel performance and the costs incurred to attain these performance capabilities. Tools made with RVG diamonds help the end user to remain consistently in an optimal operation area.

Leader in Diamond Coating Processes

Diamond Innovations continues to be recognized as the premier coating expert for industrial diamond grinding products. A variety of high-tech coatings is offered

to enhance diamond performance. The success results from the combination of first grade crystals and a superior coating technology.

Nickel Coating

Recommended for use in phenolic resin bonds and polyimide bonding systems to improve the mechanical retention characteristics of the diamond. Improves grinding wheel life and surface finish.

Copper Coating

Provides improved chemical adhesion as well as mechanical retention of RVG diamond crystals. Very effective in dry grinding applications, taking heat out of the cutting zone and back into the wheel rim.

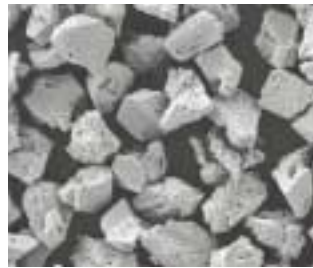
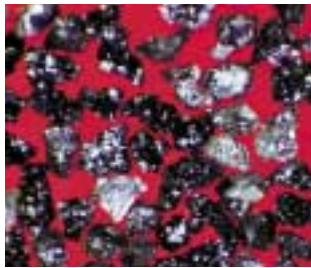
Spiked Nickel Coating

The extremely spiky surface texture achieves superior retention of RVG diamond. Excellent heat dissipation allows most aggressive material removal rates.

Silver Coating

Silver shows the best thermal conductivity of all coating materials. The spiky silver coating not only enhances bond retention but adds lubricity and dissipates heat effectively away from the grinding zone. Proven success in applications where straight oil coolants are in use.

Medium Toughness and Friability



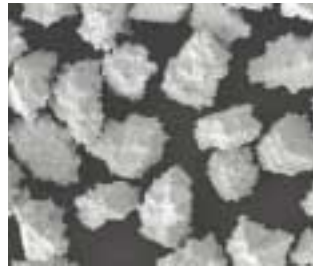
RVG Diamond

Uncoated

Ph

V

Irregularly shaped, medium friable crystals. Irregularity enhances bond retention while friability enhances self-sharpening and free cutting properties. Recommended for wet or dry tungsten carbide grinding and difficult to grind technical ceramics, such as SiN and SiC.



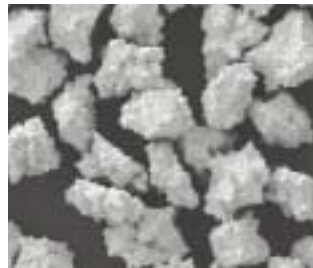
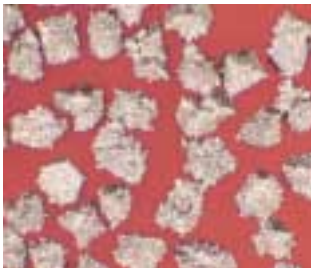
RVG NS56 Diamond

Spiky nickel based coating
Coating level 56 wt %

Ph

Pol

Engineered to expand the bond retention advantage of spike nickel coatings to all general purpose applications. RVG NS56 is also universally applicable in all wet grinding applications. The performance advantage offered by the spike coating can be realized in both phenolic and polyimide bond systems.



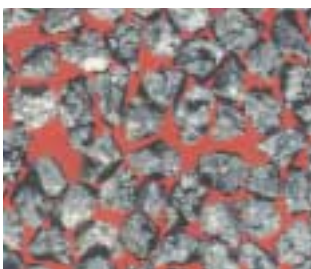
RVG W Diamond

Nickel based alloy coating
Coating level 56 wt %

Ph

Pol

Specially designed and globally successful in wet grinding applications. RVG W diamond is universally applicable and the most widely used diamond in phenolic bonds on the market today. Enhances bond retention and heat dissipation, resulting in prolonged tool life.



RVG W30 Diamond

Nickel based alloy coating
Coating level 30 wt %

Ph

Effective compromise between free cutting RVG diamond and longer life RVG W diamond. Ideal for applications where a balance between long life and low power consumption is desired. Widely used in tungsten carbide tool grinding.

Medium Toughness and Friability



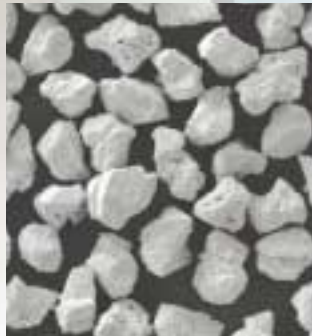
RVG D Diamond

Copper based alloy coating
Coating level 50 wt %

Ph

Pol

Originally engineered for dry grinding. Due to its excellent thermal conductivity it is widely used in demanding wet and dry tool room applications, where temperature control is a must.



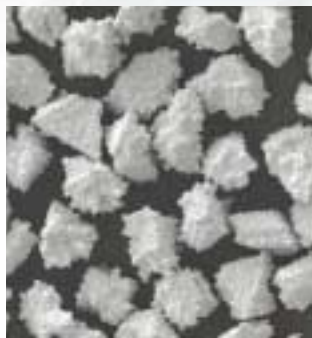
RVG AG50 Diamond

Silver Coating, Coating level 50 wt %

Ph

Pol

Specially designed for tungsten carbide flute grinding with straight oil coolant. Friable, irregularly shaped diamond. Spiky silver coating enhances bond retention, adds lubricity and dissipates heat quickly. Can eliminate carbide cracking, smoke generation and short wheel life when straight oil is used as coolant. Best results at low wheel speeds. Drastically prolonged tool life and significantly decreased power requirements.



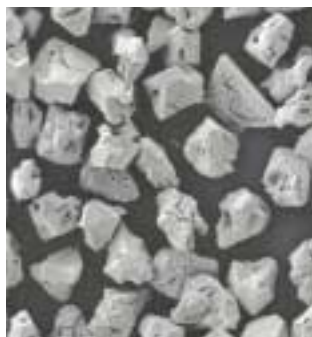
RVG WS60 Diamond

Spiky nickel based coating
Coating level 60 wt %

Ph

Pol

Specially designed coating for improved bond retention in wet grinding applications (water based coolants recommended). Thermally highly resistant metallic spikes provide extremely long life in severe applications. Excellent thermal stability ideal for applications with long contact lengths, i.e. flute grinding of tungsten carbide drills, face grinding of technical ceramics.



RVG 2 Diamond

Uncoated

Ph

V

RVG 2 is an uncoated medium grade resin bond diamond. The product was designed for applications that require better performance than economy grade diamond. The product offers controlled fracturing and self sharpening properties that lead to excellent free cutting.



RVG 2-W Diamond

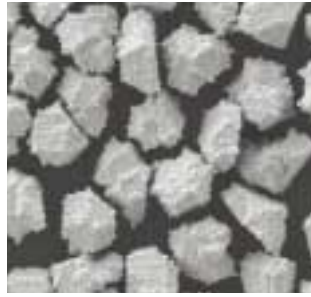
Nickel based alloy coating
Coating level 56 wt %

Ph

Pol

The coated version of our medium grade resin bond diamond. Produced with an improved Nickel coating, RVG2-W is perfect for wet grinding of ceramics and tungsten carbides. The enhanced coating improves bond retention, resulting in long tool life and consistent performance.

High Toughness

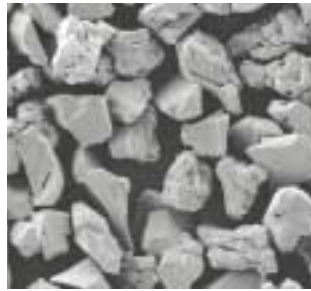
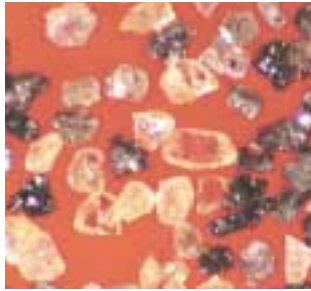


CSG II Diamond

Nickel based alloy coating
Coating level 55 wt %

Ph V

This very tough diamond reduces wheel loading and minimizes workpiece burn when grinding tungsten carbide/steel combinations. Due to its toughness and impact resistance, CSG II is highly recommended for heavy duty grinding and applications with interrupted cut.

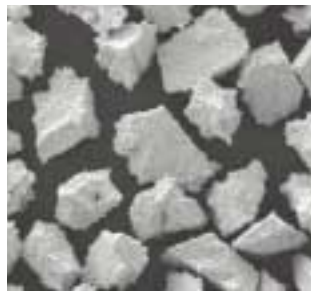
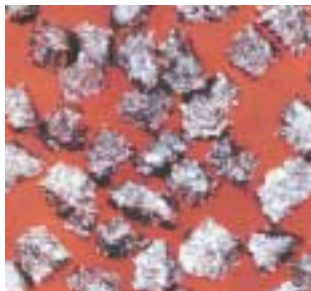


RB-I Diamond

Uncoated

Ph Pol

Best suited for applications where free cutting capabilities, low cutting forces and thermal stability are key. Excellent results in tungsten carbide and PCD grinding.



RB-II Diamond

Nickel based alloy coating
Coating level 56 wt %

Ph Pol

Blocky crystal form, provides long tool life in applications where high material removal rates in hard to grind materials are a priority. Highly recommended for tungsten carbide and PCD grinding, delivers very good results even with interrupted cuts.



RB-II 30 Diamond

Copper based alloy coating
Coating level 30 wt %

Ph Pol

Similar to RB-II, but with lower coating level. Provides lower grinding energy and heat. Ideal where a balance of wheel life and grinding energy is critical.



RB-D Diamond

Copper based alloy coating
Coating level 50 wt%

Ph Pol

Base product is RVG RB, a blocky crystal with excellent performance in dry grinding or wet polyimide, tungsten carbide and PCD grinding.



V Vitreous Pol Polyimide Ph Phenolic

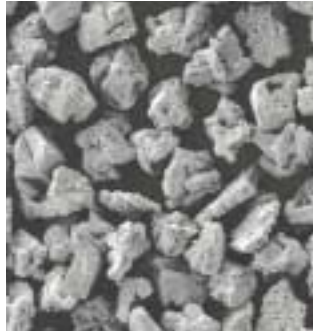
High Friability



RVG 800 Diamond
Uncoated

Ph V

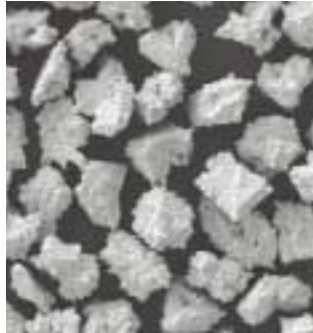
Superior free cutting capabilities due to controlled microfracturing mode of crystals. Suitable for applications with demanding tolerance requirements. Consistent finishes and accurate geometries are achieved in grinding of tungsten carbides, new materials, cermets, technical ceramics.



RVG 810 Diamond
Uncoated

Ph V

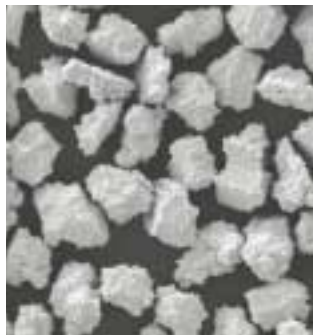
Ideal for high precision grinding in demanding materials with stringent quality requirements. Extremely effective where wheel life and/or form retention are critical.



RVG 880 Diamond
Nickel based alloy coating
Coating level 56 wt %

Ph Pol

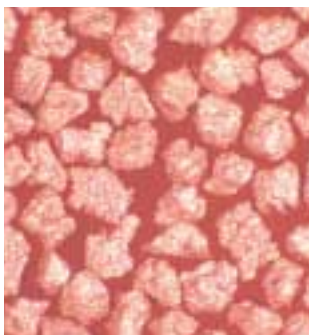
Offers even more improved free cutting and fracture characteristics, provides extended wheel life coupled with low grinding power. Textured coating enhances crystal retention and extracts heat from the grinding interface. Highly suitable for wet grinding of cemented carbide and ceramic workpieces.



RVG 890 Diamond
Nickel based alloy coating
Coating level 56 wt %

Ph Pol

Most productive crystal in the RVG family. Widely used, excellent free cutting characteristics and controlled micro fracturing mode. Provides superior surface finishes and unmatched part to part consistency in technical ceramics, cermets and new hard to grind materials.

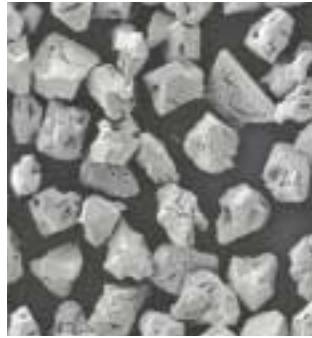


RVG 810 D Diamond
Copper based alloy coating
Coating level 50 wt %

Ph Pol

Highly friable crystal with Cu coating for ideal performance in dry phenolic or wet polyimide grinding of carbides and PCD.

RVG SPR Diamonds – Your Choice When Abrasive Cost is Key



SPR Diamond
Uncoated

Ph V

Economy grade grinding product for less demanding applications where abrasive cost is the primary consideration. The friability of SPR enables controlled diamond fracturing, wheel self-sharpening and free cutting action.



SPR N Diamond
Nickel based alloy coating
Coating level 56 wt %

Ph

Superior Diamond Innovations metal coating adds texture to the surface of the diamond, increases the crystal's heat capacity and heat dissipation. Increased diamond retention and prolonged tool life are additional benefits.



SPR N 30 Diamond
Nickel based alloy coating
Coating level 30 wt %

Ph

Similar to SPR N, but with a 30 % coating level. Reduces grinding energy and heat generation, with a minimal reduction in wheel life.



SPR Cu50 Diamond
Copper coated
Coating level 50 wt %

Ph Pol

Copper coating increases thermal conductivity of the wheel rim. Improved heat dissipation, prevents thermal workpiece damage in dry and wet grinding applications.

Machine Tool Characteristics

RVG diamond works best in powerful, rigid machine tools. Grinding with superabrasives is optimized at much higher rates than conventional grinding. The machine must be able to withstand the increased operating conditions.

RVG Diamond Product Selection Guidelines

Bond Systems													
Phenolic	CSG II RVG 880	RB-I RVG 890	RB-II RVG 890	RB-II 30 RVG AG50	RB-D SPR	RVG SPR N	RVG W SPR N30	RVG W30 RVG 2	RVG D RVG 2-W	RVG WS60 RVG NS56	RVG 800 SPR Cu50	RVG 810	RVG 810D
Polyimide	RB-I RVG 2-W	RB-II RVG NS56	RB-II 30	RB-D	RVG W	RVG D	RVG WS60	RVG 880	RVG 890	RVG 810D	RVG AG50	SPR Cu50	
Vitreous	CSG II	RVG	RVG 800	RVG 810	SPR	RVG 2							

Availability Chart

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
CSG II	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RB-I	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RB-II	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RB-II 30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RB D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG NS56	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG W	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG W30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	S
RVG D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG WS60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG 800	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG 810	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG 810 D	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG 880	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG 890	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
RVG 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG 2-W	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RVG AG50	n/a	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
SPR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPR N	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPR N 30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SPR Cu50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a

S = Special Please consult your sales representative.

Diamond Innovations' quality systems are registered under ISO 9002.

Order Example: Product name, US mesh size or FEPA designation: RVG-W30 120/140 or RVG-W30 D126

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