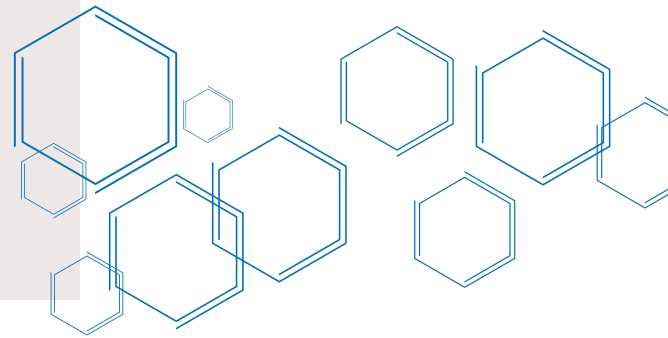


Achieve up to 3X Longer Wheel Life in Tungsten Carbide Flute Grinding

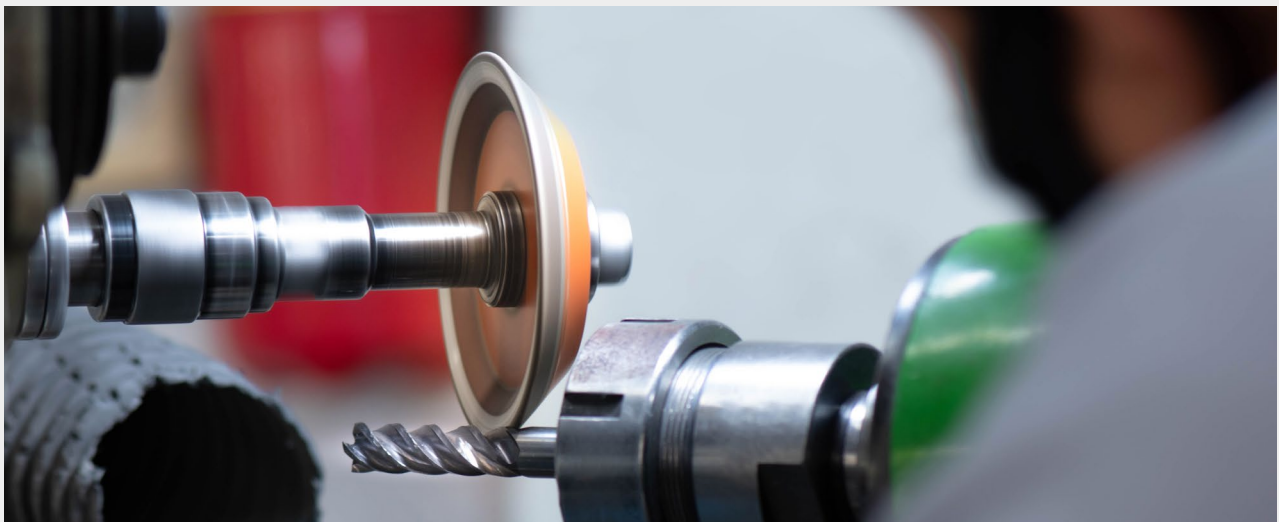


Advances in WC Flute Grinding

Toolmakers are turning to hybrid-bond grinding wheels to offer customers a solution that produces better performance and reduces operational costs for tungsten carbide (WC) flute grinding. Standard polyamide wheels struggle to achieve the efficient grinding performance of flutes due to rapid wear, necessitating frequent replacements that add to expenses. WC flute grinding is expensive and complex. It involves multiple steps from rough grinding to finishing, each step requiring precision to achieve a desired geometry and surface finish. Due to the flexibility and wear within standard polyamide wheels, it is difficult to maintain precise shapes and achieve high material removal rates, forcing toolmakers to turn to other options.

Hybrid grinding wheels combine the best attributes of multiple bond types, such as resin and metal, to create a wheel optimized for durability and cutting performance. Due to their higher material removal rates, form retention, heat management, and efficiency, **hybrid bond wheels deliver up to 10 times better grinding performance than standard polyamide wheels**. The outstanding performance of hybrid bond wheels has driven a dramatic shift in the market from wheel manufacturers.

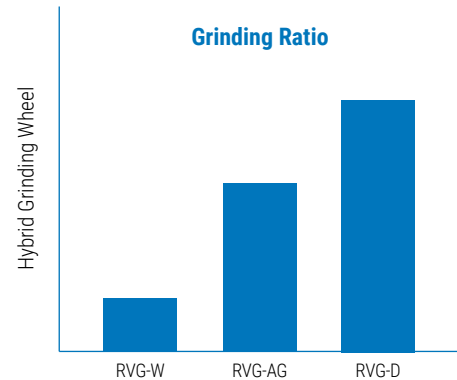
As market demand transitions to hybrid bond grinding wheels, toolmakers can differentiate grinding performance on hybrid wheels by utilizing the correct materials. Hyperion Materials & Technologies hypothesized that diamond materials could maximize the performance of hybrid grinding wheels and set out to determine the best solution for wheel manufacturers.



Testing RVG-D and RVG-AG

Determined to enhance the grinding ratio performance of hybrid grinding wheels, Hyperion produced WC flute grinding simulation tests on hybrid bond wheels alongside conventional polyamide resin wheels utilizing copper (RVG-D) and silver (RVG-AG) coatings on its RVG diamond. RVG-D (Cu-50 wt.%) and RVG-AG (Ag-50 wt.%) combine the exceptional hardness and abrasiveness of diamonds with the excellent thermal conductivity of copper and silver to produce a coating material that dissipates heat generated during grinding. The effective heat dissipation reduces the risk of thermal damage to the grinding wheel and workpiece.

During testing, Hyperion discovered that hybrid-bond grinding wheels **lasted 3 times longer delivering higher output with better grinding performance** with the use of the copper and silver-coated diamonds. Compared to a standard grinding wheel, a hybrid-bond grinding wheel with copper and silver-coated diamonds can produce up to **30 times longer lifespan with fewer dress cycles and higher throughput**.



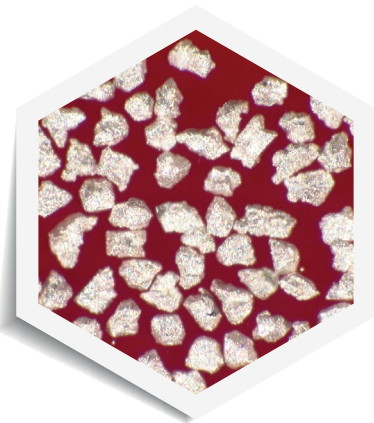
Gather more insights, reviewing the testing data and lab results. [Learn More](#)

How RVG-D and RVG-AG Enhance Hybrid Wheel Grinding Performance

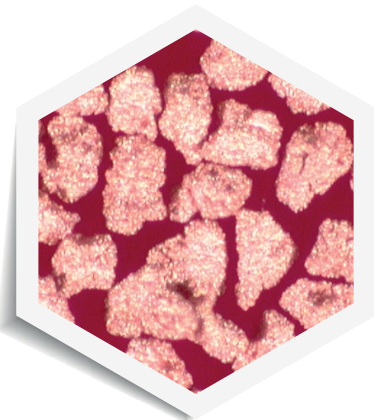
The superior performance of RVG-D and RVG-AG in hybrid grinding wheels is directly related to the thermal conductivity of the premium-coated diamond crystals. During WC flute grinding, the wheel exhibits a large arc of contact measuring approximately 27mm, which generates a significant amount of heat. To mitigate the adverse effects of this heat, copper and silver coatings effectively transmit the heat away from the grinding zone, thereby preventing the degradation of diamond particles in the bond systems used in a hybrid grinding wheel.

Copper and silver's lower friction coefficient reduces the number of dynamic forces and energy required for grinding. With lower forces, RVG-D and RVG-AG coatings help minimize deflection and potential thermal damage during high feed rates. By providing a stronger and more durable connection between the diamond particles and the resin matrix, RVG-D and RVG-AG improves the adhesion of the diamond particles to the resin, reducing the likelihood of premature diamond pullout during grinding. The enhanced bond retention helps hybrid wheels maintain their shape and sharpness for longer, leading to more consistent grinding performance.

As an additional benefit, RVG-AG increases lubricity between the diamond particles and the grinding wheel by creating a smoother interface. With enhanced lubricity, toolmakers reduce friction and heat during grinding. As a result, hybrid grinding wheels experience less wear and tear, maintaining their effectiveness and longevity.



RVG-D, copper coated abrasives that prevent degradation of diamond particles in the bond systems.



RVG-AG, silver coated abrasives that minimize potential thermal damage during high feed rates.

The Impact of Longer-Lasting Hybrid Wheels in Flute Grinding Applications

With copper and silver-coated diamonds on hybrid-bond grinding wheels, toolmakers can substantially enhance performance in WC flute grinding, enabling them to develop effective tooling that streamlines the end-user's operations by boosting tool efficiency and improving quality and sustainability.

Toolmakers can consistently deliver higher quality and more precise tools with durable hybrid-bond grinding wheels. The enhanced durability of hybrid-bond grinding wheels ensures wheels maintain their shape and performance over extended periods. With improved quality control associated with hybrid-bond grinding wheels, toolmakers help end-users reduce scrap rates, maximize resource efficiency, and enhance overall performance and competitiveness in the market.



Summary

As the toolmaking industry transitions to more hybrid-bond grinding wheels than standard polyamide wheels, toolmakers must continue to innovate grinding wheel performance to achieve the highest throughput quality. Hyperion's innovative copper and silver-coated diamonds deliver excellent tool life on hybrid grinding wheels, achieving 3 times better-grinding performance. RVG-D and RVG-AG enable toolmakers to streamline operations and improve grinding quality under challenging applications such as tungsten carbide flute grinding.

 About the product www.hyperionmt.com/synthetic-mesh-diamonds

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