



# Gem Diamond Products

## *Diamond Lapping Compounds*



Advances in engineering technologies, and increased demands for better luster and surface finish have given rise to requirements for new products and technologies where high precision and excellent surface finish are called for. The answer to these evolving requirements of the engineering and lapidary industry is our range of precision graded synthetic diamond lapping compounds.

These lapping compounds are manufactured using the toughest and most tightly graded diamond powders for aggressive cutting action and exceptional surface smoothness. These are available in Low, Standard, and High concentrations, in tightly graded sizes ranging from 0.25 microns to 80 microns.

To meet varied requirements regarding lubricity and work-piece contamination issues, lapping compounds are available with Oil Soluble, Water Soluble and Universally Soluble carrier jellies.

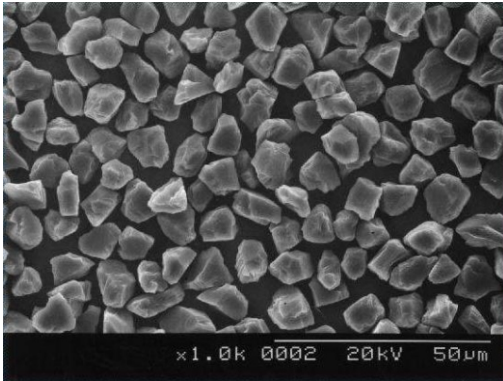
- ❖ Oil Soluble Compounds provide the greatest flexibility in carrier chemistry, recommended for applications such as controlled lapping of carbide drawing dies, cold heading dies and other standard polishing applications.
- ❖ Water Soluble Compounds are used where petroleum contamination is forbidden. These are carefully engineered to ensure the highest lubricity and thermal consistency.
- ❖ Universally Soluble compounds have been developed to combine the advantages of both oil and water soluble compounds, increasing the versatility of use.

We also offer our services in altering the properties of our vehicles to match your requirements for consistency, lubricity, viscosity, stability, thermal properties, should your requirements fall outside of our standard range of products.

Gem Lapping Compounds are available in 5 and 10 g syringes for easy dispensing, as well as in 50 g, 100 g, 500 g and 1000 g containers where bulk packing is required.

## **Graded Synthetic Diamond Micron Powder**

With advances in polishing technologies, arise requirements where improved surface finish and luster is of prime importance. The answer to these evolving requirements is a dynamic target of graded micron powders. Since a lapping compound is only as good as the microns it uses, our Superabrasive Powder Division is dedicated to generating the highest quality diamond powders.



Beginning with sourcing of the best diamond feed available worldwide, the powders are subject to a thorough cleaning and purification process to remove the last traces of impurities. The powders are then graded using state-of-the-art machinery and then subjected to rigorous quality control procedures using sophisticated equipment such as the Leeds and Northrup Microtrac Laser Particle Size Analyzer and computerized Image Analysis techniques to ensure they are of the highest standard and eliminate the probability of even that last tiny scratch to ensure that your products have the last word in surface finish.

The advantage of using tightly graded diamond powders is made apparent by the following illustration. The first figure shows the performance of ungraded/broadly classified diamond powder when applied to a work-piece. As shown, at the plane of contact, the larger particles of diamond are the only ones that are being used, resulting in increased stress on the diamond crystals which ultimately causes their failure, and also increases the probability of scratch formation due to a limited number of crystals effecting material removal. Figure 2 shows the multiple points of contact, which are generated by the use of graded diamond micron powder. This not only reduces the stress on the individual diamond crystals resulting in longer life but also results in improved surface finish as all the crystals evenly effect material removal, thus reducing the susceptibility of scratch formation.







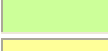


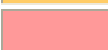
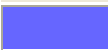



***Fig. 1: Illustrating Limited Points of Contact Ungraded Diamond Powder Resulting in Scratch Formation***



***Fig. 2: Illustrating Multiple Points of Contact using Graded Diamond Powder Resulting in Improved Surface Finish.***

Our range of premium graded micron diamond powder and lapping compounds are available in every conceivable size fraction. However, we acknowledge while that our standard product line is sufficient for most applications, your requirements may be unique to your production process, be it lapping or honing or polishing. We commit our every resource to provide you with the graded micron powder of your specification. Our team of committed and highly motivated engineers is dedicated to make our range of graded micron powders the final answer to your surface finish requirements.

### Color Code Chart for Diamond Lapping Compounds

Size	Application	Color
<i>0 - 1/4 <math>\mu</math></i>	<i>Mirror Finish for Precision Applications</i>	
<i>0-1/2 <math>\mu</math></i>	<i>Ultra-fine Finish for Metallographic specimens</i>	
<i>0-1 <math>\mu</math></i>	<i>Very High Finish on Steel and Soft Metals.</i>	
<i>0-2 <math>\mu</math></i>	<i>High Finish on Steel, Gauges, etc</i>	
<i>1-3 <math>\mu</math></i>	<i>Finishing of Tungsten Carbide Dies, Sapphires, Rubies etc.</i>	
<i>2-4 <math>\mu</math></i>	<i>Pre-finishing of Tungsten Carbide Dies, Sapphire, Rubies etc.</i>	
<i>4-8 <math>\mu</math></i>	<i>Rapid finish and General Purpose Polish on Sapphire, Agates, Steel.</i>	
<i>8-12 <math>\mu</math></i>	<i>Pre-polishing of Steel, Medium Polish on Tungsten Carbide</i>	
<i>15-25 <math>\mu</math></i>	<i>Fast Lapping of Steel and Tungsten Carbide</i>	
<i>30-40 <math>\mu</math></i>	<i>Rapid Stock Removal and Fast Lapping on Steels and Carbides.</i>	
<i>40-60 <math>\mu</math></i>	<i>General Purpose Stock Removal on Hard Metals</i>	
<i>60-80 <math>\mu</math></i>	<i>Roughing of Hard Metals with Rapid Material Removal.</i>	
<i>80-100 <math>\mu</math></i>	<i>Roughing of Hard Metals with Rapid Material Removal</i>	