



Phone: 407-696-7450

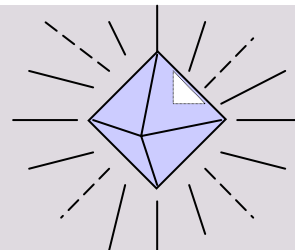
Fax: 407-696-7465

Gator Diamond. Inc.

1270 Belle Ave. Suite 106

Winter Springs, FL 32708

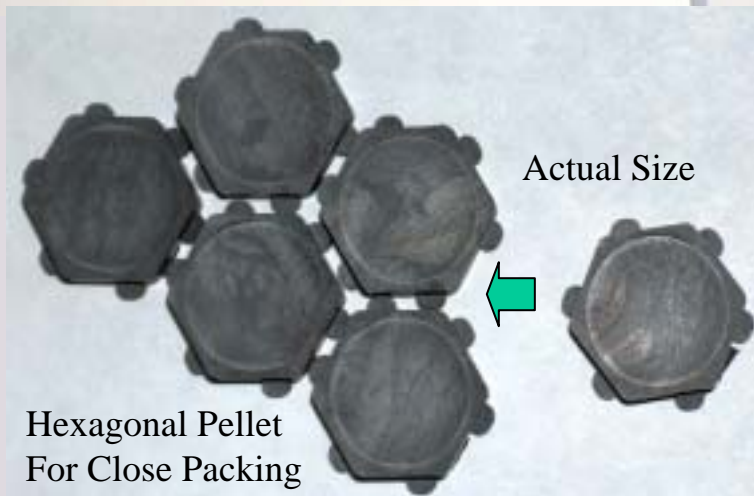
www.GatorDiamond.com



DIAMOND IMPREGNATED LAPPING PELLETS



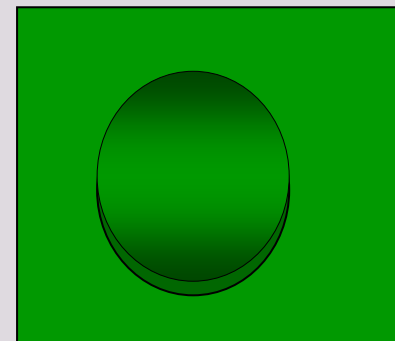
Fine Grinding for Glasses
To Very Hard Materials



Actual Size

Hexagonal Pellet
For Close Packing

Techniques for Very
Flat Surfaces



PELLET SELECTION GUIDE

WHY SWITCH TO FINE GRINDING WITH GDI PELLETS

Lower Cost of Ownership.

After adding up ALL the cost of abrasive powder, pellets are more attractive.

Cycle time tests comparing pellets with loose abrasive on ceramic parts removing 0.010”/side on a standard 24” machine; 60 part load, <5 psi at +40 rpm top & -25 rpm bottom.

GDI Pellet w/active dressing
4 to 5 minuets

Pellet w/lub only
15 to 20 minutes

Loose abrasive (SiC)
30 to 45 minutes

Shorter Cycles mean fewer machines, less floor space, less labor and less maintenance

- In addition to higher removal rates, GDI Fixed Abrasives give lower Ra’s resulting in faster polishing cycles, frequently cutting polishing times in half.
- GDI makes a line of pellets that work at pressures below 1 psi for glass and quartz.

PELLET SELECTION GUIDE

GDI is the only known factory that tailors a pellet to the pressure of the machine

Pressure verses Cut Guide (in pounds per square inch)

	Pressure				Pressure		
	Low <1 to 3	Medium 3 to 10	High 10 to 30		Low <1 to 3	Medium 3 to 10	High 10 to 30
Glass, soft Crystals				Fused Silica, Quartz			
Fine Cut (or small parts)	F-Gls-L	F-Gls-M	F-Gls-H	Fine	F-Qtz-L	F-Qtz-M	F-Qtz-H
Standard Cut	S-Gls-L	S-Gls-M	S-Gls-H	Standard	S-Qtz-L	S-Qtz-M	S-Qtz-H
Aggressive Cut (or large parts)	A-Gls-L	A-Gls-M	A-Gls-H	Aggressive	A-Qtz-L	A-Qtz-M	A-Qtz-H

	Pressure				Pressure		
	Low <1 to 3	Medium 3 to 10	High 10 to 30		Low <1 to 3	Medium 3 to 10	High 10 to 30
Ceramic, Soft Sapphire				SiC, c-Axis Sapphire			
Fine Cut (or small parts)	F-Cer-L	F-Cer-M	F-Cer-H	Fine	F-Sap-L	F-Sap-M	F-Sap-H
Standard Cut	S-Cer-L	S-Cer-M	S-Cer-H	Standard	S-Sap-L	S-Sap-M	S-Sap-H
Aggressive Cut (or large parts)		A-Cer-M	A-Cer-H	Aggressive		A-Sap-M	A-Sap-H

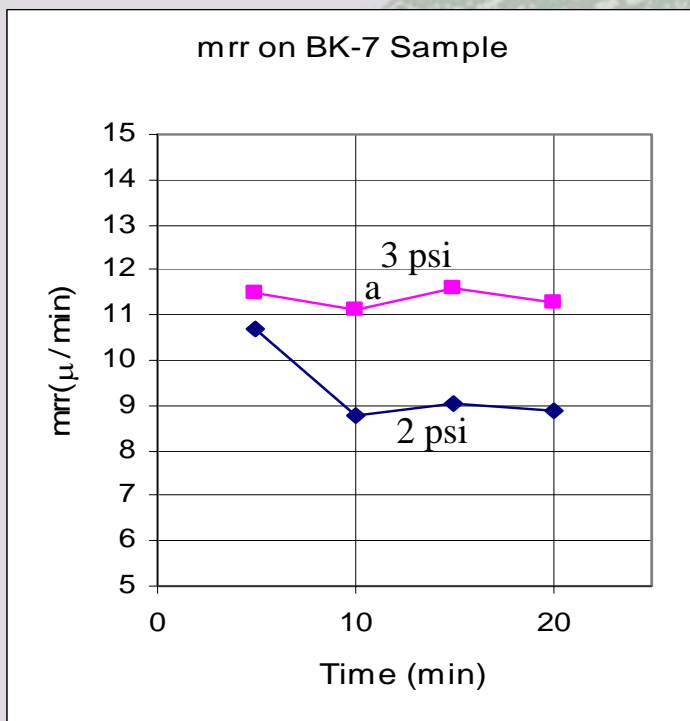
GDI's test results on metals needed improvement. However - good news - GDI has been developing a vitreous pellet for metals. At this time all pellets offered by GDI are of the Resin type.

Any pellet matrix may be supplied in either the 16mm by 6mm Cylindrical or the larger Hexagonal version - 21mm flat to flat. The Hexagonal pellet may be mounted in a "near" solid surface pattern by removing the index tabs (see front page). Gator Diamond also has a line of epoxy formulas that work well with glass and quartz products. These can be formed into almost any shape or size surface.

GDI can shape grinding heads to low radius using temperature and pressure for precision parts.



Gator Diamond has a process for grading the pellet hardness across the plate so the parts stays flatter for extended periods of operation.



Lapping with S-GIs-L pellet

Charts similar to the one shown here are available for many materials and are available on request.

Ask GDI engineers if they can run a sample of your material.

Ask Gator Diamond for the Users Manual. It is very useful when getting started with pellets.

Several factors control the properties of a diamond impregnated lapping pellet:

- The pellet matrix: metal, vitreous, resin - there are several choices for each
- The pellet abrasive: diamond (many friabilities), CBN, others
- The hardness of the pellet - usually a choice of fillers or a change of the matrix
- Proprietary ingredients for the bonding of the abrasive, internal lubricants, etc.

From the users point of view, there are also several criteria, some of which are:

- The required final surface roughness, Ra (usually in microns or micro-inches).
- The material removal rate (mrr, usually in microns or mils per minute).
- How often the pellets need dressing for planarization and/or sharpening.
- Special requirements for curved or optically flat surfaces.
- Small parts requiring close pack (HEX Pellet) or large parts (low pressure).
- A cost advantage - the pellet must make (or save) money for the user.
- A reliable supplier with a broad range of pellets who will work closely with them, particularly in the start-up phase of lapping with diamond pellets.



Curved pellet Plate
To generate Spherically
Ground Surfaces.



Grinding Ratio
Test Plate

The main questions Gator Diamond needs to have answered are:

- What is the material to be lapped?
- What are the lapping speed and surface roughness requirements?
- How much pressure can be applied to the pellet surface? --- Utmost Importance.

Gator Diamond engineering can then recommend an appropriate pellet.

Gator Diamond is prepared to:

- Mount, dress and planarize pellets in a turn-key operation.
- Supply un-mounted pellets.
- Supply GDI process for mounting pellets.
- Supply the base plate (platen) fabricated to the customers specifications.
- Visit the customer's plant to help with setting up an operation with pellets.