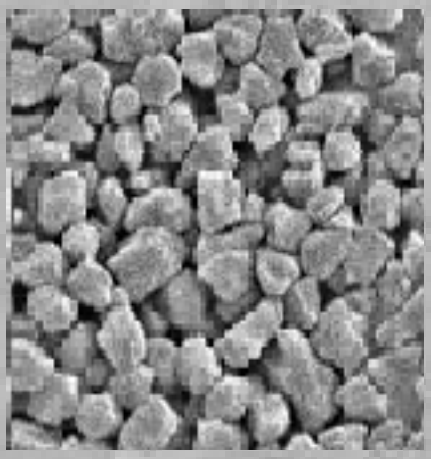
High Friability Polycrystalline Diamond

Polycrystalline diamond abrasives are manufactured by transforming graphite into diamond via a high temperature and high pressure explosion process. The resulting particle is comprised of numerous microcrystallites bonded together. Particle sizing is accomplished by milling or grinding the aggregate particle.

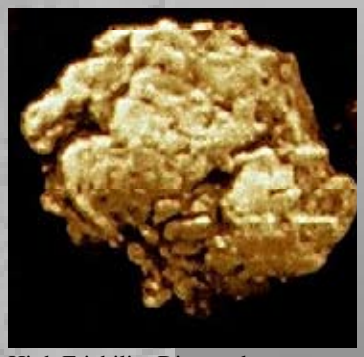


HSEM (High Resolution Scanning Electronic Microscope) of 0.05-0.2 mcm at 10,000 times magnification

Polycrystalline diamond as compared to synthetic and natural monocrystalline diamond provides better surface finishes and higher removal rates for precision surface finishing. The features and advantages of polycrystalline diamond include the following:

- -Higher cutting rates
- -Very uniform surface finish
- -More uniform particle size distribution
- -Higher removal rates (self sharpening abrasives)
- -Harder/tougher particles
- -Blocky shaped
- -Hexagonal microcrystallites (equally hard in all directions)
- -Extremely rough surface (more cutting points)
- -Surface area 300% greater than monocrystalline diamond

In addition to particle size, the friability of polycrystalline diamond plays an important role for precision surface finishing. High friability diamond continually breaks down during the polishing operation and therefore produces better surface finishes with improved cut rates. The friability of the diamond is controlled by the amount of force used in the crushing operation.



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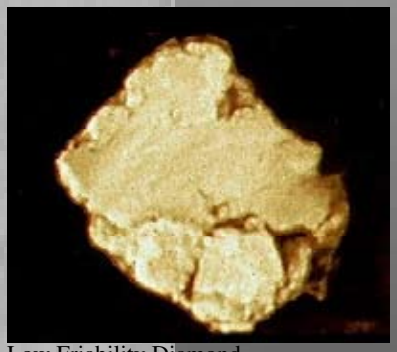

Low Friability Diamond

PC Diamond

-Glycol based
-Glycerin based
-Water based
-Oil based

Polycrystalline Diamond

Diamond	Particle size (microns)	Carrier	Viscosity	Part No.
Polycrystalline (submicron)	0.05- <1.0	-Glycol	15-20 xps	PC series
		-Glycerin	15-50 cps	PGY series
		-Water	1 cps	PCW series
		-Oil	15-30 cps	PCO series
Polycrystalline	1-45	-Glycol	15-20 xps	PC series
		-Glycerin	15-50 cps	PGY series
		-Water	1 cps	PCW series
		-Oil	15-30 cps	PCO series

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