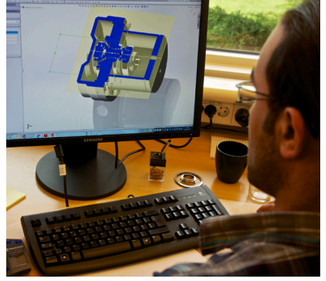

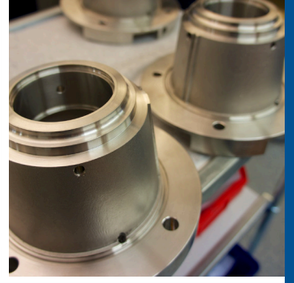

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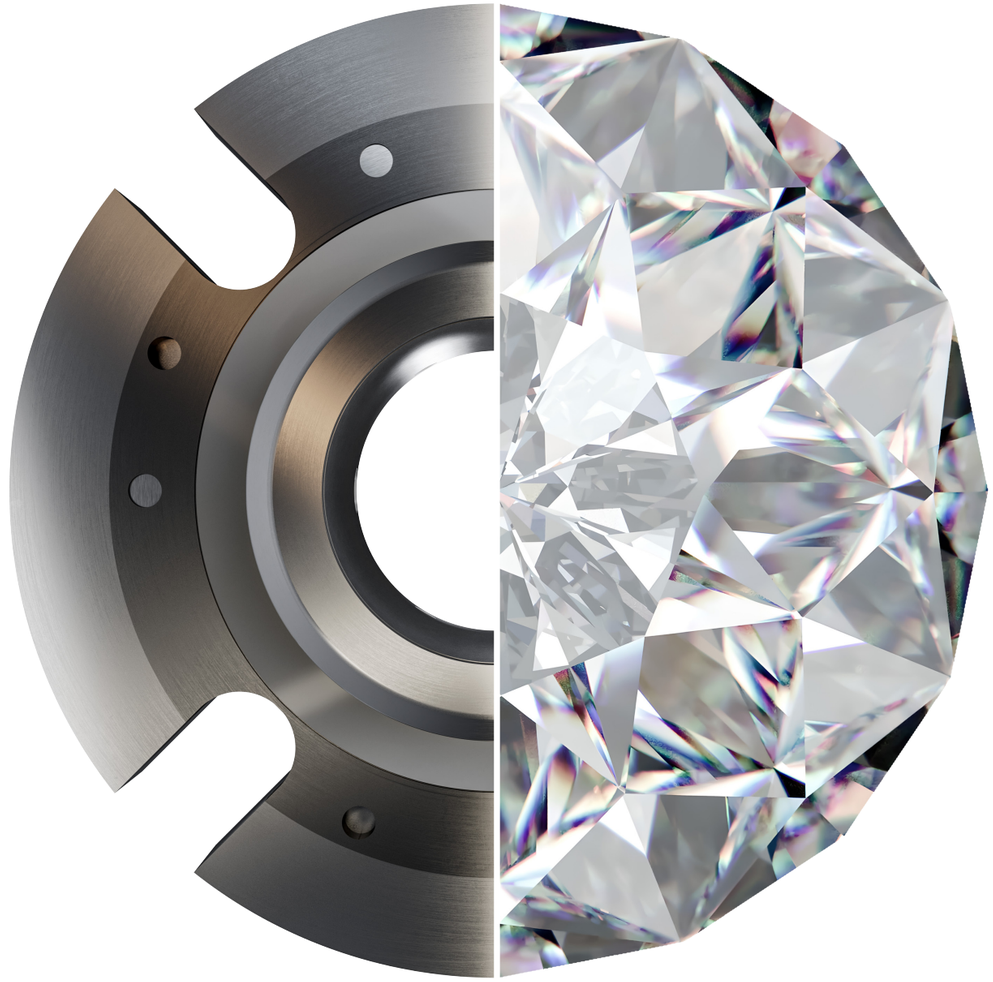


Diamond Face Coatings

Longer life and new applications for Mechanical Seals

Crystalline - (HF-CVD) Diamond Coating

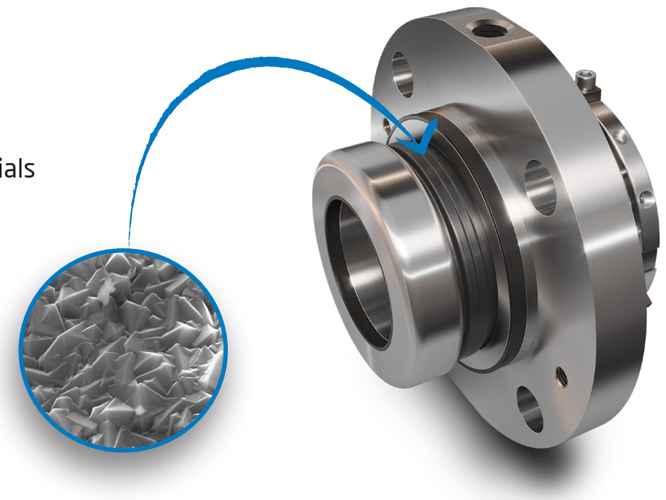
- HF-CVD = Hot Filament Chemical Vapor Deposition Process comprised of pure carbon
- Hardest face coating (10,000+ Hv)
- Can only be applied to Silicon Carbide

HLD - (PA-CVD) Diamond Coating

- PA-CVD = Plasma Assisted Chemical Vapor Deposition Process
- Comprised of carbon, hydrogen
- Very hard (4,000 Hv)
- Can be applied to a wider range of materials (SiC, TC, SS, others)

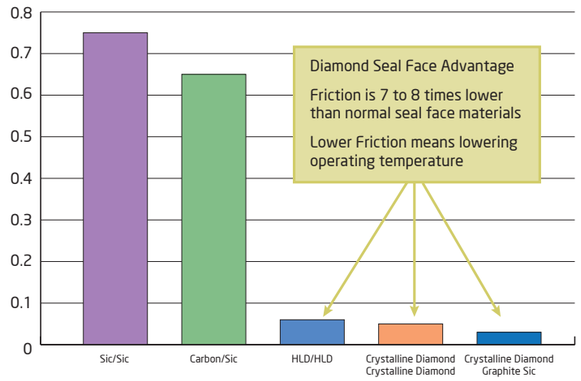
DLC - Diamond Like Carbon

- PA-CVD
- Comprised of carbon, hydrogen, graphite
- Very hard (2,000 Hv)
- Can be applied to a wider range of materials

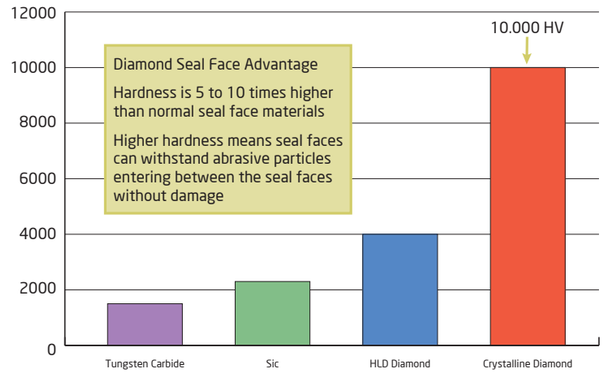


	Manufacturing						Seal Application			
	Available Substrates	Composition	Application	Adhesion	Hardness (Kgf/mm2)	Cost	P/V Rating	Abrasion Resistance	Coefficient of Friction	Hygienic
Crystalline	Silcar (Sintered, Reaction Bonded)	Carbon	HF-CVD	1	10,000+ Hv	$$$	1	1	0.025-0.1	GRAS
HLD	Silcar (Sintered, Reaction Bonded), TC, Carbon, SS, Aluminum (and others)	Carbon, Hydrogen	PA-CVD	1	3,500-4,000 Hv	$$	1	2	0.025-0.1	GRAS
DLC	Silcar (Sintered, Reaction Bonded)	Carbon, Hydrogen, Graphite	PA-CVD	2	1,800-2,000 Hv	$	2	3	0.1-0.2	GRAS

Coefficient of Friction



Hardness



Diamond Coating is an extremely hard surface.
There are four purposes for use of Diamond Surfacing on mechanical seal faces.

Dry Running/Poor lubrication

Conventional face materials can be damaged in seconds when ran dry. Because of the low coefficient of friction, Diamond Coated faces will tolerate poor lubrication and/or dry running (performance depends upon P/V).

Abrasive Applications

Often a double or single seal with flush is used in abrasive applications and there are times when flush is not available or product contamination is not permitted. Diamond Coating allows for better performing seals in abrasive applications.

High Pressure/Velocity (P/V)

In extreme high-pressure and/or high-speed applications Diamond Coating can help offset the negative effects of high closing force and high frictional heat generation on the mating faces due to its low coefficient of friction.

Electro-Corrosion

This phenomenon can happen when ultra-pure water is being pumped with high shaft speeds.
An electric charge arcs between the two seal faces causing pitting on the wear surfaces and eventually causing seal failure. Some Diamond Coatings stand up well to this type of corrosion. DLC cannot be used in this application.