



ULTRAC™ DIAMOND COATING

Ultimate abrasive wear resistance

Overview

Entegris' UltraC™ Diamond coating is a diamond-like carbon (DLC) coating with very high hardness, high lubricity and extremely smooth surface. UltraC Diamond is deposited using a low-temperature (<150°C) proprietary Plasma Enhanced Chemical Vapor Deposition (PECVD) process and can be deposited on virtually all vacuum compatible substrates, including polymers. The coatings can be deposited over large areas, uniformly and with a high degree of conformality.

UltraC Diamond can significantly minimize or eliminate the formation of macro and submicroscopic wear debris. UltraC Diamond is increasingly specified for a wide range of precision applications in demanding environments encompassing semiconductor wafer processing and biomedical engineering.



Applications

- Semiconductor wafer contacting and processing components
- Surgical tools and non-implantables
- Air bearings
- Plastic injection molding and moving components
- Aluminum metal forming tools and dies
- Automotive racing components
- Other anti-friction and wear applications

Features

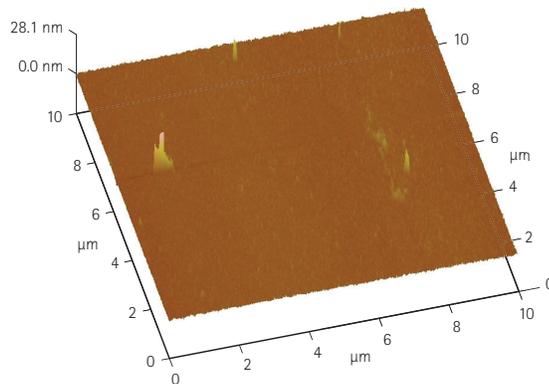
- Extremely wear resistant
- Super hard
- Ultra low friction
- Corrosion resistant
- Stops the formation of macro and submicroscopic wear debris

Specifications

Substrate:	Compatibility	Metals, ceramics (AlN, Al ₂ O ₃ , quartz, YSZ, Si, graphite, etc.), many polymers and anodized metals
	Size	Up to 91 cm (36")
	Geometry	Any shape, including complex geometries
Structure:	Dense, amorphous, micro-conformal DLC	
Temperature:	Deposition	<150°C (302°F)
	Use	400°C (752°F)
Coating thickness:	1–10 µm	
Electrical resistivity:	10 ⁵ –10 ⁷ Ω-cm	
Coefficient of friction:	0.04–0.08	
Hardness:	2450–2855 HV (24–28 GPa)	
Wear resistance:	Excellent	
Corrosion resistance:	Resistant to most acids and alkalis	

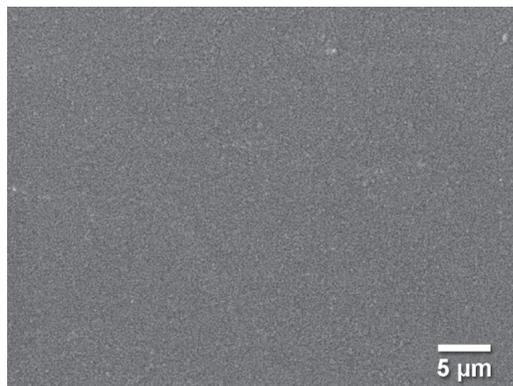
Characteristics

AFM Image of UltraC Diamond Coating

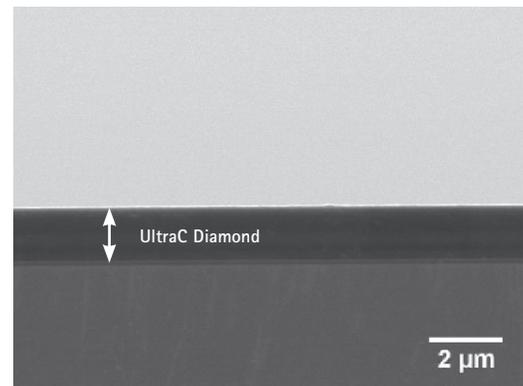


SEM Images of UltraC Diamond Coating

Coating Surface Morphology



Coating Cross-section



For More Information

To learn more about how Entegris' high-purity specialty coatings help customers enhance yields, improve productivity and meet future technological needs, call Entegris at +1 781-538-8745.

To review Entegris' specialty coatings offering, visit Entegris' website at www.EntegrisSpecialtyCoatings.com.

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