UNCD® Faces

Expanded Performance Capabilities for Mechanical Seals

Product Description

UNCD Faces are engineered diamond-faced seal rings for enhancing mechanical seal performance in rotary shaft equipment such as pump and mixer applications. UNCD is a patented form of diamond that features exceptionally low friction, superior wear resistance, and chemical inertness. UNCD Faces have a thin film of diamond securely integrated on the seal face of a silicon carbide ring for improved mechanical seal reliability and longer service life.

Benefits

- Minimizes friction, resulting in less heat generation
- Reduces wear for longer service life
- Enables dry running of hard-on-hard surfaces
- Performs exceptionally well against conventional soft or hard counterfaces
- Suitable for a wide range of media
- Affordable for mainstream use

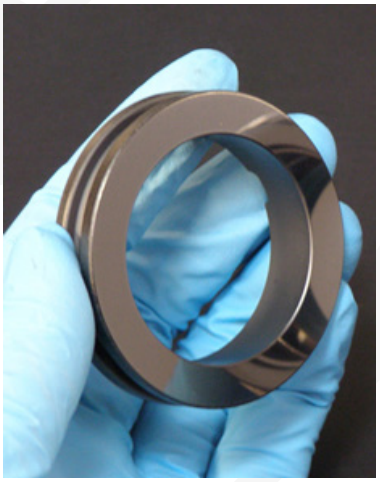
Applications

- chemical/ refining
- pharmaceutical
- power generation
- food processing
- pipeline
- pulp & paper
- water/ waste water

UNCD Faces open wider opportunities for the use of hard seal faces in demanding applications and are particularly suitable for abrasive slurries, poor lubricating environments including hot water and applications that include temperature sensitive media. UNCD Faces mated with silicon carbide result in significantly lower friction compared to silicon carbide mated with silicon carbide and is even lower than the current industry practice for low friction of carbon running against silicon carbide. UNCD offers hard seal face users a means to take advantage of both low friction and high wear resistance. UNCD Faces are so smooth that the faces can run directly against conventional seal face materials such as blister resistant carbons and silicon carbide for application versatility.

Properties

UNCD Faces are manufactured using seal ring substrates of high purity, alpha-phase self-sintered silicon carbide. The UNCD film maintains the surface smoothness and flatness of the substrate it is applied to. For example, UNCD Faces for shaft diameter sizes smaller than 4 inches (<100mm) have face flatness within 2 helium light bands (23 microinches). Standard properties of Silicon Carbide are shown below:



PROPERTY	UNITS	TEST	VALUE
Density	gm/cc	ASTM-C 20	3.10
Flexural Strength, 20°C	MPa (psi X 10^3)	ASTM-F417	462 (67)
Elastic Modulus, 20°C	GPa (psi X 10^5)	ASTM-C848	393 (57)
Poisson's Ratio, 20°C	N/A	ASTM-C848	0.20
Compressive Strength, 20°C	MPa (psi X 10^3)	ASTM-C773	2700 (363)
Hardness	GPa (kg/mm^2)	KNOOP 1000 gm	26 (2500)
Tensile Strength, 25°C	MPa (psi X 10^3)	ACMA TEST #4	307 (44.5)
Thermal Conductivity, 20°C	W/m K	ASTM-C408	125
Specific Heat, 100°C	J/kg K	ASTM-E1269	820
Thermal Shock Resistance (delta temp. °C)	°C	N/A	400
Maximum Use Temperature	°C	NO-LOAD COND.	1000

Actual property values may vary. This data is not warranted.

Offerings

UNCD Faces are available to OEMs and seal manufacturers to enhance the performance of their mechanical seals. UNCD Faces can be supplied for practically any seal ring design to meet your requirements in sizes up to 12 inches diameter (300 mm), and we welcome small quantity orders. To request a quote for UNCD Faces, simply provide us with engineering drawings and quantity requirements. Engineering and technical support, including extensive surface characterization and dynamic seal test capabilities, are available to help ensure that OEMs and seal manufacturers can quickly incorporate UNCD Faces into existing products and develop new products using UNCD.

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