DTEC
ENGIMECH LLP

SILICON CARBIDE PRODUCT BROCHURE

ABOUT COMPANY

DTEC is an expanding company specializing in manufacturing and supply, focusing on planning, design, development, and production.

Quality Policy

We at DTEC specialize in producing and delivering finished products tailored to our customers' needs. Our goal is to achieve complete customer satisfaction by: –

- Delivering merchandise

Engaging all employees and improving their skills.
Continual enhancement of our product, process, and system's efficiency.

Timely Delivery

DTEC focuses on enhancing customer satisfaction by ensuring prompt deliveries and consistently upgrading our technology to provide unmatched service to our clients.

Our Focus

DTEC provides all the aforementioned products with precise tolerances and strict quality controls. These products undergo rigorous testing through ongoing research and development to meet the demand for high-performance sealing components.

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RBSIC / SSIC TUBE

Silicon carbide (SiC) products consist of materials and components derived from silicon carbide, a compound of silicon and carbon. Known for its hardness and durability, silicon carbide exhibits outstanding thermal, mechanical, and electrical characteristics, making it suitable for various demanding industrial applications. Common products include mechanical components and wear parts for diverse uses.

Mechanical seal rings are designed for use in oil refineries, petrochemical plants, fertilizer production facilities, and the pharmaceutical industry. They are engineered to endure extreme temperatures and pressures.

Reaction Bonded Silicon Carbide(RBSIC)

High wear resistance

Thermal shock resistance

High modulus

Sintered Bonded Silicon Carbide(SSIC)

High hardness and strength

High-temperature resistance

High modulus

Chemical resistance

Desirable characteristics include:

Superior wear resistance with low friction
High-temperature capabilities
Wide-ranging compatibility with other materials
High thermal conductivity
Outstanding thermal shock resistance
Superior corrosion resistance, especially in alkali environments

Application :

Centrifugal pumps
Submersible pumps
Compressors
Mixers and steam joints
Gear pumps
Propulsion shaft sealing
High temperature and pressure applications
Abrasive and aggressive fluid applications
Mechanical seals for circulating pumps with limited dry running capability
Bearings for circulating pumps
Speciality pumps for handling corrosive and abrasive fluids
Bearings for electric water pumps used in electric and/or hybrid cars

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Silicon Carbide Seal Ring

Silicon carbide seal rings serve as the friction pair material in mechanical seals, which are crucial components of these systems. Selecting the appropriate silicon carbide material enhances the performance, longevity, and stability of the mechanical seal.

Product Customization Service

A Assist customers in selecting the most appropriate silicon carbide material based on the operating conditions of mechanical seals.

B Customize silicon carbide seal rings B according to the customers' drawings.

C Ensure timely delivery by assessing the quantity of product C and the complexity of its processing.

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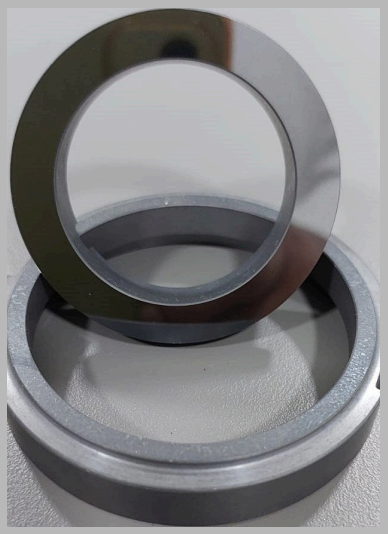

Silicon carbide seal ring for contacting mechanical seal

Suitable for Contacting mechanical seals whose seal faces are close fitting.

Silicon carbide seal rings are advanced materials used in high-performance friction pairs. They are designed based on specific working conditions, including mechanical seal PV values, pressure, temperature, speed, and friction coefficients.

Silicon carbide seal ring for dry gas mechanical seal

Suitable for Non-contacting mechanical seals whose seal faces have no direct solid friction.

Dry gas seal rings possess attributes such as high strength, hardness, temperature resistance, thermal conductivity, low expansion coefficient, and the ability to operate at high linear velocities. These features cater to the specific working conditions of dry gas seals.

Silicon carbide seal ring for split mechanical seal

Reformulated for split mechanical seals, this method shortens installation time and reduces workload.

We use the professional ring split technology to ensure no damage to cross section of the products so the cross sections can be fitted closely to make sure that the split mechanical seal can run very well. According to the actual split mechanical seal working conditions,

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Properties of Silicon Carbide

ITEM	UNIT	RBSIC	SSIC
Purity	%	≥90	≥98
Density	g/cm3	3.05	3.1
Shore Hardness	HS	110-125	120-130
Elastic Modulus	MPa	4.12x105	4.10x10s
Poisson Ratio		0.15	0.16
Tensile Strength	MPa	2.75x102	2.8x102
Bending Strength	MPa	4.41x102	4.9x102
Compression Strength	MPa	2.94x103	3.0x102
Thermal Conductivity	W/m.k	141	147
Coefficient of Thermal Expansion			
I/ºC	4.3x10-6	4.0x10-6	
Heat Resistance		1600C	165CTC
Thermal Impact Coefficient	cal/cm.sec	46.5	200
Tolerance	mm	0	0
Acid Resistance		5 times higher than the usual TC	Resist al chemical media

The phase diagram observed under a 200x optical microscope reveals that the distribution and size of the crystals in the pressure-free sintered silicon carbide material are consistent, with the largest crystal measuring no more than 10 μm.

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Industries Served

Oil & Gas

Power Plant

Nuclear

Pulp & Paper

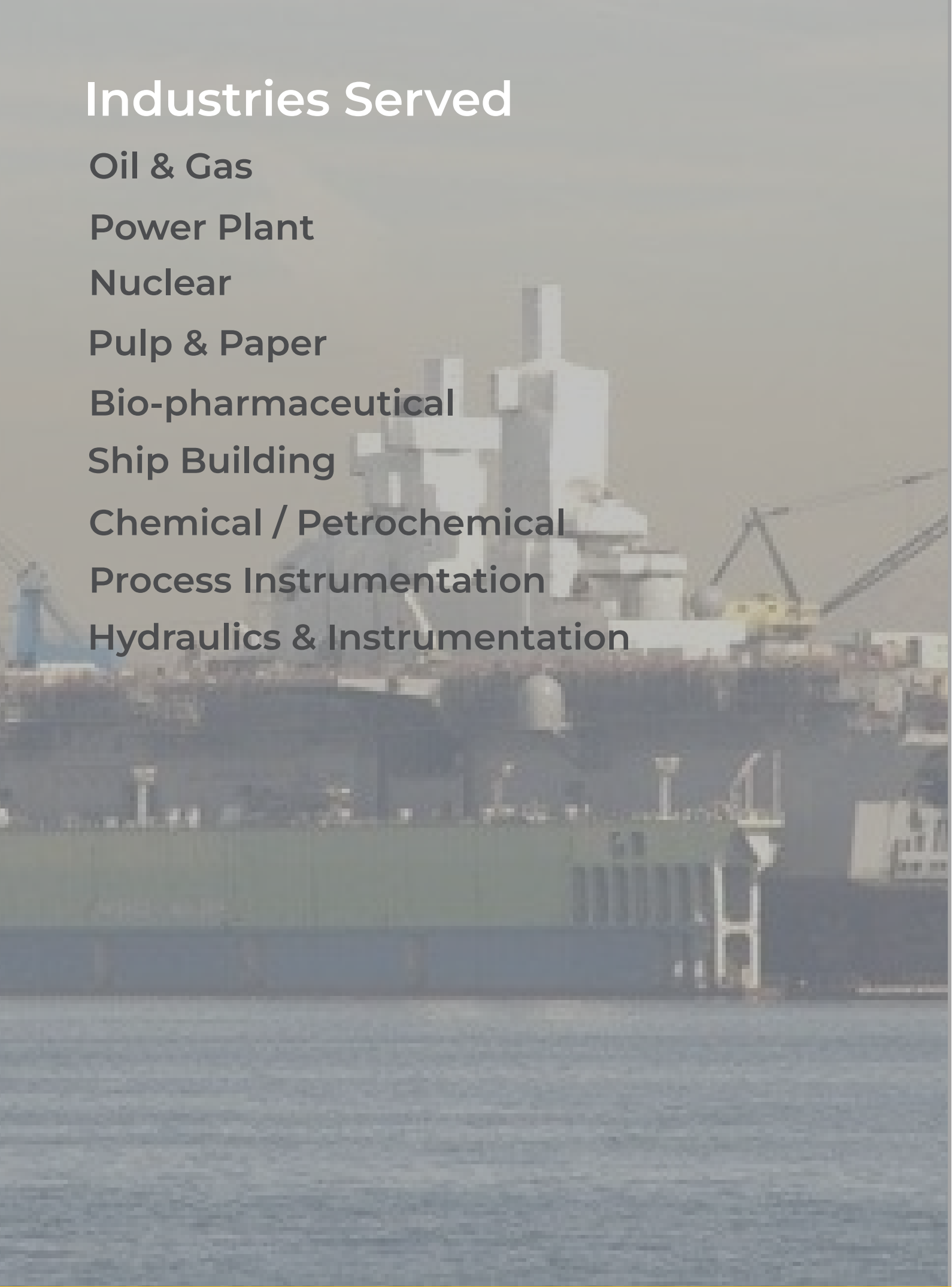
Bio-pharmaceutical

Ship Building

Chemical / Petrochemical

Process Instrumentation

Hydraulics & Instrumentation



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