



INTERNATIONAL  
**Syalons**

## ADVANCED SILICON NITRIDE & SIALON CERAMICS

### Oil & Gas Applications

As existing supplies of oil and gas are depleted, these industries are being forced to explore ever more severe environments for future supplies. To help in this exploration, Oil and Gas companies are utilizing the excellent characteristics of Syalons, such as their corrosion and erosion resistance, light weight and heat tolerance, to replace traditional metal components.

#### Syalon 101 / Syalon 050

Syalon 101 is a general purpose advanced ceramic whose unique combination of physical properties such as high strength, toughness and hardness impart excellent wear resistant properties. In addition Syalon 101 has excellent thermal shock resistance, corrosion resistance and can be used at temperatures up to 1000°C.

Syalon 050, although not as strong and tough as Syalon 101 has significantly greater hardness, making it particularly suitable for applications where erosion is encountered. In addition Syalon 050, as well as possessing excellent corrosion resistance, can be used in applications up to 1400°C.

These unique physical properties give Syalon 101 and Syalon 050 a distinct advantage in many arduous oil and gas applications over metals and other ceramics such as alumina and silicon carbide.

#### Hydrocyclone Liners

In sub-sea oil extraction, hydrocyclone separators are used in the process of separating sand from the oil. Pressure differences in the slurry generates centrifugal forces which causes rotational motion of the fluid which in turn causes the dense sand particles to separate from the less dense material. The rotational flow results in severe abrasion on the materials used in the hydrocyclones.

Syalon possesses the physical and chemical properties to perform well in this demanding environment where wear resistance is critical.

#### Metering Valves

Metering valves, used for metering the flow of often hot, abrasive slurries, require a demanding set of properties. The high hardness, toughness and strength of Syalon 050 results in excellent wear resistance, which when combined with its excellent thermal properties and chemical stability make it an ideal material for this application.

A 38mm diameter Syalon 050 metering valve, which cycles every 10 seconds, while metering a hot, abrasive slurry, out-performed inconel valves by a factor of 14 to 1 and out-performed silicon carbide valves by 7 to 1.

#### Summary of Benefits

In the Oil and Gas industries Syalon offers the following benefits over alternative materials such as metals and other ceramics:

- Excellent wear resistance for handling abrasive slurries
- Chemical stability in many extreme environments and temperatures
- Improved component life and increased productivity



#### Technical Support

The successful integration of ceramics into industrial and engineering systems requires close collaboration between you, the end-user and us, the material supplier. Please contact us to discuss your Oil and Gas application.



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