

Process Datasheet

TECH 28

Durable sealing surfaces for corrosive environments

TECH 28 is a composite ceramic material which adds a dimension of toughness to the composite coating line. The initial slurry is chemically modified to enhance wear characteristics when in contact with seal material. Subsequent thermochemical processing bonds precursors into the substrate resulting in a very hard, dense, and chemically inert coating.

BOND STRENGTH

TECH 28 develops a bond into the substrate through the formation of a spinel-like interphase between the ceramic coating and the metal surface. Part of the thermochemical reaction causes the substrate metal's surface atoms to migrate into the ceramic coating while some of the ceramic molecules are moving into the substrate during initial processing. Like the **TECH 22** and **TECH 23** coatings, **TECH 28's** bond strength to the substrate is in excess of 10,000 PSI.

DENSITY

TECH 28 is an almost totally dense (>97%) ceramic coating and, like the **TECH 23** coating, has no open porosity to the substrate. Modification of the inter-granular bonding mechanism substantially increases the density of the initial coating. **TECH 28** processing completely seals off this open porosity, making the part impervious to most chemical attack.

HARDNESS

The particles in **TECH 28** coating range in hardness from 1000 to 2850 Vickers. When measured microscopically, the composite hardness is between 1000 and 1850 Vickers. In sliding wear applications, the surface wears as a result of the hardest component, chromium oxide, which has a hardness of 2850 Vickers.

RESULTS

The unique combination of particle hardness, density, chemical bonding, and lack of porosity result in a coating which is both durable and chemically resistant. A slight surface profile will allow lubrication of mechanical seals. Field use in pump sleeves and on seal surfaces prove that life expectancy of parts can be measured in years instead of weeks or months.

TECHNICAL DATA

Hardness	1000-1850 Vickers
Bond Mechanisim	Chemical
Bond Strength	Over 10,000 PSI
Thickness	0.002- 0.004 Inches, typical
Coefficient of friction	0.22 - 0.28 Against fiber, 0.1 - 0.13 Against metal
Corrosion Resistance	+560 Hours in hot CaCl ₂ (no damage)