

Process Datasheet

TECH 40

Low friction and extended wear life for fiber-contact surfaces

TECH 40 is a composite ceramic material thermochemically bonded to customer specified areas of fiber-contact surfaces of various fiber processing equipment, including godet rolls, separator rolls, pins, and pig-tail guides. Individual sub-micron sized ceramic particles of the ceramic matrix lock together with 15 micron-sized particles of chromium oxide. Applied in slurry form, through spraying or dipping, and porous after the initial formation of the ceramic, **TECH 40** is densified using ceramic precursor chemicals plus corrosion resisting chemicals. When thermochemically converted into ceramic and corrosion protection in situ, the densification processes form additional bonds and mass within the initial ceramic body. Each densification cycle fills some of the remaining porosity until a fully dense, non-porous, corrosion resistant, ceramic coating has been created.

BOND STRENGTH

TECH 40 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 atoms to migrate into the ceramic coating

DENSITY

TECH 40 is an almost totally dense (98-c) ceramic coating and is unique in that it has no open porosity. **TECH 40** processing completely seals off this open porosity making the part impervious to chemical attack.

HARDNESS

As with **TECH 22**, the **TECH 40** coating particle hardness range measures 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, chemical bonding, and lack of porosity, and inherent low friction result in a coating which is unparalleled in wear resistance and fiber friendliness in fiber-contact applications. Abrasive yarns run over Tech 40-coated components for years without experiencing fraying. Life expectancy of parts used in these applications are now measured in years instead of weeks.

PROPERTIES

- 0.0015 - 0.0025" Thick
- Hardness range 1000-1850 Vickers
- Chemically bonded
- Extreme wear resistant
- Resistant to thermal cycling/shock
- Fiber-friendly "orange-peel" as-applied surface
- Surface finish adjustable from 16 - 60 Rms.
- Low friction
- Polished surfaces will not abrade bushings and seals
- Better resistance to corrosives

TECHNICAL DATA

Hardness	1000-1850 Vickers
Bond Mechanisim	Chemical
Bond Strength	Over 10,000 PSI
Thickness	0.0015-0.0025 Inches, typical
Coefficient of friction	0.20 - 0.21 Against fiber
Corrosion Resistance	+560 Hours in hot CaCl ₂ (no damage)