

Process Datasheet

TECH 12

For increased wear resistance, corrosion resistance, and anti-galling with little dimensional change

TECH 12 bonds ceramic with a metal surface by chemically reacting with other oxides produced on that surface.

TECH 12 etches and penetrates into surface grain boundaries. The strength of the ceramic oxide-to-metal bond is exceptionally strong, preventing flaking or particle pull-out even at 0.5% beyond the yield point of the metal.

THICKNESS OF ONLY 0.0002 INCHES

TECH 12 does not typically require pre-machining. It has a thickness of less than 0.0002 inches (5 microns) and a penetration into the substrate of less than 0.0005 inches (12 microns).

HARDNESS

TECH 12 has a Vickers hardness of 2850. Comparatively, hard chrome plate is 850 to 1000 Vickers and tungsten carbide is 1900 Vickers. This hard ceramic, well bonded to the substrate, provides a wear surface that can withstand wear by most materials. The sealed surface prevents crevice-corrosion, especially in o-ring grooves of down-hole oil service tools, by preventing corrosives from reaching the metal substrate.

LOW FRICTION

TECH 12 produces a surface that has a coefficient of friction of 0.11 - 0.13, depending on the substrate texture and the contact material. The combination of low friction and high particle hardness can increase resistance to galling by threads, especially when the same material is used for both thread components.

PROPERTIES

- Has thickness of less than 0.0002"
- Is chemically bonded into substrate
- Will not change dimensions
- Is low friction
- Offers sliding wear resistance

TECHNICAL DATA

Max Hardness	Up to 2850 Vickers
Bond Mechanisim	Chemical
Bond Strength	Over 10,000 PSI
Thickness	0.0002 Inches
Coefficient of friction	0.22 - 0.28 Against fiber, 0.1 - 0.13 Against metal