

## Process Datasheet

# TECH 18

For textile industry, zinc diecasting, printing, and any place that wear is caused by sliding surfaces plus chemical attack

### CHEMICALLY BONDED INTO SUBSTRATE

**TECH 18** is a significant advance in surface engineering technology. The surface of a metal part is first modified to harden the outer surface of the metal and form a unique, porous oxide on the surface. Then we fill the porosity with ceramic. During the fill process, chemical reactions are created that cause the ceramic to be chemically bonded to the substrate material. The bonding creates improved surface strength, hardness, corrosion resistance, and surface "friendliness."

### HARDNESS

**TECH 18** ceramic has a Vickers hardness of 2850. Comparatively, various steels can range from 200 to 800 Vickers (20 to 64 Rockwell C). The microscopic crystals of ceramic, chemically bonded together, form an extremely hard surface which resists wear and particle pull-out. A unique feature of the **TECH 18** process is the ability to harden the metal underneath the ceramic. This metal hardness (depending on the substrate material) measure up to 1000 Vickers (70 Rockwell C, and withstands higher loads without deformation compared with untreated metal.

### THICKNESS OF ONLY 0.0005 INCHES

**TECH 18** can be chemically modified to engineer the surface for unique applications, such as non-wetting of molten metals and glasses, low friction to man-made fibers, catalytic to process streams, and numerous other properties. These added qualities are achieved with nominal buildup.

### ID AND OD SURFACES

**TECH 18** application techniques allow this process to be performed on most surfaces, including inside diameters as small as 0.1 inches by 26 inches long can increase resistance to galling by threads, especially when the same material

### EXTRAORDINARY WEAR RESISTANCE

**TECH 18's** combination of chemical bond strength, high particle hardness, low friction and corrosion resistance results in exceptional wear resistance. For example, when an abrasive fiber is texturized in a **TECH 18** processed entanglement jet, life increases of 1000% and more have been realized.

### PROPERTIES

- Has thickness of only 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