



ZEIGER
Industries

Nitride vs Bimetallic

Nitrided plasticating barrels are manufactured typically from AISI 4140 HT or similar steels with elements to enhance nitriding depth. The barrel is treated using either a gas-nitride or ion-nitride process. Gas-nitride is the more common method. It is less expensive than the ion process. The typical gas-nitride barrel bore has a shallow case hard depth of about .002 - .004 inch, while the typical ion-nitrided bore is hardened to a depth of about .015 inch. Hardness and wear resistance diminishes with depth and wear rate accelerates with operation time. This causes other components such as the feed screw to wear at a faster rate as well. The depth of wear protection for a bimetallic barrel is .050-.062 inch.

Nitride Advantages

- Nitride barrels have a low cost
- Easy to manufacture
- Nitriding can be used for complex geometries such as ID grooves, twin bores and auxiliary components.

Nitride Disadvantages

- Thin layer of wear protection
- Short peak performance life
- Low wear resistance
- Not cost effective

Bimetallic Advantages

- 4-10 times thicker wear resistant bore inlay
- High wear resistance
- Long peak performance life
- More cost effective

Bimetallic Disadvantages

- More complex to manufacture (The process does not lend itself to complex geometries)

The "bottom line" of Nitride vs. Bimetallic Plasticating Barrels:

Bimetallic barrels have over 30 years of proven history sustaining peak performance up to ten times longer than nitrided barrels.