

White Layer

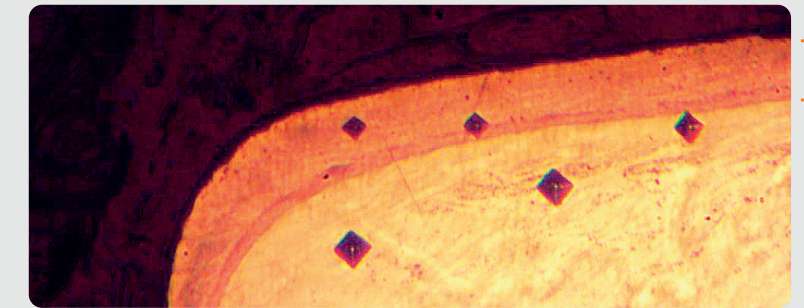
(or Compound Zone)

ASSET OR LIABILITY?

1. DEFINITION

IT IS A NITRIDING PHENOMENON:

A thin, hard surface layer formed on steel during nitriding, characterized by a high concentration of iron nitrides.



2. MEASUREMENT AND FORMING

- **Thickness:** Generally ranges from a few microns up to 25 microns.
- **Formation:** Results from a chemical reaction between nitrogen ions and the iron in steel during plasma nitriding.

3. ADVANTAGES

- **Enhanced Surface Hardness:** Significantly increases sliding wear resistance.
- **Reduced Friction:** Beneficial for parts requiring low frictional properties.
- **Improved corrosion Resistance:** Increases the corrosion resistance of the surface.

4. DISADVANTAGES

- **Potential Brittleness:** May lead to increased brittleness, reducing impact resistance.
- **Difficult to Machine:** Hardness can make post-treatment machining challenging.
- **Inconsistency:** Thickness and properties can vary based on nitriding conditions, affecting performance.

5. RECOMMENDED USES

- **Components Requiring High Wear Resistance:** Gears, bearings and brake rotors.
 - **Replacing hard chrome** | Where surface hardness and corrosion resistance are crucial.
- Not Recommended for:**
Components Undergoing High Impact Loads | Due to potential brittleness

6. APPLICATIONS BENEFITING FROM THE WHITE LAYER

- **Gears and Drivetrain Components:** For improved wear resistance. 
- **Some Cutting Tools:** To maintain sharpness and durability. 
- **Sliding Surfaces:** Where low friction and high wear resistance are needed. 

