

Weld Overlay with Tungsten Carbide

# EutroLoy® 6503



## COATING

- Nickel based, chromium-free, matrix with maximum Tungsten Carbide concentration
- Up to 3mm weld overlay thickness per pass
- Wear resistant overlay on steels, stainless steels, cast irons and nickel based alloys
- Excellent carbide distribution throughout the overlay
- Low dilution means full coating properties for extended wear resistance



## DESCRIPTION:

Eutroloy 6503 is a blended powder consisting of a nickel, chrome-free, matrix with cast and crushed tungsten carbide. The powder is specifically designed for use with the plasma transferred arc welding process. The coatings produced are hard, dense and especially resistant to low stress abrasion and erosion. Careful control of the chemistry and particle size distribution of both powder components assures consistent performance in the most challenging applications.

## COATING PROPERTIES:

Typical matrix hardness: HRC 53-54  
Microhard. of WC: 2400 (50-100g load kg/mm<sup>2</sup>)  
Volume of WC: ~ 60%  
Typical matrix chemistry: Ni, B, Si  
Wear Test Results (ASTM G-65 Test): 9-11mm<sup>3</sup> volume loss  
(Ref. D2 tool steel 32 mm<sup>3</sup>)  
Standard chrom. carb. plate: 28-30 mm<sup>3</sup> volume loss

## POWDER PROPERTIES:

Carbide: cast and crushed WC-WC<sup>2</sup>C  
Carbide to matrix ratio: 60/40  
Melting temperature: approx. 2500°F (1370°C)  
Max. operating temp.: approx. 1200°F (650°C)  
Typical Hardness: matrix 50 HRC (carbide 2400HV)  
Density: 0.405 lbs/in<sup>3</sup> (11.2g/cm<sup>3</sup>)  
Thickness limit: up to 3mm per pass  
Deposition rate: 5-20 lbs/hr (2.2-9kgs/hr)

## TYPICAL APPLICATIONS:

Oil and Gas: Stabilizer and hardbanding applications

Agricultural: Ground engagement tools, rub bars, decanter screws

Mining: Shovel bucket teeth, shrouds and adaptors, conveyor screws

Utilities: Fan blades, clinker grinders

Recyclers: Wear guides, deflectors, mixing & paddles

## PROCEDURE FOR USE:

Remove damaged material. Clean areas to be welded. Match heat input during welding to component, its material and dimensions, and follow the prepared welding procedure for the specific base metal chemistry. Keep dilution with base metal low. Allow workpiece to slowly cool upon completion of welding.

**FINISHING:** Coatings of Eutroloy 6503 can be finished by grinding.

## PARAMETERS: Plasma Transferred Arc

System: GAP 2001 and 3001 systems  
Torch: E52  
Anode: dictated by part geometry (1.2, 2.0 or 3mm / 90° or 180°)  
Cathode: standard  
Shielding Gas Nozzle: standard or high deposit  
Pilot Gas: Argon 2.5 Bar - 37 psi (1.5 L/min)  
Carrier Gas: 2.5 Bar - 37 psi (1.8-2.5 L/min)  
Shielding Gas: Argon/5% hydrogen (10-15 L/min)  
Powder Feeder: EP2  
Powder Wheel Speed: dictated by part geometry: 20-100 %  
Powder Feed Rate: dictated by part geometry: 5-15 lbs/hr (2.2-6.8 kgs/hr)  
Amperage\*: dictated by part geometry: 90-200 A  
Voltage\*: dictated by part geometry: 19-28 V

**\*NOTE:** amperage and voltage should be kept as low as possible to maintain WC integrity, while maintaining a well bonded overlay.

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