

Tribomet[®] MCrAlY Coatings

Tribomet[®] coatings are electro-deposited composites that are applied by a patented process. The coatings are produced when particles, which are kept in suspension within an electroplating bath, settle onto the component and are fixed by the depositing metal (see Figure 1).

Tribomet MCrAlY coatings are produced by co-deposition of alloyed powders of specified particle size distribution (typically incorporating a selection of Cr, Al, Y, Si, Hf, Ta, Re) with nickel and/or cobalt from conventional electroplating solutions, followed by a vacuum heat treatment (see Figures 2 and 3).

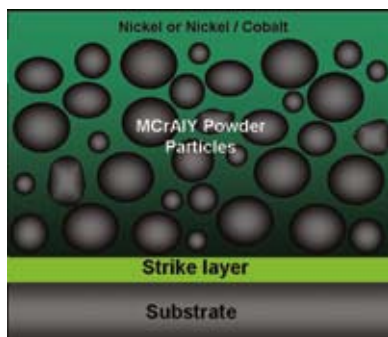


Figure 1. Schematic showing formation of Tribomet MCrAlY composite coating

Tribomet MCrAlY coatings are Praxair's electrodeposited version of high-temperature oxidation- and corrosion-resistant coatings. These coatings are also used as bond coats for thermal barrier coatings to protect gas turbine components

against hot gas corrosion at temperatures up to 1150°C. A wide range of compositions are available along with compositions that can be specifically tailored to your requirements.

Advantages

- Provides excellent oxidation and corrosion resistance; better than thermally sprayed equivalent
- Suited for non-line-of-sight faces and complex geometries
- Excellent adhesion >30,000 psi
- Wide range of compositions
- Can be plated to size with excellent thickness control and uniformity around complex geometries
- Minimal cooling hole reduction without blockage
- 100% dense coating
- Applied to low- or high-volume manufacture
- No component distortion
- Can be diffusion heat treated over a wide range of temperatures (typically 1000°C to 1150°C)
- Can be used as bond coat for thermal barrier coatings

Applications

Typical applications include aviation, power generation, and marine.

Base Materials

Tribomet coatings can be applied to aluminum, steel, and cobalt- and nickel-based alloys. Components can be cast, forged, rolled, or extruded.

Coating to Size

Tribomet MCrAlY coatings are plated to final dimensions with no machining required. Typical plated values are 2-3µmRa. These coatings can also be vibro finished to <1.5µmRa.

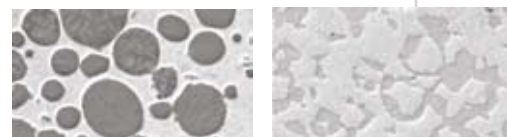


Figure 2. Tribomet MCrAlY coating as plated (left) and after heat treatment (right)

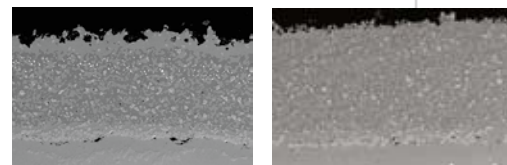


Figure 3. Comparison after exposure for 2500 hours at 1000°C; vacuum plasma spray (left) and Tribomet MCrAlY coating (right)



Figure 4. Distribution around aerofoil trailing edge