

WC-Co Hard Chrome Replacement



Tunable Hardness: 700 - 1500HV (300g)

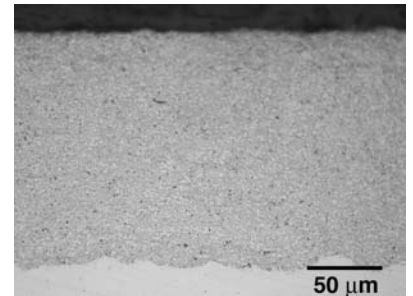
Field Repairable: Portable field unit

Environmentally Safe: No carcinogens

Corrosion Resistance: 5000 hour salt spray

Thickness: 0.001 - 0.050"

Fully Dense: >99%



Above: Fatigue Test **Below:** Micrograph

Tungsten Carbide-Cobalt (WC-Co)

Hard chrome is widely used for wear resistance within the defense, automotive, industrial equipment, electronics, civilian aircraft, and consumer durables marketplaces. The ability for the KM process to be tuned to the desired hardness for each application, significantly improves the wear resistance for many applications. This gives a measure of control not available with existing thermal spray techniques. In addition the low temperature KM process precludes decarburization of WC-Co.

Chrome electroplating is a problematic process, producing a significant hazardous waste stream of known carcinogens. New, tougher OSHA regulations and penalties for disposal of such waste products are two contributing factors to the increasing interest in developing an acceptable alternative to this process. A Tungsten Carbide – Cobalt (WC-Co) alloy, applied using the Kinetic Metallization process is a good alternative to hard chrome.

In addition to KM's favorable environmental position, the repair market for these parts may benefit from a cost savings that is realized by on-site component repair. The mobility of Inovati's equipment, its use of non-combustible accelerant gases and the possibility of complete over spray capture, provides an opportunity for the development of mobile service stations that could perform repairs of WC-Co coatings on-site.

On-site repairs offer a means of not only reducing repair costs, but also downtime, which is of special interest in military settings. The U.S. Army is currently developing a Mobile Parts Hospital (MPH) concept for the on-site repair of battlefield parts (i.e., tank armor plates, vehicle tie rods, etc.). Inovati's KM process is presently under consideration for repair of coatings on military aircraft landing gear surfaces. KM is the solution to some of our most difficult coating problems.

KM Benefits vs HVOF

- Low temperature
- Low cost
- Highly directed
- Environmentally safe
- No soundproofing
- No grit blasting
- No explosive gas

KM WC-Co Characteristics

- Tunable hardness
- Near zero porosity
- High adhesion strength
- High corrosion resistance
- No decarburization
- Field repairable

Application Areas

- Hard chrome replacement
- Wear resistance
- Corrosion resistance
- Erosion resistance