



# Trivalent Chromium Pre/Post Treatment Corrosion-Resistant Coatings (TCP)

U.S. Patent Number 6,663,700; 6,669,764; 7,811,391

## Technology & Background:

In order to improve the corrosion resistance and bonding of paints to aluminum alloys, anodized aluminum and sacrificial coatings, a surface treatment is required. A class of chemicals called conversion coatings is used for this purpose. For more than 50 years the standard corrosion resistance surface coatings for aluminum or zinc-coated alloys in both military and industrial applications has been hexavalent chromium, which is a highly toxic carcinogen. After several years of research and development at the Naval Air Warfare Center Aircraft Division, Patuxent River, MD a new line of environmentally benign and highly effective coatings for application on aluminum and zinc-coated alloys was developed named Trivalent Chromium Pre/Post Treatment Corrosion-Resistant Coatings (TCP).

## Technology Solution:

TCP was invented as a more environmental benign coating than hexavalent chromium without sacrificing corrosion resistance or other performance characteristics. A family of four United States Patents for these corrosion resistance coatings were issued and are now available for licensing.

## Summary of Benefits:

There are many benefits to TCP. They are the only non-hexavalent chromium conversion coatings that will fully meet all military specifications for pre/post treatment of aluminum. Numerous inside and outside laboratory and field test show that TCP is the best all-around alternative to chromate coatings available at this time. Additionally, its improved electrical conductivity makes it ideal for applications in the electronics and telecommunications industries. A few of the benefits include:

- Can be applied at room temperature by immersion, spray or wipe
- Contact/dwell time two (2) - ten (10) minutes
- No post treatment/cures required
- Easy to mix and handle
- Provides good surface adhesion
- Meets EPA and OSH Requirements
- Cheaper to make than chromate conversion coatings.



## Market Opportunities:

The four TCP patents are environmentally benign and highly effective corrosion resistant coatings recently developed by the U.S. Navy are available for licensing and can be utilized in the following areas:

- Boats
- Swimming pools
- Window frames
- Wheels
- Automobiles
- Aircraft
- Bicycles
- Fasteners
- Military vehicles



## Status and Opportunity:

- 1.) Full text copy of the issued US patent is available at [www.uspto.gov](http://www.uspto.gov)

## TCP

Licenses for commercial production and sale of the TCP technology are available.

Cooperative Research and Development Agreements (CRADAs) can be established to focus on a particular application of the technology.

CRADAs may include joint development and testing, cooperative use of NAWCAD facilities, and exchange of information. These agreements have been and continue to be an excellent vehicle for government and industry to work together toward specific technology development goals.

CRADA and PLA:

Naval Air Warfare Center  
Aircraft Division  
Technology Transfer Office

Tel. 301.342.1133  
Fax. 301.342.1134

For Technology Transfer  
Information Visit:

<http://www.navair.navy.mil/nawcad>

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