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Chromate Conversion Coating

Chromate Conversion Coating (also commonly referred to as Chemical Film, Chem Film, Alodine or Iridite) converts the surface properties of the substrate (typically aluminum or magnesium) as compared to plating which applies a coating onto the surface of the substrate. Chromate provides excellent corrosion resistance, is conductive and results in no measureable buildup (0.00001"- 0.00003") on the parts. Chromate coatings are the most widely used coating for corrosion protection of Aluminum and Aluminum alloys minimizing surface oxidation. It is commonly used for an undercoat for paint or adhesive applications due to the excellent bonding properties it provides. Class 1A coatings give maximum corrosion protection with the highest electrical surface resistance while class 3 coatings have lower corrosion protection and provide lower electrical surface resistance.

Advanced Surface Technologies applies both standard hexavalent (clear and yellow) and RoHS compliant Trivalent (TCP) to Aluminum and Magnesium alloys. Both Hexavalent and Trivalent films at Advanced Surface Technologies have passed initial 336 hour salt spray testing and are subject to monthly 168 hour salt spray testing as well as paint adhesion testing conforming to all specifications. MIL-C-5541E, MIL-DTL-5541F, ASTM B 449-93 (2004), AMS 2473G, AMS 2474D and MIL-DTL-81706B.

The Trivalent Chromium Process (TCP) provides a non hexavalent chrome coating compliant with RoHS, ELV and WEEE directives. It compares favorably with the hexavalent coatings providing a conversion coating that fulfills the corrosion, paint and electrical requirements of the different specifications. Advanced Surface Technologies extensive experience with the chromate process enables us to effectively process cast and all the different wrought alloys with alloy specific pre-treatment chemistries.

· CAPABILITIES · MIL-C-5541E SPECIFICATIONS · MIL-DTL-5541F/MIL-DTL-81706B SPECIFICATIONS · ASTM B 449-93 (2004) SPECIFICATIONS · ADDITIONAL INFORMATION

CAPABILITIES

Chromate Colors	Clear (Class 3) Yellow (Class 3 &1A)
Substrates	Aluminum Magnesium

MIL-C-5541E SPECIFICATIONS

Chromate Classes	• Class 1A- (Yellow) For maximum protection against corrosion, painted or unpainted. • Class 3- (Clear or Yellow) For protection against corrosion where low electrical resistance is required.

MIL-DTL-5541F/MIL-DTL-81706B SPECIFICATIONS

Chromate Classes [1]	• Class 1A- (Yellow) For maximum protection against corrosion, painted or unpainted. • Class 3- (Clear or Yellow) For protection against corrosion where low electrical resistance is required.

1 Type I- Compositions containing hexavalent Chromium; Type II- Compositions containing no hexavalent Chromium

ASTM B 449-93 (2004) SPECIFICATIONS

Chromate Classes	• Class 1- Yellow to Brown, Maximum corrosion resistance generally used as final finish • Class 2- Colorless to yellow, Moderate corrosion resistance, used as a paint base and for bonding to rubber • Class 3- Colorless, Decorative, slight corrosion resistance, low electrical contact resistance • Class 4- Light green to green, Moderate corrosion resistance, used as a paint base and for bonding to rubber (Not done at AST)
Electrical Resistance (Class 3 Coatings)	< 5,000 micro ohms per square inch as applied 10,000 micro ohms per square inch after 168 hours of salt spray exposure
Chromate Conversion Coating Advantages	Base for Paints, Adhesives, and Powder Coatings Corrosion Resistance Easy to Repair Flexibility Low Electrical Resistance Minimal Build-up

ADDITIONAL INFORMATION

Industries Served	Aerospace Automotive Communications Computer Electronics Household Appliances Medical Equipment Oil &Gas Equipment Pharmaceutical Recreational Equipment Solar Tool &Die