

THE *Loxcreen* COMPANY, INC.

FINISHES *the basics*

There are many ways to finish the surface of an aluminum extrusion. Desired appearance and the product's final environment are the most important factors. Aluminum naturally protects itself from the environment. A protective oxide coating naturally begins to form as soon as the extrusion process is completed. For many applications, this thin, transparent film is all that is necessary. **Aluminum can be treated with a wide range of coatings whenever additional surface protection or an enhanced appearance is needed. The most common are anodizing, liquid paint and powder coat. Others include chemical or mechanical finishing.**

Anodizing is an electrochemical process that enhances aluminum's natural oxide surface. Extruded aluminum profiles are immersed in an acid solution under controlled conditions. An electrical current is passed through the solution to produce an aluminum oxide film. This film is extremely hard, durable and resistant to corrosion. It serves as a color anchor in the anodizing process. Anodic coatings can yield a wide range of characteristics such as thickness, hardness, porosity, and protective value; all are dependent upon the specific process used, the alloy, and the length of treatment time.

Chemical finishing includes etching and bright dipping. An etched or frosted appearance can be achieved by passing the aluminum profile through a hot caustic solution. The profile is passed through a hot bath, rinsed, and then immersed in a deoxidize/desmut bath that removes surface impurities. To complete the process, further rinses are usually necessary.

Bright dipping is a chemical finishing process that yields a bright, mirror like finish also known as a specular finish. An acid bath is heated to an elevated temperature. The profile is dipped, rinsed and then anodized. The profile can be dipped as is or buffed prior to dipping to remove surface scratches.

With mechanical finishing, the surface of an aluminum profile can be buffed to a polished finish or brushed for a fine, medium, or course texture finish.

Various types of paint and an unlimited array of colors are used in the aluminum industry. Powder coat is an electrostatically applied powder that melts and fuses to the extrusion when heat is applied. This coating is extremely mar-resistant. Liquid coating types are wide-ranging. The most common are polyester, acrylic, and fluoropolymers. These coatings are fluid materials that, when applied to a surface, form an adhering film to protect and beautify the substrate.



Loxcreen's finishes include anodized finishes, electrolytic coloring (2-step), chemical finishes, mechanical finishes and liquid paint.

Loxcreen uses a sulfuric anodizing process. This is the most common process and it produces thin films suitable as pretreatment for organic and inorganic coatings.

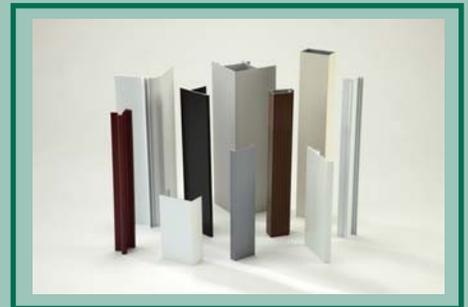
Electrolytic coloring or 2-step anodizing is a two-step process. In the first step, the extrusion is clear anodized using conventional sulfuric anodizing. In the second step, the color is electrolytically deposited into the anodic pores. Colors range from champagne to black. 2-Step finish is much more resistant to fading than conventional color anodizing; however some variation in color is unavoidable because of process variables.

Our chemical finishes yield a matte or satin surface appearance (etched).

Loxcreen's standard liquid coating is an acrylic paint. The aluminum extrusion is cleaned and treated with a conversion coating. The paint is then electrostatically applied and cured in a high temp oven. It is typically applied in a single coat and has excellent application and mar-resistant properties. Polycron, which is a polyester coating, is also available. Polyester coatings are high solid, meaning they typically contain 55 to 70 percent solids. Acrylic solids ratio is 40 percent. Both coatings have a dry film thickness of 0.8 to 1.2 mils.

Certain finishes are not provided in-house but are available. Please contact your sales representative for more information.

Samples serve as a reference to aid in the selection of a finish. Color variation is inherent in the anodizing process itself. Some gold and bronze anodized finishes are not colorfast. Consider end use (inside or outside application) when selecting a finish. Factors to consider are alloy, temper, gloss and surface structure.



Information for "Finishes – Basics" was provided by the Aluminum Extruders Council. Visit www.aec.org for expanded information.

Loxcreen's Anodic Coating Designations:

<u>Designation</u>	<u>Min. Film Thickness</u>
200	.15 mils
201	.20 mils
202	.30 mils
Class II	.40 mils
Class I	.70 mils

Note: Class I and Class II are compliant to AAMA Specification 611.98

Loxcreen's Liquid Acrylic Coating:

<u>Specification</u>	<u>Dry Film Thickness</u>
AAMA2603-02	.80 mils minimum

Loxcreen Tempers

T-1: Cooled from an elevated temperature and naturally aged to a substantially stable condition. Applies to products for which the rate of cooling from an elevated temperature, such as casting or extrusion, is such that their strength is increased by room temperature aging.

T-4: Solution heat-treated and naturally aged to a substantially stable condition. Applies to products that are not cold worked after solution heat-treatment, or in which the effect of cold work in flattening or straightening may not be recognized in mechanical property limits.

T-5: Cooled from an elevated temperature and then artificially aged. Applies to products that are cooled from an elevated temperature, such as casting or extrusion, and then artificially aged to improve mechanical properties or dimensional stability or both.

T-6: Solution heat-treated and then artificially aged. Applies to products that are not cold worked after solution heat-treatment, or in which the effect of cold work in flattening or straightening may not be recognized in mechanical property limits.

T-52: Cooled from an elevated temperature and artificially aged at an elevated temperature to produce a controlled temper range, typically used in bending or forming operations

