Anodizing and the Automotive Market

The automotive market is the fastest growing market for aluminum. According to the Aluminum Association, there was a 40 percent increase in the amount of aluminum used in automobiles between 1995 and 1998. That amounts to an increase of 1.9 billion pounds. The total in use is now 3.8 billion pounds. Automakers are turning to aluminum because of its many advantages: strength, durability, light weight, recyclability, formability, and versatility obtained through surface treatment. New environmental policies all over the world encourage car manufacturers to reduce fuel consumption and emission through weight savings and attempt to improve safety and performance. These factors have combined to cause an ever-increasing use of aluminum in its many forms, including cast, rolled or extruded material used in car manufacture.

According to the Aluminum Association, the transportation industry uses about 30 percent of all the aluminum manufactured in the United States – making it the number one market for aluminum. Almost seven billion pounds of aluminum were shipped to the transportation industry in North America in 1997. Automakers use aluminum for applications that include wheels, frames, cylinder heads, wheels, gear box housings, pistons, anti-lock brake components, transmission parts, radiators and bumpers to name but a few – the possibilities are nearly limitless.

With the increased use of aluminum, anodizing has also significantly increased in automotive applications. An anodized finish is the only one in the metals industry that satisfies each one of the factors that must be considered when selecting a high performance automotive finish:

Cost

A lower initial finishing cost combines with low maintenance costs for unmatched long-term value.

Durability

Anodizing is harder and more abrasion resistant than paint. Most anodized products have an extremely long life span and offer significant economic advantages through ease of maintenance. Anodizing is a chemical finish that integrates with the underlying aluminum for total bonding and unmatched adhesion.

Color stability

Exterior anodic coatings are unaffected by ultraviolet rays, do not chip or peel, and are easily repeatable. Interference coloring offers a new palette of aluminum finishes that are cost effective and impervious to ultraviolet rays.

Information courtesy of Aluminum Anodizers Council

For more information, go to www.midstal.com or call 920.922.7207.

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Aesthetics

Anodizing offers an infinite number of gloss and color alternatives. Unlike other finishes, anodizing allows the aluminum to maintain its metallic appearance. Anodizing gives a deeper, richer metallic appearance than is possible with organic coatings.

Health and safety

Anodized aluminum is fully recyclable with low environmental impact. Anodizing is a safe process that is not harmful to human health when performed in an industrial setting equipped with proper ventilation and following established procedures. An anodized finish is chemically stable, will not decompose, is nontoxic, and can be recycled along with its aluminum substrate. Since the anodizing process is a reinforcement of a naturally occurring oxide process, it is relatively less hazardous than other processes; most anodizing is performed without generation of hazardous waste.

Capacity

Anodizing is compatible with large scale manufacturing. Because of the large scale of most anodizing operations, a throughput of millions of parts per year presents no problem to most anodizing firms. Most anodizers work efficiently with manufacturers who wish to outsource their finishing processes. Outsourcing is a way of life for part manufacturing firms in the automotive industry. Anodizers are strategically positioned to help component manufacturers focus on their own processes while anodizers add value through metal finishing expertise.

Color selection

Anodized finishes are limited only by the imagination of the designer. Typical automotive anodized finishes include:

- Black
- Bright dip, often mistaken for “chrome” trim by the consumer
- Interference coloring, providing colors that are impervious to ultraviolet light
- Standard clear anodizing
- Finishes formulated for adhesion
- Anodizing can be used to match stainless steel and does not show fingerprints
- Dyes
- Hardcoat, for abrasion resistance under the hood

Ease of maintenance

In contrast to stainless steel, anodizing will not show fingerprints. Anodizing is part of the metal and cannot peel off. It is difficult to scratch anodized aluminum during fabrication, handling, installation, cleaning. Rinsing or mild soap and water cleaning usually will restore an anodized surface to its original appearance. Mild abrasive cleaners can be used for more difficult deposits. Use caution with strongly acidic or alkaline cleaners, but feel free to use a scrubbing or scouring technique.

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