Advantages of Coil Coated Vs. Anodized Reynobond

Alcoa Cladding Systems has taken the position at this time to discontinue product development efforts and promotion of anodized Reynobond ACM panels. The demand for Class I Anodized ACM panels is driven by the desire to match popular Class I Anodized curtain wall extrusions with quality ACM panels. After careful consideration we feel as a company that the best value available from both a performance and economical standpoint is the combination of anodized curtain wall extrusions and or spray coated extrusions with coil coated Reynobond Aluminum Composite Material. Summarized below by subject and bullet point are the compelling reasons and the technical realities, which lead us to this conclusion.

COST COMPARISON: Anodizing Vs. Painting (Coil Coating)

• **Extrusions:** Anodizing is a very cost effective coating process for extrusions. Batches of extrusions are dipped into anodizing tanks as opposed to passing through a paint spray coating line. Due to production and material costs, spray-coating extrusions is more expensive hence from a cost perspective, anodizing is more economical. Due to these considerations often times the exit curtain wall cover is painted while the interior mullion is anodized.

• **Coil Coated ACM:** In the case of Reynobond ACM panels, an inverse relationship exists between anodizing and coil coating. The aluminum coils used to manufacture Reynobond ACM are coil coated on high speed coating lines which offer a much more economical process than anodizing. Anodizing ACM panels can be performed via two processes. For a Class I coating, ACM panels are dipped individually into anodizing tanks. For a Class I or II coating, aluminum coil can be anodized and then manufactured into ACM. Both are much more expensive than coil coating with paint.

TRADEOFFS (Anodizing vs. Coil Coating)

• **Extrusions:** Anodizing offers better surface hardness and abrasion resistance, which is important for curtain wall extrusions since they undergo extensive handling during the fabrication process and installation. Hence, our position is that anodizing is more suitable for coating extrusions. This is reinforced by the fact that most extrusions do not come with removable heavy gauge protective film to protect the surface.

• **Coil Coated ACM:** The data summarized on page 3 clarifies the key tradeoffs between anodizing and paint coatings. In choosing paint coil coatings for ACM, one is trading off surface hardness and abrasion resistance for superior color consistency, retention, and corrosion resistance. To compensate for the difference in coating hardness we use heavy gauge protective film, applied to the panel surface during manufacturing, that protects the paint surface during fabrication and installation.
ANODIZING PROCESS LIMITATIONS

- **Limitations of Batch Anodizing:** Batch anodizing ACM panels requires dipping panels in anodizing tanks in order to achieve the desired finish. The major limitation is color consistency. Since the application and quality control processes begin and end with each panel or batch, a degree of variation between each individual panel or batch will always exist.

COLOR RETENION PERFORMANCE SPEC. COMPARISON

- **Anodizing:** The AAMA 611-98 specification for architectural aluminum stipulates a maximum 5 ΔE color change during the 5 year weatherability test (exposure in Florida, South of 27 degrees north at an angle of 45 degrees South). Anodized finishes are subject to potential pitting and corrosion over time when exposed to marine environments and/or urban centers.

- **Coil Coatings:** Alcoa Cladding Systems Colorweld 300 (XL) paint system uses 70% Kynar 500 / Hylar 5000 resin coatings for Reynobond ACM. AAMA 620.96 (coil coating) calls for a maximum 5 ΔE color change during the same test as mentioned above however, as per the stipulations in the Alcoa Cladding Systems architectural coatings warranty, maximum change is warranted for a **20 year period**. Therefore from a performance perspective the coil coating spec is much more stringent. Coil coated aluminum has a greater ability to resist chemical attack and corrosion.

COLOR UNIFORMITY

- Since the majority of designers and architects require a consistent, non-random appearance of ACM panels on building façades, the color consistency and other performance characteristics of coil coating make it a superior coating process to anodizing for **aluminum composite panels**. Coil coating is a continuous coating process that allows an indefinite amount of identical ACM panels to have the same appearance. Batch anodized ACM panels will always be subject to variability between each individual panel.
PERFORMANCE COMPARISON MATRIX

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<thead>
<tr>
<th></th>
<th>Coil Coated Reynobond</th>
<th>Anodized Coil / ACM</th>
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</thead>
<tbody>
<tr>
<td>Color Range</td>
<td>√√√√</td>
<td>√</td>
</tr>
<tr>
<td>Color Retention</td>
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<tr>
<td>Color Uniformity</td>
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<td>√</td>
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<tr>
<td>Alkaline / Acid Resistance</td>
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<tr>
<td>Abrasion Resistance(^1)</td>
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<tr>
<td>Warranty(^2)</td>
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<td>Cost</td>
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</table>

1. Coil coated Reynobond is protected by heavy gauge protective film, applied to the panel surface during manufacturing, which protects the paint surface during fabrication and installation.

2. Reynobond CW300 / CW300XL architectural colors come with a standard 20 year coating warranty. Warranties are not customarily extended for true anodized finishes or competing anodized ACM due to performance limitations.

CONCLUSION

Alcoa Cladding Systems feels that the combination of anodized extrusions and coil coated panels offers supreme value via the combination of consistent appearance and color retention for the façade, and superior hardness and abrasion resistance for the curtain wall extrusions. Alcoa Cladding Systems is launching 4 standard mica colors specifically matched to closely approximate commonly specified anodized finish colors. Please consult Alcoa Cladding Systems for more information on these specific colors.

In situations where as close a color match as possible is desired between curtain wall extrusions and ACM panels, spray coated extrusions with a finish formulated to match an ACM color is recommended. Note that any time a substrate is coated via a separate process there will always exist a minimal degree of color shading difference.

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MC-02