

Powder coatings poised for major growth in the US architectural market

Dave Heflin Akzo Nobel Coatings

The US has lagged behind Europe and other parts of the world when it comes to powder coating in the architectural market. That is about to change with the recent advancement of powder coatings and equipment technology available to coaters for the architectural market. This article explains the changes that have occurred and discusses two companies that decided to switch from liquid coatings to powder coatings as a result of these changes. It also includes photos of architectural powder coating applications from various parts of the world.

Since 1972, powder coatings have proved their performance on thousands of buildings all over the globe. Powder coatings have been the preferred choice of coating technology within the architectural market in Europe and the Asia Pacific throughout this time. However, the US architectural market took a different course, choosing various liquid technologies as the mainstream coating. Although several extruders and manufacturers had flirted with the concept of powder coating, they did not make the conversion.

Now, recent developments with both powder technologies and application equipment have enhanced the capability of powder coatings as a viable contender to liquid coatings in the US aluminum extrusion market. These manufacturers as well as the architects and specifiers within this market are now taking a more serious look at powder as the preferred choice over liquid.

AAMA specifications drive the US market

Within the US, the choice of coating within the architectural aluminum extrusion and panels market is driven by American Architectural Manufacturers Association (AAMA) specifications. The association has developed performance standards and product certifications that are recognized within the US architectural market. The specifications describe test procedures and performance requirements for organic coatings applied to aluminum extrusions and panels for architectural products.

These specifications assist the manufacturers, architects, specifiers, and others involved in a job to specify organic coatings that will provide and maintain a high level of film integrity, exterior durability, and appearance over a required time.

Two key weatherability requirements differentiate these specifications. Each of the AAMA specifications requires South Florida exterior exposure testing to be completed, and the coating must maintain its film integrity and meet specified color and gloss retention requirements throughout the exposure period. Three AAMA specifications are used within the architectural coatings market.

AAMA 2603-05. This specification requires 1 year South Florida exposure testing. It specifies only a slight gloss change and a slight change in color throughout the exposure period.

AAMA 2604-05. This specification requires 5 years South Florida expo-



AIG Headquarters, London

sure testing. It specifies at least 30 percent gloss retention and allows a color shift of no more than 5 Delta E units throughout the exposure period.

AAMA 2605-05. This specification requires 10 years South Florida exposure testing. It specifies at least 50 percent gloss retention and allows a color-shift maximum of 5 Delta E units throughout the exposure period.

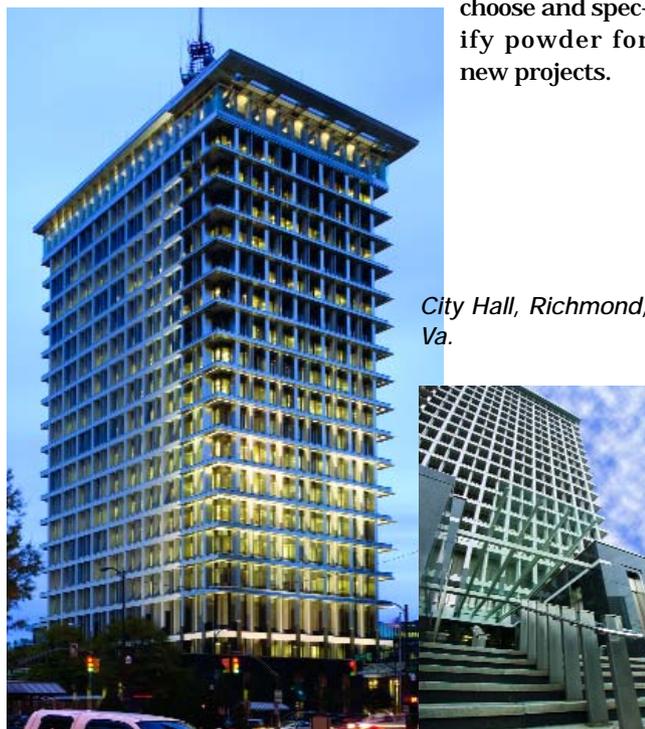
Developments move architectural powder coating forward

The aging process progressively damages any coating. The weather affects color and gloss integrity. Ultraviolet (UV) energy breaks down the surface polymer of standard coatings and exposes the pigment. Throughout time, degraded polymer and exposed pigment is removed by precipitation exposing the next layer of polymer.

In a standard powder, UV energy causes the pigment to fade. Ultradurable polyesters were developed to significantly reduce the aging process compared with a standard finish. Powder coatings that meet the stringent AAMA 2603 and AAMA 2604 specifications have been commercially available for some time and have been gaining a foothold in the aluminum extrusion market. Today, new hyperdurable powder technologies are available that meet the superior performance level required in the AAMA 2605-05 specification.

US architects and specifiers are becoming more aware of powder technologies for the monumental architectural aluminum market. In the past, they were somewhat reluctant for a few reasons: Powder was perceived as a new unproven technology, powder was not available to meet the AAMA 2605 specification, and a minimal track record of powder-coated projects had not been established in North America. There was a reluctance to

choose and specify powder for new projects.



City Hall, Richmond, Va.

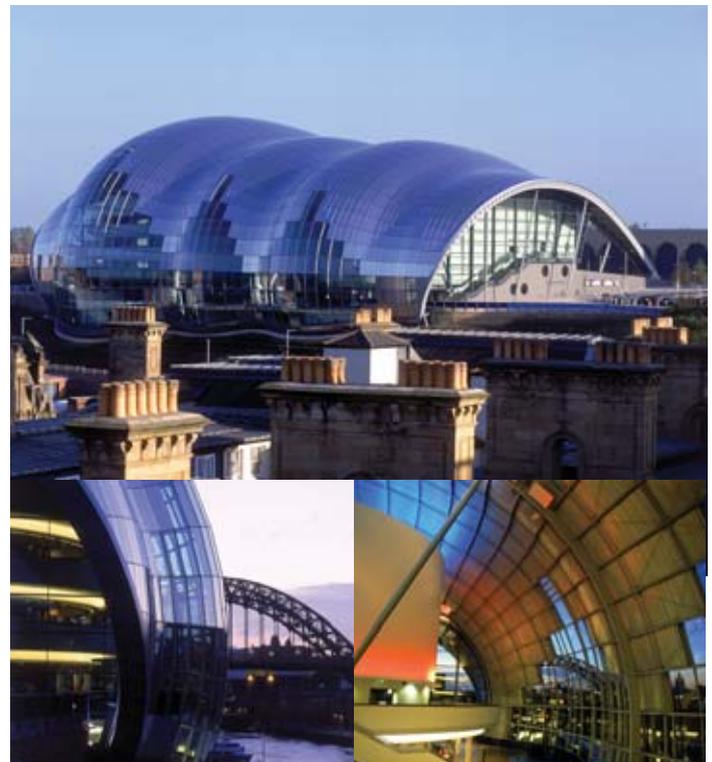
During the past few years, this reluctance has changed considerably. New fluoropolymer powder technologies have been developed, and they meet the AAMA 2605-05 specification. Consequently, the track record for projects coated with these technologies has been growing. The new AAMA 2605-05 powders are a true alternative to 70 percent fluorocarbon liquid paint. They do not require primers and are applied in single coats. They require normal application equipment and normal bake requirements, and can be reclaimed.

Powder can now grow in popularity in the US architectural aluminum market to become the preferred choice because of its many benefits:

- It is environmentally friendly.
- It is reclaimable, which enhances efficiencies and economics.
- It has excellent durability.
- It is offered in a variety of colors and textures.
- It provides an increased perception of quality because of its appearance on the finished part.

Growth in US economy provides impetus for companies to convert to powder coating

During the past few years, manufacturers and aluminum extruders cut back on some of their required capital expenditures due to the economic environment. Several of these manufacturers have liquid coating lines that required updating or revamping because of wear and aging. Until recently, the improvements could not be justified given the minimal availability of capital. The economic environment has now slightly improved, and capi-



SAGE Gateshead exterior, detail, interior (Gateshead, UK)

tal is becoming more available. As a result, these manufacturers are faced with decisions on making investments that will provide the greatest return on their capital investment.

Given the benefits of powder coatings and the fact that there are now powder coatings available that meet all of the AAMA specifications, these manufacturers are looking to the future and leaning toward the next generation of powder coatings, rather than liquid coatings.

The momentum for powder-coated aluminum extrusions is also gaining speed because of developments in powder application equipment. This includes large vertical systems that run at improved utilization and efficiencies, and at increased line speeds, which makes powder coating systems an attractive option compared with liquid coating systems. Following are two companies who recently installed these systems.

Indalex Aluminum Solutions Group. A major manufacturing company that has recently installed a new powder coating line, Indalex now supplies powder-coated aluminum extrusions into the architectural market. Tom Click, vice president of Marketing and Product Development for Indalex, indicated the following reasons why the company invested in powder coating:

- Indalex has 11 vertical paint lines and is the largest coater of aluminum products in North America. Adding powder was a natural extension of its services.
- Powder coat sales have been supplied by Asia Aluminum—until now. Indalex has owned 26 percent of Asia Aluminum for the past 6 years. Adding domestic capacity allows Indalex to provide service like no other extruder.
- Indalex was able to create a true partnership with an existing customer to “anchor” its powder line. Without this partner, who will consume 65 percent of the available capacity, investing in a powder line would have been incredibly risky.
- The idea to install a powder line, once initiated, naturally evolved into an opportunity to lead the market. “We believe that having the largest and most productive vertical powder line in North America, coupled with supply from Asia, is a huge competitive advantage,” Click said.
- Powder coating is a green technology. Converting one of its wet paint lines to powder had immediate benefits for the environment, as well as for the company’s internal safety standards.
- The durability of powder coating provides an immediate benefit to its customers in the form of lower internal scrap and fewer field callbacks.

Starline Architectural Windows. Another major manufacturer, the company recently converted from liquid- to powder-coated parts. Pat Murphy, lean manufacturing manager for Starline, said: “Starline Architectural was looking to bring painting in house in 2005. We had been using outside coaters to paint Duranar wet coat for our aluminum high-rise window systems. We were meeting the AAMA 2605 requirements that our customers demanded, but relying on outside vendors was having a negative impact on several areas of business.”

Murphy said the company realized that installing a powder coating line in its Langley, British Columbia, architectural plant would allow the company to be more flexible in scheduling to meet customers’ needs while reducing lead time, inventory, and costs.

After studying the options available to them, Murphy said, it was clear that the best and most forward thinking decision was to install a powder coating line rather than stay with liquid coating. “By partnering with good quality powder and chemical suppliers,” he said, “we have been able to ship products that not only meet the AAMA 2605 requirement that our customers demand, but are actually superior to wet-coated products in many ways.”

Installing a powder line at Starline was far more environmentally friendly than installing a wet system. With powder, the company isn’t exhausting any pollutants into the environment, and it doesn’t have to deal with the removal of hazardous waste from the plant.

“We also get the benefit of reclaiming powder, so our transfer efficiency is very high and our finish quality is excellent,” Murphy said. “We do extensive quality control testing in house and at our powder vendor, and we have been extremely happy with the results we have achieved.”

The company also found that powder-coated extrusions are more scratch resistant than wet-coated extrusions. As a result, the company has practically eliminated rework from paint damage caused during manufacturing and shipping. Murphy said this is clearly a benefit to the installers and end users of the company’s products because the finish is very difficult to damage. “We have virtually eliminated the need to send touch-up paint out with our windows since moving to powder,” he said. “We have been very pleased with our decision to use fluoropolymer powder, and it has had nothing but a positive impact on our business, both for us and our customers.”

US powder coaters set their sights on an architectural market ready to go global

The overall number of projects with powder-coated aluminum has grown in the past years because of the

numerous projects completed with aluminum extrusions that were powder-coated either in Asia or in Europe and imported for installation on US job sites. The architectural market has transitioned into a global market. Projects for installation in the US may have an architectural firm in Europe responsible for a project, while the parts may be extruded and coated in Asia.

For years, architects in Europe and Asia have been specifying powder for projects and therefore do not have any reluctance in specifying powder over liquid for projects that will be installed in the US. The result is a growing track record in the US for powder. US architectural firms are also becoming more knowledgeable about powder technology and more aware of not only AAMA 2603 and AAMA 2604 powders, but also the new AAMA 2605 powders.

Powder coating is making a major positive impact in the US architectural market and is poised for growth. Soon, powder, not liquid, will be the coating of choice. PC



Hasselblad, Göteborg, Sweden

Editor's note

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Dave Heflin is market manager of Akzo Nobel Coatings, 4150 E. 56th St., Cleveland, OH 44101; 281/352-2254; e-mail [dave.heflin@interpon.com]; Web site [www.interpon.com]. He is a member and past president of the Powder Coating Institute.