

Warranties for Architectural Metal Coatings: A Comparative Review



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Introduction

Today's skyscrapers, stadiums, office buildings and entertainment complexes look better and last longer than ever. That's due in large part to advances made in the aesthetics and performance of liquid and powder coatings for aluminum and other metal building components.

Even with these advances, the most sophisticated metal coatings have the potential to corrode, lose their color or gloss, or crack and peel if they are not manufactured, applied or installed properly, or if they are exposed to environmental hazards in the field. Correcting these problems can cost millions of dollars.

For architects, specifiers, consultants and building owners, the strongest protection from these potential liabilities is a solid, enforceable warranty backed by a world-class coatings manufacturer and delivered through a trusted, proven supply chain. The following document identifies and explains the elements of a metal coatings warranty so end users can thoroughly evaluate the applicable terms and conditions and obtain the most effective coverage.

Warranties and Quality Standards

Many companies, including coatings manufacturers, finished component manufacturers, applicators and contractors issue coatings warranties. Coverage typically extends from warranty issuers to their direct customers, but terms can vary by technology (liquid vs. powder, for instance), by product, by country and even from one project to another. For architects, specifiers and building owners, this can present major challenges when comparing bids and warranty terms from competing suppliers.

In North America, the most important warranty terms and conditions, those related to wear, are outlined in voluntary standards published by the American Architectural Manufacturers Association (AAMA).

AAMA 2605-05 *Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels* is the most rigorous and widely cited benchmark; however, AAMA also publishes less rigorous criteria for high-performance (AAMA 2604-05) and basic pigmented (AAMA 2603-02) coatings. In Europe and Australia, Qualicoat is the most widely recognized standard. To learn more, visit www.qualicoat.net or www.aamanet.org.

Why Warranties Are Important

Coating architectural components made of aluminum requires not just an excellent coating, but expert application in the factory and installation on the job site. At any point, from the time the metal is pretreated and coated to the time it is actually installed on a building, there are numerous variables that must be carefully prepared for and controlled to ensure the coating will achieve its expected service life.

Coatings warranties are designed to protect building owners, architects and specifiers from failures, which can cost millions of dollars. Because there are many companies involved in the coatings supply chain, conflicts or confusion can arise about which supplier is backing a warranty, what constitutes a coatings failure and who ultimately is responsible, especially if the failure occurs five, seven or 10 years after a building is complete. For this reason, understanding and selecting the right supplier, applicator and warranty is critical to a project's success.

WARRANTY CHECKLIST:

Performance Variables

Pretreatment

Pretreatment refers to the preparation of the metal substrate before the coating is applied. It is an important consideration when specifying a coating system because it can determine the degree to which it is warranted.

Thus far, coating systems that incorporate traditional, field-proven pretreatments have demonstrated the most effective protection of architectural aluminum. This is particularly true in seacoast environments, where long-term exposure to salt air and humidity can lead to the failure of a coating.

Film Integrity

Film integrity primarily addresses a coating's long-term ability to adhere to the pretreated metal substrate and to resist cracking and peeling. If a warranty covers adhesion, it is appropriate to ask about restrictions related to the pretreatment or the location of the finished project.

Weathering

Warranties address three major weathering performance variables that are key indicators for long-term performance: color fade, chalk and gloss retention. Inferior coatings that fade, chalk, and lose gloss may need to be repainted at the job site, a costly development that can have negative environmental impacts.

Comparative testing and measurement standards for fade, chalk and gloss retention are published in the AAMA 2605-05, 2604-05 and 2603-02 voluntary specifications. For more details on industry recognized weathering standards published by AAMA and Qualicoat, see the table on page 5.

Corrosion Resistance

The two main components to corrosion resistance are resistance to humidity and salt spray. For this reason, metal coatings manufacturers, with very few exceptions, drastically restrict or eliminate

warranty coverage in severe marine or seacoast environments. Accelerated test procedures for salt spray resistance are detailed in ASTM B 117, which prescribes scoring a coated test panel to reveal the base metal substrate, then exposing it to a 5 percent salt solution for 4,000 hours according to the AAMA 2605-05 voluntary specification (compared to 3,000 hours for AAMA 2604-05 and 1,500 hours for AAMA 2603-02).

Although many coatings manufacturers test for salt spray resistance according to this protocol, it is a minimum standard that does not necessarily correlate to the ultimate performance of the coating in a seacoast environment. Many coatings manufacturers rely on accelerated test data to substantiate the corrosion resistance of their products, but this has resulted in many costly field failures. The only true indicator of corrosion resistance in salt air and humidity is long-term exposure data in real-world environments.

For the best protection, specifiers should work with a coatings supplier that offers corrosion resistance in seacoast environments as part of its long-term warranty.

Please note that in addition to seacoast environments, warranties for corrosion resistance may also be limited by a coating's proximity to steel plants, power stations, oil refineries, chemical plants, paper mills and other industrial environments where potential for exposure to environmental hazards is high. Corrosion resistance warranties should maintain coverage in these situations as well.

Recoating

Many warranties, especially those from some powder coatings manufacturers, can be voided or restricted if a building's metal architectural components need to be recoated due to improper film thickness, appearance flaws or other problems. Specifiers should have a thorough understanding of how finished products are warranted if they have been or must be recoated.

Fabrication and Handling

Items raised in the fabrication and handling portion of the warranty may include issues related to the manner in which the coating is applied prior to fabrication, how coated building components are stored prior to installation and other related issues.

Remuneration

Warranties should specify precisely how the warranty holder will be remunerated in the event of coatings failure. Beyond identifying what is covered, the warranty should stipulate who ultimately determines which party is responsible for a coatings failure (manufacturer, fabricator, installer or owner), whether the coating will be repaired or replaced, and whether the warranty provides full or declining payouts over its term.

Term

Most warranties cover five, 10 or 20 years; however, the number and type of performance variables covered under these terms, as detailed earlier, are always of greater consequence. Before agreeing to the terms of a coatings warranty, specifiers should confirm whether it is a full warranty that covers each specified performance variable throughout the term or a declining warranty with payout obligations that reduce over time.

Company History and Reputation

The metal coatings industry is constantly evolving. At any one time, there are hundreds of manufacturers and applicators in operation, particularly in parts of the world where construction is booming.

Unfortunately, not all of these companies have the resources to cover their warranty obligations, particularly in the wake of a catastrophic coatings failure. To ensure that a warranty is viable and can be enforced, specifiers should partner with companies that have the financial wherewithal to back their warranties as well as history and reputation for doing so.

Before entering into an agreement with a coatings warranty issuer, know the financial strength of the company as well as its history, integrity and experience in the construction industry through research and referrals.

Other Miscellaneous Issues

Additional warranty items may relate to cleaning or maintenance requirements, exposure temperatures and others. Parameters should define the building owner's maintenance obligations and other potential exclusions. A specification qualification with detailed weather exposure data from the warranty issuer is recommended.

Table 1: Comparing Warranty Terms & Conditions

What to Look For. What to Ask.

The following table helps architects and specifiers compare competing warranties:

Topic	Issues	Impact
Term	Make sure you know the length of your warranty and what it covers. Ask about exclusions related to the finished building's location.	Full long-term coverage is preferred over declining coverage with reduced payouts or liabilities over time.
Pretreatment	Know the type of coating pretreatment used on the metal substrate.	Coatings over traditional, field-proven pretreatments may have better warranties than those applied over metals pretreated with new technologies.
Film Integrity	Your warranty should cover issues related to film adhesion, particularly in industrial or seacoast environments.	Make sure your warranty is enforceable according to the pretreatment used as well as the location of the finished building.
Weathering	Color fade, chalk and gloss retention are the most important weathering elements in a warranty. Make sure you understand how the performance parameters for each are defined in your warranty.	Stronger warranties define performance numerically per AAMA specifications, not generically as uniform loss of color, gloss, etc.
Corrosion Resistance	Insist on corrosion resistance and weathering performance in your warranty. Understand what constitutes corrosion according to your warranty.	Make sure your warranty is enforceable in seacoast or industrial environments if your building is located in one.
Recoats/ Repairs	Understand how recoating and repairs are covered in your warranty. Ask the warranty issuer if there are any restrictions that affect your coverage.	Many powder warranties are void if there is repainted material. If metal components must be scrapped due to repainting, repair costs are much higher than they would be if they just required a new coat of paint. Make sure you understand how these issues are addressed in your warranty.
Handling & Fabrication	Follow instruction from the warranty issuer on how to properly store and handle your finished panels prior to installation. Make sure your procedures meet their warranty specifications if they have any.	Check to see if your warranty addresses how painted materials are stored prior to installation or if recoating is required due to a handling issue. Make sure it does.
Remuneration	Your warranty should stipulate how you will be remunerated in the event of coatings failure.	Make sure your warranty stipulates whether warranted products are repaired or replaced, who decides the party responsible for the failure and the type of payout (a full warranty or one with declining payouts based on years of service).
Warranty Issuer	Research the company issuing your warranty. Make sure they are financially strong and have a history of standing behind their claims. Check referrals to verify experience in the construction industry.	Know your warranty-issuer. Most companies only issue warranties to direct customers or one level down the supply chain.
Miscellaneous	Find out if the warranty issuer has maintenance requirements for the warranted panels or coating related to cleaning, temperature or UV exposure. Make sure you understand the cost associated with maintaining your coatings.	Make sure the coatings or component supplier has a specification qualification that specifically contains and addresses exposure testing.

Table 2: Industry Recognized Weathering Standards

Weathering Variable	Voluntary Spec	So FLA Exposure (yrs @ 45° Angle)	Measurement Method	Acceptable Standard
Color Fade	AAMA 2605-05	10	ASTM D 2244, Section 6.3	Minimum 5ΔE Units (Hunter) of Color Change
	Qualicoat Class 3	10	ISO 7724/3	Minimum 5ΔE Units (CIELAB) of Color Change
	AAMA 2604-05	5	ASTM D 2244, Section 6.3	Minimum 5ΔE Units (Hunter) of Color Change
	Qualicoat Class 2	3	ISO 7724/3	Total color change tolerance variable by color family
	AAMA 2603-02	1	N/A	N/A
	Qualicoat Class 1	1	N/A	N/A
Chalk Resistance	AAMA 2605-05	10	ASTM D 4214, Method A	Minimum No. 8 for Colors Minimum No. 6 for White
	Qualicoat Class 3	Not Specified	Not Specified	Not Specified
	AAMA 2604-05	5	ASTM D 4214, Method A	Minimum No. 8 for all
	Qualicoat Class 2	Not Specified	Not Specified	Not Specified
	AAMA 2603-02	1	N/A	N/A
	Qualicoat Class 1	Not Specified	Not Specified	Not Specified
Gloss Retention	AAMA 2605-05	10	ASTM D 523	Minimum 50% retention
	Qualicoat Class 3	10	ISO 2813	Minimum 50% retention
	AAMA 2604-05	5	ASTM D 523	Minimum 30% retention
	Qualicoat Class 2	3	ISO 2813	Minimum 50% retention
	AAMA 2603-02	1	N/A	N/A
	Qualicoat Class 1	1	N/A	N/A

PPG is a leading coatings manufacturer with more than 125 years of service to the building industry, and plants and sales offices in more than 60 countries. If you have any questions

about the terms of a warranty before or during the specification process, please call a PPG architectural specialist at **1-888-PPG-IDEA** or visit www.ppgideascales.com.



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