valspar

if it matters, we're on it.®

Weatherability matters.

Weather Exposure is a Key Component to Coatings Performance

Valspar's industry-leading test site in Florida provides conditions that are perfect for natural exposure "real world" testing. Currently, there are approximately 100,000 exposure panels at various angles. The oldest panel is from 1968!

Pictured: Fort Myers, FL site

Weather Testing

For more than 200 years, Valspar has shaped its reputation for coatings that are rugged enough to withstand the harshest of conditions. And while the coatings need to perform, they also must maintain their beauty over time.

What's the science behind this coatings success? While there are many elements to developing a quality coating, one critical component is testing - and Valspar's testing methodology is rigorous.

The centerpiece of Valspar's exposure sites is a 6.25-acre facility in Fort Myer's, Florida. Based on its subtropical location 26° 39'N and 81° 49'W, this weathering site provides conditions that are perfect for natural exposure testing. The site has 100,000 panels on exposure and a laboratory staffed with experts to review results and complete accelerated weather tests.

In addition to this site, Valspar has three other company owned facilities in Rochester, PA to test Acid Rain, Marengo, IL to test Freeze/Thaw and Rockhampton, Queensland Australia our High UV site. All of these facilities work together to make sure we are testing our coatings in every condition possible.

Most Accredited Test Facility

Valspar's "Test Fence" as it is known by its employees, is the most accredited manufacturer's test facility in the coil coatings industry. We have equal accreditations to the facilities that our competitors use for exposure and cool roof testing.

What does that mean for our customers? Peace of mind. When Valspar puts a new product on the market it has been tested by a technical staff that has been evaluated, tested and retested by Accreditation Bodies. During the process, factors relevant to a laboratory's ability to produce precise, accurate test and calibration is assessed, including testing environment and handling of test items to meet industry standards.

Exterior weather exposure (natural weathering) involves placing sample panels on inclined open racks orientated at the sun, usually at a 45 degree angle in a southerly direction. This angle ensures full UV exposure.

Benefits to our Customer

Our commitment to quality would mean nothing if there wasn't an end goal in mind, helping our customers. Valspar's test facility is open to our customers to help navigate the world of weatherability. By providing access to our facility and knowledgeable staff.

Site Accreditations

- ISO 17025 Accredited by A2LA (American Association for Laboratory Accreditation) Accredited for Testing and accredited Exposure Site
- EPA 1st Party Laboratory - Roof Coatings, listed on Energy Stars Website
- Accredited Manufacturing Test Lab - CRRC (Cool Roof Rating Council)
- AAMA Verified Component Laboratory - American Architectural Manufacturers Association

Know Your Enemy

Exposure to the sun (UV light), moisture and humidity, high temperatures and temperature fluctuations can lead to color changes, chalking, blistering, corrosion and many other physical factors to the protective metal coating. Knowing our enemy and understanding how it can affect our product helps Valspar develop and deliver superior products to our customers.

Testing and evaluating how these elements interact is an important step in the coatings industry. UV light from the sun usually starts the break down of the coating molecules but it is a combination of the sun, heat and moisture that can accelerate the damage more than any one factor alone.

So the test of a coating is its ability to resist weathering.

Technology is key.

Weather testing is a critical variable to Valspar's Technical Engineers when they are formulating new materials or improving upon old formulas. All new formulations are put through rigorous testing, because it is important to know if we are heading in the right direction or if we need to go back to the drawing board.

Key reasons why Valspar tests:

- New product development
- Prevent field failure
- Improve quality and durability
- Expand product lines
- Improve current product lines
- Resin development
- Patch performance
- Application performance
- Pigment studies
- Product Warranty requirements
- Meet new customer requirements
- Comply with Government regulations
- Comply with Environmental regulations
- Outlast the competition
- Help customers make educated decisions

Pictured: Rochester, PA site

"This testing not only provides us with important information about the specific coating being tested, but also builds our general knowledge of weatherability that can be applied to future development," said Marlene Garrow, Group Leader at Valspar's Test Facility.

Pictured: Rockhampton, Queensland Australia site

Pictured: Fort Myers, FL site

Test, test and test again.

Valspar has two key approaches to weather testing: long term natural exterior weather exposure and laboratory accelerated weathering. Each of these testing approaches verifies performance, application, weathering and appearance of our sample panels.

Tests and evaluations are performed to appropriate industry association standards by Valspar technical experts.

Natural Exposure

Exterior weather exposure (natural weathering) involves placing sample panels on inclined open racks orientated at the sun, usually at a 45 degree angle in a southerly direction. This angle ensures full UV exposure.

Accelerated Testing

Special environmental cabinets and instruments are used to speed up the weathering process and measure its effects under extreme conditions.

Cabinet Testing	Description	Standard
Corrosion Testing	Neutral Salt Spray	ASTM B 117
	Cyclic Prohesion	ASTM G 85 Annex5
	Cosmetic Corrosion Test	SAE J 2334
	Cyclic UV Fog	ASTM D 5894
	100% Humidity @ 100° F	ASTM D 2247
	Cleveland Humidity	ASTM D 4585
UV Testing	Dew Cycle Weatherometer	ASTM D 3361
	QUV A - 340nm Bulb	ASTM D 4587
	QUV B - 313nm Bulb	ASTM D 4587
Physical Testing	**Description**	**Standard**
	Falling Sand Abrasion Test	ASTM D 968
	Adhesion Testing	ASTM D 3359
	Chalking	ASTM D 4214
	Solar Reflectance	ASTM C 1549
	Emittance	ASTM C 1371
	Gloss	ASTM D 523
	Instrumental Color	ASTM D 2244
	Impact	ASTM D 2794
	Pencil Hardness	ASTM D 3363
	MEK Rubs	ASTM D 5402
	Dry Film Thickness - Boring Device	ASTM D 5796
	Detergent Resistance	ASTM D 2248
	Water Resistance	ASTM D 4585
	Measure of Thickness - Eddy Current Method	ASTM B 244
Exterior Exposure	**Description**	**Standard**
	Atmospheric Environmental Exposure Testing	ASTM G 7
Wet Stack Testing	**Description**	**Standard**
	Wet Stack Test	ASTM D 7376
	Degree of Rust	ASTM D 610
	Degree of Blistering	ASTM D 714
	Evaluation of Specimens in Corrosive Environment	ASTM D 1654
Physical, Accelerated and Exterior	**Description**	**Standard**
	All Testing and Weathering	AAMA 2603, 2604 & 2605

Valspar develops a complete solution

Outlasts the competition.

Valspar is constantly evaluating our products to make sure they withstand the damaging forces of nature and provide the excellent long-term durability and beauty our customers have come to expect. While accelerated weathering cabinets are a key resource when developing and reporting to industry associations, Valspar does not reply on those tests alone.

Nothing provides better results then natural exposure to the sun, heat and moisture, even if it takes years. Valspar is continually testing and collecting data on our products and our competitor products. We focus on what matters to our customers - a coating system they can trust.

According to Rick Afton, Technical Director of Valspar's Coil and Extrusion, pigments and additives used to help block and reflect light are significant in maintaining the integrity of Valspar coatings. Testing helps scientists understand how those pigments perform and access how much dirt will stick to the coating as it expands and contracts from exposure to a variety of outdoor temperatures.

Weathering Governing Associations

What is ASTM?

ASTM International, formerly known as the American Society for Testing and Materials (ASTM), is a globally recognized leader in the development and delivery of international voluntary consensus standards. ASTM International standards are the tools of customers satisfaction and competitiveness for companies across a wide range of markets. ASTM standards help level the playing field so that businesses of all sizes can better compete in the global economy. **www.astm.org

What is AAMA?

American Architectural Manufacturers Association (AAMA) stands as a strong advocate for manufacturers and professionals in the fenestration industry and dedicated to the promotion of quality window, door, curtain wall, storefront and skylight products. They work to improve product, material and component performance standards. **www.aamanet.org

Other Associations

We're in good company when it comes to our Green Agenda. Because when you're a proud member of the following organizations, sustainability becomes top priority; Energy Star, USGBC (U.S. Green Building Council and LEED) and CRRC (Cool Roof Rating Council).

Testing to Failure

Why test to failure? Weather testing has become a crucial step to head off potential product failures. Innovation matters at Valspar and research and development is ongoing to improve performance and durability of our coating systems. With this, new formulations are created and need to be tested to failure. A well-planned weathering test program could identify coating failure risks in advance. Below are a few of the many potential coating failures we are testing for.

Gloss Retention

Gloss has been defined as the ability to reflect without any scattering of light. Direct UV exposure can degrade the top coat luster. While all types of coating will lose some degree of gloss over time, lower quality paints will generally lose gloss much earlier than superior coatings.

Chalking

Chalking is caused by degradation of the resin system at the surface of the finish due, predominantly, to exposure to ultraviolet (UV) rays. As the resin system breaks down, resin particles take on a white appearance and imbedded pigment particles lose their adhesion to the film. Chalking is tested by transferring the chalk to a fabric or adhesive tapes and compared to a photographic reference standard (ASTM D 4214). The range goes from 10 to 1 with 10 showing the least chalk and 1 showing the presence of extreme chalking.

Fading / Delta E

Delta E (dE) is a single number that represents the distance between two colors. One color is always the standard, the starting point for the calculation. The second color is the weathered panel and the Delta E number will provide the color change in color that is expected due to fade and loss of gloss after exterior exposure. The lower the number, the lower the amount of color change. The higher the number, the higher the amount of fading.

Blistering

Blistering represents a localized loss of adhesion and the lifting of the coating film from the underlying surface. This is caused by heat, moisture or a combination of both. This condition eventually leads to peeling and corrosion. Surface blistering can sometimes be caused by improper drying or curing of the coated material.

Cracking / Flaking

Hairline fractures occur in the coating that then splits and eventually peels away from the substrate to cause cracking and flaking. Improper application, spreading paint too thin, poor surface preparation, coating primers and coatings adhere to the pretreatment on the substrate, or improper paint selection for the environmental conditions can all cause cracking in a coating system.

Quality and performance always matter, and we're on it with innovative research and development.

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