

Alodine®

EC²™ ElectroCeramic Coating



Engineered for the Forces of Nature

Alodine® EC2™ ElectroCeramic Coating

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Engineered for the Forces of Nature



Alodine® EC²™ ElectroCeramic Coating

A revolutionary new base coating for aluminum, titanium and related alloys

Alodine® EC²™ ElectroCeramic Coating delivers benefits throughout the entire coating process and over the life of your coated products. When protection is essential from the forces of nature or the forces of man, Alodine® EC²™ can withstand the most extreme conditions, prolonging the ability of your aluminum, titanium and light metal components to perform at optimum levels. Heat, cold, salt, gas, oil and water are no match for Alodine® EC²™.

Formed through the electro-deposition of titanium oxides, this tough, flexible coating provides exceptional chemical, corrosion, temperature and abrasion resistance at process costs lower than traditional coating methods. As a result, Alodine® EC²™ provides options for automotive, marine and industrial applications that are not available with any other coating process.

Alodine® EC²™ ElectroCeramic Coating Benefits

- **Excellent for withstanding corrosive environments**

From the extreme, inferno, friction and pressure of automotive engines, to the pounding galvanic corrosion of the sea in marine craft, Alodine® EC²™ protects aluminum and light metal parts from the forces of nature and man. Regardless of your industrial application or the harsh environment your parts face, Alodine® EC²™ can withstand extreme chemical and corrosion hazards.

- **Improves efficiency across the coating process**

The Alodine® EC²™ process eliminates steps such as priming and oven curing, compared to standard coatings, allowing for only one application level between the metal surface and the decorative finish.

- **Reduces processing cost**

By removing steps from the traditional aluminum/light metal coating process, Alodine® EC²™ has the ability to lower total operating costs, including maintenance labor and downtime. Save money while improving quality.

- **Extends life of coated components**

Alodine® EC²™ delivers long-term corrosion protection far beyond a traditional conversion coating and paint process, with exceptional heat and abrasion resistance. Where other coatings fall short, Alodine® EC²™ ElectroCeramic Coating can withstand the beating of wind, fire, water and air.

- **Improves performance of secondary coatings and adhesives**

When the coating process begins with Alodine® EC²™ ElectroCeramic Coating, a powerful foundation is created. The finished surface of Alodine® EC²™ allows for improved adhesion by subsequent coatings, providing even greater protection compared to a traditional primer or base coat layer.

- **Environmentally safe and compliant**

RoHS and ELV compliant and 100% chrome-free, the Alodine® EC²™ process is more environmentally responsible and sound than traditional coating methods. And, by removing steps from the aluminum coating process, energy and natural resources are saved as well.





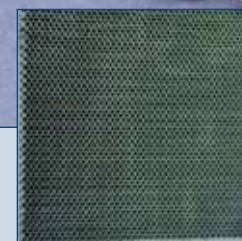
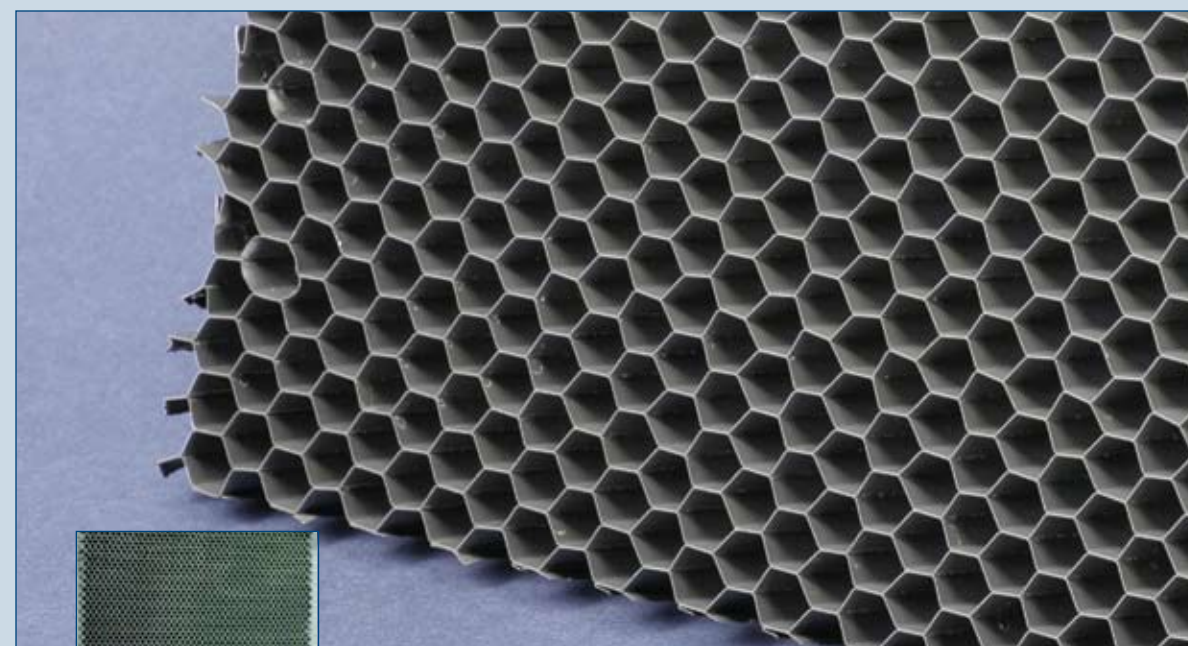
AEROSPACE

High-flying aerospace components demand a high-performance coating – that's Henkel's Alodine® EC²™ ElectroCeramic Coating.



AEROSPACE

The right coating is critical to the protection of aerospace engine components from the inferno-like conditions under which they must successfully operate. The recipient of the “Innovation Award” from the SurfAir 2006 Conference, Alodine® EC²™ provides superior corrosion and wear resistance as a primer for thermal spray over aluminum, and other aluminized surfaces. Alodine® EC²™ may even replace other primers and pre-treatments for some aerospace components and aluminized composites, reducing manufacturing time and costs. Powerful friction and corrosion protection has never been more convenient.



5052 aerospace honeycomb core,
4000 hours salt spray



Alodine® EC²™ ElectroCeramic Coating

Engineered for the Forces of Nature

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ARCHITECTURAL
COMPONENTS

Builders and building component manufacturers
around the world rely on Henkel's Alodine® EC²™
ElectroCeramic Coating.

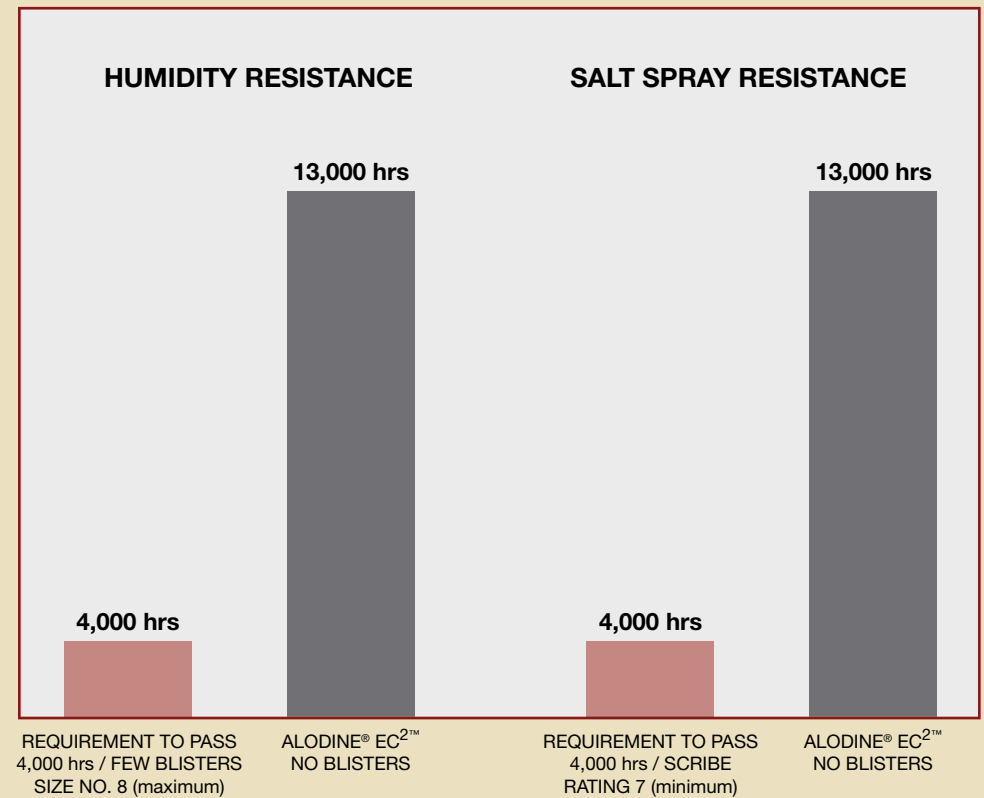
www.henkeIEC2.com



ARCHITECTURAL COMPONENTS

Alodine® EC²™ can help protect aluminum exterior architectural components from the harshness of the natural elements. Window frames and sills, door frames and doors, and many other components are constantly threatened by deterioration from pounding thunderstorms, corrosion from salt and fog in coastal areas, the bitter cold and snow of winter, and the scorching heat and humidity of summer. Alodine® EC²™ boosts corrosion resistance in the most demanding environments.

ORGANIC COATED ALUMINUM TESTED PER AAMA 2605-02



Alodine® EC²™ ElectroCeramic Coating

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AUTOMOTIVE ENGINES
AND COMPONENTS

Rev it up – Alodine® EC²™ ElectroCeramic Coating can take the blistering heat and the friction that today's automotive engines unleash.

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AUTOMOTIVE ENGINES AND COMPONENTS

In recent years, automotive engines have increased in performance and power. Alodine® EC2™ provides engine protection under a wide variety of extreme conditions, ranging from low temperature short trip service to extended high speed, high temperature operations. Alodine® EC2™ provides excellent wear and corrosion resistance for pistons, intake manifolds, brake components, aluminum structural components and stainless replacements, as well as corrosion resistance for water pumps, cylinder heads and liners. By reducing friction, Alodine® EC2™ adds life to automotive components.



Alodine® EC2™ increases the adhesive strength of adhesives and sealants. Loctite® silicone liquid gasket lap shear strength and joint movement to break is doubled while yielding 100% cohesive failure on Alodine® EC2™ coated aluminum alclad.



Due to its hardness, temperature and wear resistance, and coefficient of friction properties, Alodine® EC2™ can replace both the ring groove anodize coating and the piston skirt coating while also eliminating several stages and simplifying the manufacturing process.



Alodine® EC²™ ElectroCeramic Coating

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COOKWARE

On the stove or in the oven, Alodine® EC²™ protects cookware from corrosion and high-temperature environments.

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COOKWARE

Coatings that can't stand the heat have no place in a kitchen. Henkel's "dishwasher safe" Alodine® EC²™ ElectroCeramic Coating provides such effective light metal corrosion protection and wear resistance that a primer is no longer necessary. You'll save time and money in the manufacturing process, confident that Alodine® EC²™ best-in-class heat protection can withstand direct contact with extreme temperatures, up to 1100°F, much greater than any temperature to which cookware is routinely exposed.



Because Alodine® EC²™ can take the heat, it is in the kitchen. By providing a protective ceramic coating layer on pots, pans, and kitchen equipment, harsh cooking environments and dish washing cleaners are no match for your tools of the trade.



Aluminum fasteners in a marine environment? Unthinkable, until now! Henkel's Alodine® EC²™ ElectroCeramic Coating allows the use of aluminum, aluminum alloys, and aluminized ferrous substrates in place of costly stainless steel fasteners for high corrosion environments.



FASTENERS

Alodine® EC²™ offers corrosion protection for fasteners used in saltwater and coastal areas, aircraft engines, automotive engines, marine engines and other components exposed to harsh environments. Subjected to both the forces of man and the forces of nature, fasteners are critical components that cannot risk failure. Alodine® EC²™ is a revolutionary electroceramic coating that remains fully intact on the fastener, even after installation, resulting in superior protection.



Aluminized Steel Bolts (13 microns), 7 microns of Alodine® EC²™, 2000 hours ASTM B-117 Salt Fog, No Red Rust No red rust or corrosion to seize your fasteners.



HVAC

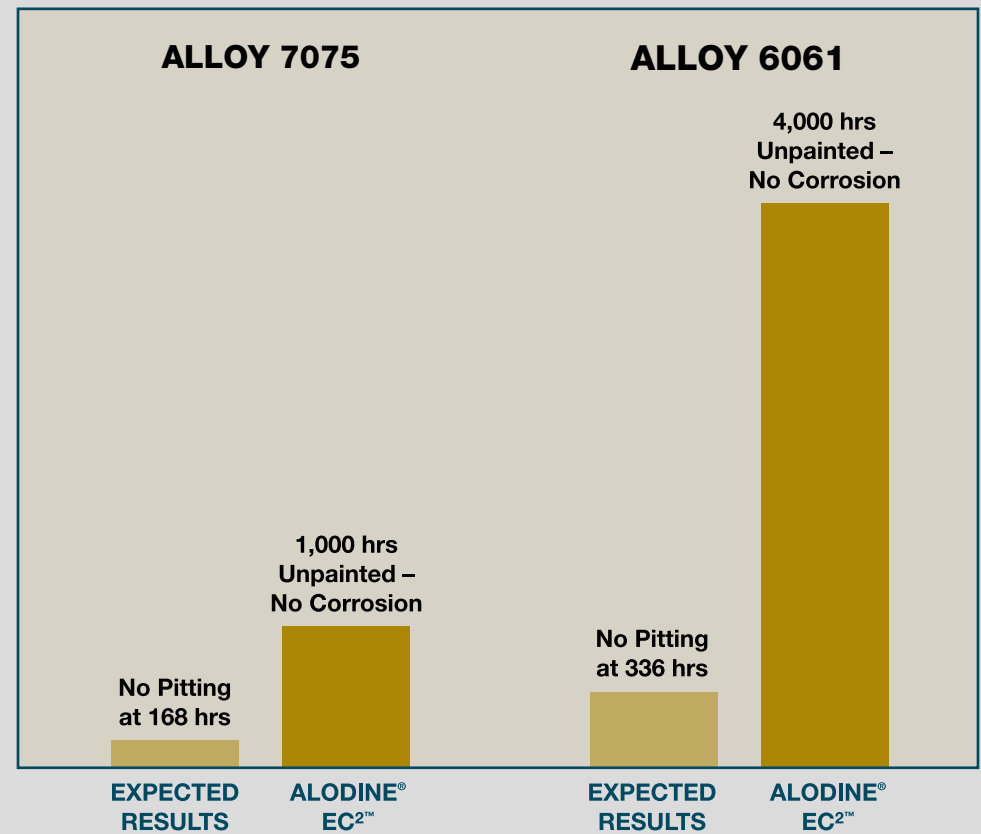
Alodine® EC²™ ElectroCeramic Coating offers best-in-class protection against hot and cold temperature extremes.

HVAC



Coating product selection is critical in the heating, ventilating, heat exchange and air conditioning industry. Aluminum components must endure punishing heat and extreme cold. As manufacturers seek to improve both the quality and efficiency of their products, the right coating can play a crucial role. Alodine® EC²™ provides exceptional protection, reduced costs, and longer part-component lifetimes.

BARE SALT SPRAY TESTING



Alodine® EC²™ ElectroCeramic Coating

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MARINE ENGINES
AND COMPONENTS

Henkel's Alodine® EC²™ protects against the harsh, corrosive nature of salt water in marine engines, which can cause destruction or catastrophic failure.

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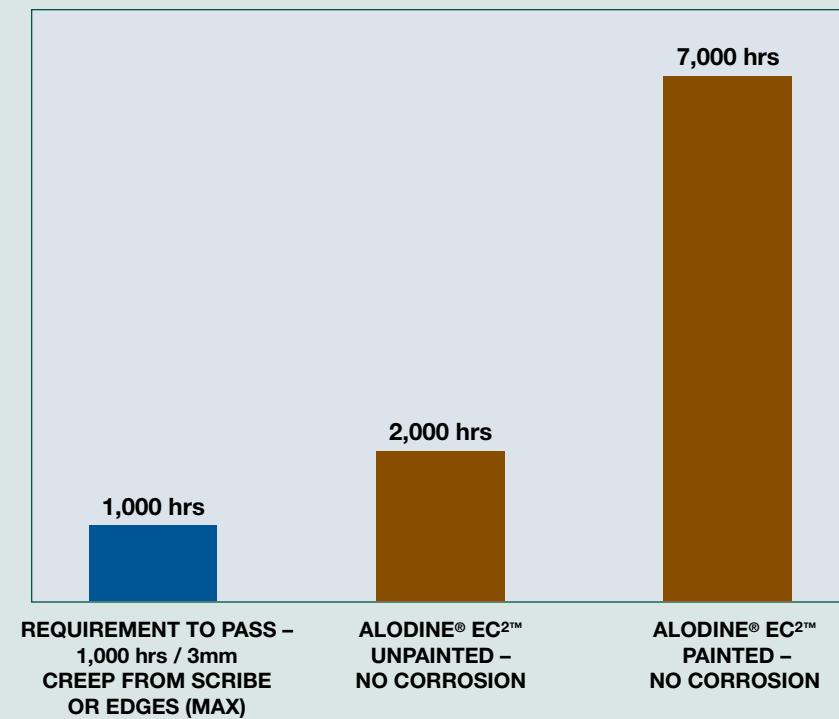


MARINE ENGINES AND COMPONENTS

When Henkel introduced Alodine® EC²™ for the coating of aluminum and light metal marine engine parts including outboards, stern drives and components, the industry knew they were witnessing something special. Alodine® EC²™ delivers optimal protection against the chemical corrosions caused by seawater, which can be even more damaging than the type of metal rust commonly found on land-based engines. Manufacturers in the marine industry are now able to provide their customers with products that require less maintenance and last longer than ever before.

SALT SPRAY RESISTANT

PAINTED ALUMINUM TEST

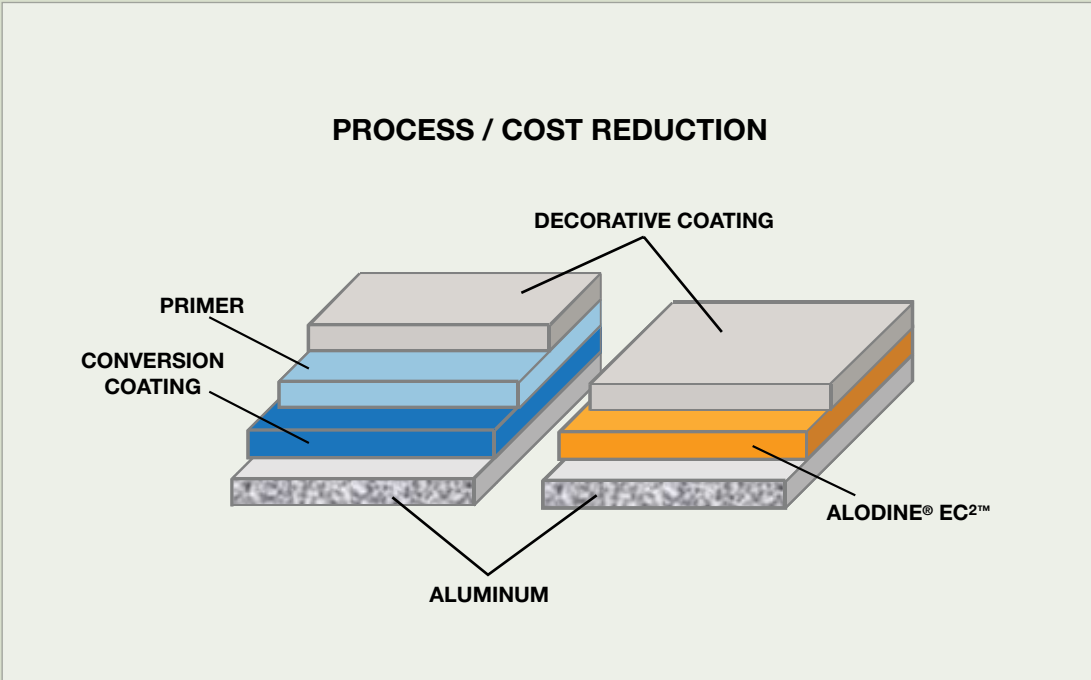


Round-the-clock exposure to the worst of nature's fury can cause outdoor furniture to chip, rust, crack, stain, peel or corrode. Alodine® EC²™ helps furniture withstand the elements.



OUTDOOR FURNITURE

Exposed to the elements 24 hours a day, 7 days a week, 365 days a year, outdoor furniture must endure drenching of thunderstorms, extreme heat, extreme cold and other severe conditions unleashed by nature. Alodine® EC²™ can withstand the sun's damaging rays and the bitter winter temperatures. No other high-performance coating can provide the same corrosion protection. Every day, in every climate, Alodine® EC²™ is on the job.



Alodine® EC²™ ElectroCeramic Coating can be used as a base coat for decorative finishes. Traditional conversion coatings and primers can be eliminated.



Small engines could have big problems if they're not protected against heat, friction and vibration. Henkel's Alodine® EC²™ not only provides that protection, it also keeps engine components running longer.



SMALL ENGINES AND COMPONENTS

The aluminum and light metal parts used in small engines, decks and housings, such as those in lawn mowers, snow blowers, weed trimmers, and other lawn and garden equipment can be just as vulnerable to damage as their larger counterparts. With Alodine® EC²™, the most frigid temperatures are no match for the coated components in a snow blower. Weed trimmers with blowers that reach speeds of 210 mph can subject engine components to temperatures up to 600°F, as well as harsh vibrations. But Alodine® EC²™ can take the temperature and the pressure, extending the operating life of engine components.



As demonstrated time and again in our impact tests, Alodine® EC²™ is a coating rugged and tough enough to withstand wear and tear year after year.



No red rust on aluminized steel after a 2,000 hour salt spray test.



LICENSED
PROCESS CENTERS

Henkel Corporation can assist in the development and engineering of an in-house Alodine® EC²™ processing line for our direct customers. Please contact us at 1-866-332-7024 for more information.

Henkel Corporation also has authorized Licensed Process Centers throughout the country for customers that prefer to outsource the process.



LICENSED PROCESS CENTERS

Alabama

American Trim
1909 Beech Avenue
Cullman, AL 35056
256.734.4921
www.amtrim.com

Connecticut

The Whyco Group
670 Waterbury Road
Thomaston, CT 06787
860.283.5826
www.whyco.com

Indiana

Saran Industries
820 South Post Road
Indianapolis, IN 46239
317.897.2170
www.saranindustries.com

Michigan

Whyco Finishing Technologies, LLC
18074 Sherwood Avenue
Detroit, MI 48324
313.891.6047
www.whyco.com

Ohio

American Trim
1005 West Grand Avenue
Lima, OH 45801
419.228.1145
www.amtrim.com

Wisconsin

Crystal Finishing Systems
2610 Ross Avenue
Schofield, WI 54476
715.355.5351
www.crystalfinishing.com



Production line for Alodine® EC²™ coating process at American Trim.





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VISION ON SUSTAINABILITY

Henkel is founded on a deep commitment to deliver services and chemical products that consistently exceed customer expectations while encompassing product safety and ecological compatibility.

The guiding principles of Henkel inspire long-term customer relationships based on reliability, credibility and mutual trust. Henkel continuously develops innovative products and technologies that offer customers benefits in environmental and health protection, and are economically advantageous. This trust is earned by the continued practice of putting the customer first and working to discover new, more effective solutions every day.

With more than 50,000 employees, Henkel continues to expand its diversified range of products and services. Facilities in over 80 countries help ensure Henkel remains a global market leader.