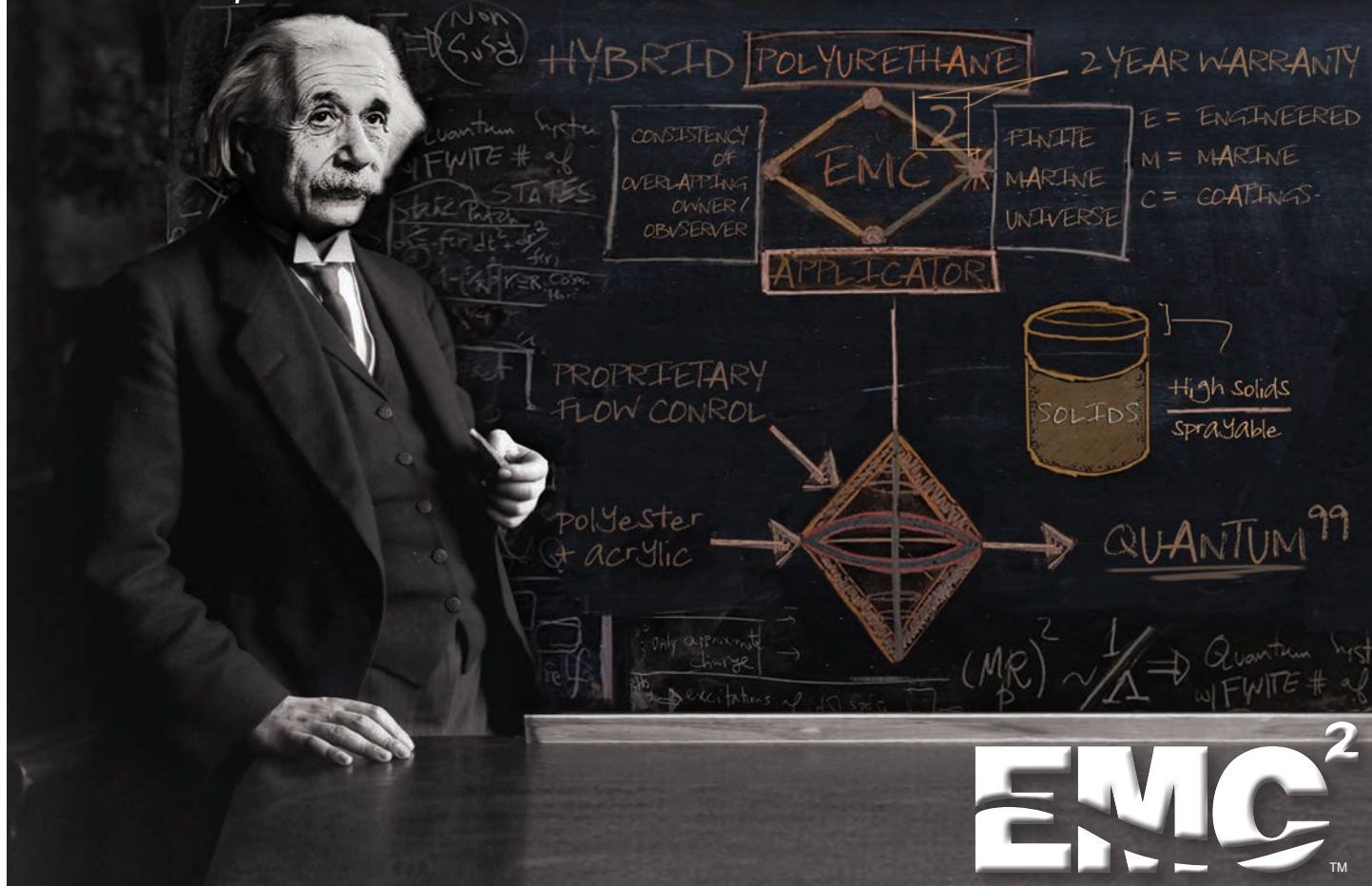


QUANTUM™ / A NEW STANDARD IN MARINE POLYURETHANE COATINGS



EMC²

ENGINEERED MARINE COATINGS



WHO IS ENGINEERED MARINE COATINGS?

Engineered Marine Coatings was founded with the idea of bringing to market a marine polyurethane system technology that would be easy to apply, deliver the highest level of gloss and gloss retention, maximize abrasion resistance for marine use and meet current and future environmental guidelines. Professional applicators in the pleasure boat market are not satisfied with the products that are currently available. The same paints have been produced since the late 1970s — they were difficult to apply then and continue to be difficult to apply to large surfaces such as pleasure boats. If a product is hard to apply, then it is unlikely to meet the owners expectations in terms of gloss level, smoothness and clarity as well as the coating system service life.

Engineered Marine Coatings is dedicated to providing the boat owner and the paint applicator with a proven performance two-part polyurethane paint systems to deliver the optimum look and performance for the yachting market. Their polyurethane coating system for pleasure boats is called **Quantum⁹⁹**.

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QUANTUM⁹⁹ TOPCOAT TECHNOLOGY

For many years boat owners and boatyard applicators have continued to use older paint product technologies on pleasure boats. This is because they have tried new products that *promise* utopia, but fail to deliver. The end result is disappointment and a return to the same old products.

Many have said, “I don’t want the latest in technology because I don’t want to be the guinea pig to sort out unknown problems. I want proven performance, not new technology.” In the two-part polyurethane category, there have been many promises like this and few successes. Even the current market leader has tried to improve their thirty-year-old product. They were told by the most experienced applicators to go back to the old formulation that flowed properly and delivered the high gloss look that boat owners demand.

The yacht industry has many examples of the adage “older is better.” But what if new is *not* experimental? What about incorporating technology that has been completely proven and adapted by larger industries *outside* of the boating market? That is what EMC² is doing, and we are prepared to drive change in the yacht paint industry by bringing to market technology that is completely proven and meets a very high standard in the aerospace industry.

Coatings used in aerospace must meet stringent testing regiments to receive their qualification. Quantum⁹⁹ Polyurethane Topcoat and primer systems are based on the latest BMS 10-125 aerospace specification standards required for new Boeing 787 and other similar aircraft. These aircraft are a combination of carbon fiber composite construction (like fiberglass) and aluminum.



QUANTUM⁹⁹

A BETTER YACHT COATING

What makes the Quantum⁹⁹ Polyurethane technology different than existing polyurethane products? Until now, two-part yacht polyurethane products have come in two generic types. There has been either polyester polyurethane technology previously used on aircraft, or acrylic polyurethane technologies typically used on luxury automobiles. Each type has advantages and disadvantages. But it is 2014, not 1970. We don't need to settle for yesterday's technology.

Today it is possible to take the best of both worlds by engineering polymers that combine the best attributes of polyester polyurethane with the best attributes of acrylic polyurethanes. EMC² has taken Quantum⁹⁹ from its proven performance in the aerospace market and made it applicable to the boating market. Durable, abrasion-resistant and flexible enough to move with the boat, it can be easily repaired via buffing/polishing during application and throughout its service life. It is glossy and long lasting.

How does silicone improve the performance of polyurethane? EMC² has incorporated a unique form of silicone into the backbone of Quantum⁹⁹. This addition to the structure of the product enhances application and, more importantly, improves UV, chemical, and stain resistance.

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Why is a proprietary flow control package important? EMC² has also engineered a Flow Control Package for Quantum⁹⁹ Polyurethane to improve the wetting, atomization, and flow properties during application. By improving flow and leveling, Quantum⁹⁹ maximizes gloss levels and gloss clarity. This, in combination with the best performance attributes of the polyester and acrylic polyurethanes, is why the product improves the application experience.

When is a high solids coating really a high solids coating? One final priority borrowed from the aerospace standards is to ensure Quantum⁹⁹ is truly high solids. Many paint companies offer a so-called

“high solids” polyurethane topcoat. More often than not, topcoat applicators find it necessary to add more and more paint thinner/reducer to get the coating to flow when it hits the surface of the boat. At that point the polyurethane is no longer “high solids.” The result is usually no benefit at all for the applicator. In the case of Quantum⁹⁹ Polyurethane Topcoat, chemists have developed a proprietary Flow Control Package to replace the need for additional paint reducer. The proprietary package lowers the surface tension and allows the paint to flow better. This eliminates what is referred to as orange peel or roughness in the final paint surface.

What are the benefits of a high solids coating? Quantum⁹⁹ contains less solvent, and more paint solids. This results in less solvent emissions upon application, as well as more paint protection per coat than traditional polyurethane coatings. Higher solids translate to less coats and therefore less labor for the boatyard and boat owner. All are positive benefits.

Quantum⁹⁹ polyurethane topcoat is a hybrid two-component polyurethane topcoat that delivers aerospace quality to boats and yachts! What makes Quantum⁹⁹ Polyurethane technology better than other, older polyurethane paints on the market? Quantum⁹⁹ is formulated as a result of the latest aerospace BMS 10-125 specifications to deliver “best in class” protection for boat application. Quantum⁹⁹ is a true “hybrid polyurethane,” combining the best attributes of polyester polyurethanes with the best attributes of acrylic polyurethanes. Quantum⁹⁹ uses inorganic silicone fused in the polymer backbone to improve UV, chemical, and stain resistance. It also has a Proprietary Flow Control Package to improve surface wetting and flow without the need for extra thinners. This ensures the benefits of high solids that will adhere to the hull to protect the boat for a longer period. We are so confident our Quantum⁹⁹ Polyurethane Topcoat System will outlast the competition, we offer a written warranty that is twice as long as the current market leader. Quantum⁹⁹ is a quantum change in the quality of marine paint systems.

QUANTUM⁹⁹ POLYURETHANE TOPCOAT



Quantum⁹⁹ is a two-component acrylic-polyester hybrid polyurethane topcoat tailored for heavy duty and decorative marine environments.

This high solids topcoat provides superior protection and beauty to watercraft requiring maximum gloss, excellent chemical and weather resistance, excellent reparability, superior durability, and unequaled gloss clarity (DOI).

Quantum⁹⁹ is the featured topcoat for EMC's Quantum High Solids Repairable Marine Finish System and is available in standard marine and custom colors. Not for use below the waterline.

- Ultra-high gloss and gloss clarity (DOI)
- Superior durability and abrasion resistance
- Acrylic-polyester hybrid combines aerospace toughness with automotive reparability.
- Longest in-service life
- Proprietary Flow Control Package improves flow, gloss, and gloss clarity
- 2x Solids = 2x coverage as leading brands
- High solids = fewer coats and VOC compliance
- Easy to mix/apply and excellent reparability
- Can be polished after application to remove dust, bugs, and imperfections
- Apply by spray, brush or roller
- Mix ratio: brush 2:1; spray 1:1

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Our inspiration comes from Einstein's $E=MC^2$ mass-energy equivalence.

The "2" in this case stands for EMC²'s confidence in the Quantum System to deliver longer performance life and hence, 2X the warranty.

Furthermore, Quantum99 is 2X the solids and has 2X the coverage of the leading brands.

2X THE STANDARD WARRANTY IN A RELATIVE MARINE UNIVERSE

HYBRID POLYURETHANE 2 YEAR WARRANTY

EMC 2

FINITE MARINE UNIVERSE

APPLICATOR

PROPRIETARY FLOW CONTROL

SOLIDS High Solids Sprayable

QUANTUM 99

POLYESTER + ACRYLIC

Quantum WHITE #

$(MR)^2 \sim \frac{1}{A} \Rightarrow$

Legend:
E = ENGINEERED
M = MARINE
C = COATINGS

QUANTUM⁹⁹ COLOR CHART

Colors are representative and will vary slightly from manufacturing standards.
Contact your EMC² representative for color chips and custom color inquiries.

1003 MATTERHORN WHITE	1004 VESTAL WHITE	1008 STARK WHITE	1000 PURE WHITE	1001 OYSTER WHITE	1002 CREAM
1022 INSIGNIA WHITE	1044 SNOW WHITE	1086 CHEVY WHITE	1010 OFF WHITE	1012 BLUE TONE WHITE	1015 EGGSHELL WHITE
2002 SUNFAST RED	2008 CRIMSON TIDE	2022 RED MAHOGANY	1087 FLEET WHITE	1089 CLOUD WHITE	2001 GAMECOCK GLORY
3006 CASTLE TAN	3060 DESERT SAND	4001 SAN MATEO WHEAT	2037 RED ROCKET	3003 PRAIRIE BEIGE	3004 MOON DUST
			4029 PCDC ORANGE	4093 FIGHTING LADY YELLOW	4098 FEDERAL YELLOW

QUANTUM⁹⁹ COLOR CHART

Colors are representative and will vary slightly from manufacturing standards.
Contact your EMC² representative for color chips and custom color inquiries.

5001 LIGHT GRAY	5007 MEDIUM GRAY	5008 PEARL GRAY			
5035 WHISPER GRAY	5040 GRAYSTONE	5044 DARK GRAY	5059 KINGSTON GRAY	6002 KELLY GREEN	6024 DARK GREEN
6056 SEA FOAM	6065 AQUA MIST	6089 JADE MIST GREEN	6094 FOREST GREEN	7001 SABLE BROWN	8001 NAVY BLUE
8002 FLAG BLUE	8003 ARISTO BLUE	8004 ICE BLUE	8009 MAJESTIC BLUE	8010 PALMETTO PRIDE	8011 MARLIN BLUE
8014 SKY BLUE	8028 TEAL	8041 EMPRESS BLUE	8042 CORINTHIA BLUE	8046 MIDNIGHT BLUE	9001 BLACK MAGIC



EMC² set out to formulate the longest-lasting varnish for marine use on teak, mahogany, spruce and other common marine timber. Each of these wood types has unique properties. Teak, for example, has a high content of oil, which helps to prevent deterioration on boat applications. However, this oil also contributes to detachments of many varnishes. Mahogany, on the other hand, has wood fiber that absorbs varnishes and therefore takes more coats to seal the wood fibers to achieve a smooth finish.

An additional challenge for marine varnishes is the constant movement of the hull. It is typical for hulls to flex as the boat moves through the water, which can contribute to varnish detachment or cracking. The harsh ultraviolet rays of the sun are also a major factor in the longevity of varnish. The UV rays break down the structure and integrity of the varnish, which will shorten the life of the coating.

The final major factor that affects the life of a marine varnish is the all-important attention to detail at the time of application. The wood surface and all subsequent coats of varnish should be properly prepared to maximize varnish adhesion.

All of these factors have an impact on the longevity of the varnish coating. The consequences of an inferior varnish are less wood protection and unsightly surfaces, leading to the extra labor and cost involved in reapplications. Conversely, the longer the service life of the varnish, the less frequently the boat owner will need to reapply the varnish, thereby reducing the cost and effort of maintaining a personal boat in tip top condition.

It is for these reasons EMC² has formulated a long-lasting, high gloss or satin, abrasion resistant and flexible varnish. It is called Quantum^{UV} Urethane Varnish.



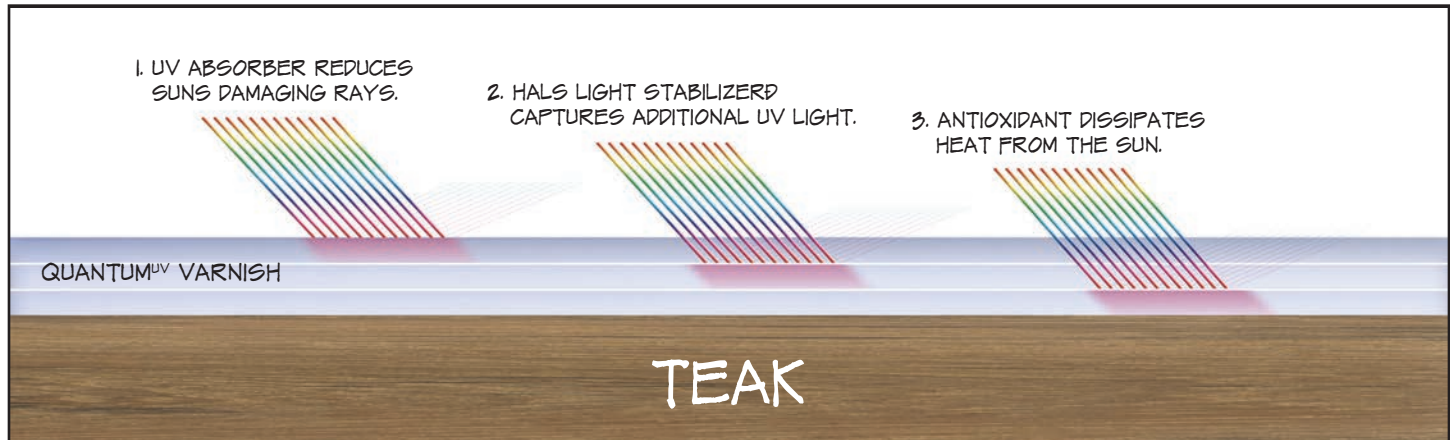
Is Quantum^{UV} any better than other varnishes on the market today? The answer to that question is unequivocally yes! First, the “backbone” of the Quantum^{UV} varnish is the same two-part polyurethane coating as the Quantum⁹⁹ Topcoat. The Quantum^{UV} varnish is based on the same resin structure that meets the high standard of the latest BMS 10-125 aerospace specification. EMC² uses hybrid polymers that combine the best attributes of polyester polyurethane with the best attributes of acrylic polyurethanes.

This makes Quantum^{UV} abrasion resistant, while being flexible enough to move with the boat as it glides through the water. It also makes the product easy to apply by brush or by spray.

Further, to block the damaging UV rays of the sun, Quantum^{UV} Urethane Varnish uses a unique Ultra Violet Package consisting of three layers of protection for superior weather resistance. Here is how it works to protect the varnish film from the UV rays of the sun.

1. This package uses an Ultra Violet Absorber to reduce the UV rays of the sun much like a highly rated sunscreen. This UV absorber dissipates most of the damaging sun rays.
2. The second layer of protection comes from HALS Light Stabilizer. This second protection perimeter in the Quantum^{UV} varnish film captures additional UV light not addressed by the first barrier, thereby reducing the UV rays even further.
3. The third critical component of the Quantum^{UV} Ultra Violet Package is the addition of an antioxidant. This dissipates heat from the sun within the Quantum^{UV} varnish, which prevents the heat from attacking the varnish film, causing it to deteriorate prematurely.

These three components of this unique Quantum^{UV} Urethane Varnish Package work together to protect the film integrity as depicted below:



QUANTUM^{UV} POLYURETHANE VARNISH



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Quantum^{UV} is a self-sealing clear urethane varnish finish system specially formulated for marine brightwork. It contains an Ultra Violet Package to maximize the service life before reapplication is required, making this an exceptional varnish. This two-pack acrylic-polyester hybrid urethane provides superior protection to all timber substrates. By chemically bonding to the wood on a molecular level, this low VOC, easy-to-apply coating provides a flexible yet long-lasting finish in even the harshest marine environments. This high solids, high build varnish is available in satin and high gloss and can be applied via spray or brush application. For interior or exterior use above the water line only.

- A long lasting, highly abrasion resistant hybrid polyurethane Varnish
- Contains a UV package consisting of three layers of protection for superior weather resistance
- Ultra Violet Absorber = reduces damaging UV rays from sun like a high-rated sunscreen
- HALS light stabilizer = secondary protection in the film to capture additional UV light.
- Antioxidant = dissipates heat from the sun which attacks the varnish film
- Superior weatherability (2-year warranty when using full system)
- High solids, high build delivers fewer coats
- Aerospace grade flexibility and chemical resistance
- Easy to apply by spray or brush application
- Mix ratio: brush 2:1; spray 1:1
- Available in gloss and satin

QUANTUM⁴⁵ EPOXY SURFACING PRIMER



Quantum⁴⁵ Epoxy Surfacing Primer is a 2-component epoxy-polyamide surfacing primer intended for marine applications prior to the application of topcoat. It has exceptional “hold out” of the polyurethane topcoat to maximize gloss levels.

This product provides superior filling qualities and exhibits excellent adhesion and corrosion protection to aluminum, steel, fiberglass, and previously painted surfaces. Quantum⁴⁵ is the ideal primer for EMC’s Quantum⁹⁹ Series Topcoats to maximize gloss and adhesion.

QUANTUM⁴⁵ CLEAR EPOXY SEALER



The Quantum⁴⁵ Clear Epoxy Sealer is a high performance two-component polyamide-epoxy sealer designed for use on carbon fiber, fiberglass, wood, and previously painted surfaces.

This product provides an excellent “tie” coat between the substrate and subsequent primers/topcoats. It is an integral part of EMC’s Quantum Repairable Marine Finish System and can be used for a variety of applications.

QUANTUM⁴⁵ HIGH BUILD EPOXY PRIMER



Quantum⁴⁵ High Build Epoxy Primer is a 2-component epoxy-polyamide primer for marine applications. It can be applied to 20 wet mils every 1 to 3 hours. The High Build has a pot life of 6 hours, which makes working time favorable. Its VOC level is 420 G/L, meeting all current guidelines.

Its novel pigment blend makes this High Build Primer unique in that it allows the application of Quantum⁹⁹ Topcoat directly to it without compromising gloss levels. This product is an integral part of EMC’s Quantum High Solids Repairable Marine Finish System.

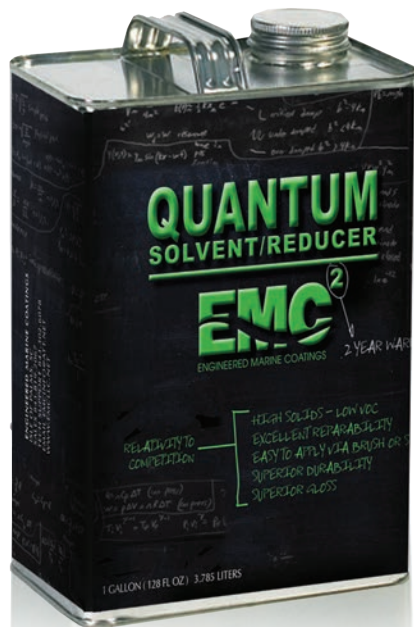
QUANTUM³⁰ CORROSION INHIBITIVE EPOXY PRIMER



The Quantum³⁰ IP Inhibitive Epoxy Primer is a high performance two-component strontium chromate polyamide-epoxy primer designed for use on aluminum and steel with exceptional adhesion characteristics, superior corrosion and chemical resistance.

Quantum³⁰ Corrosion Inhibitive Primer should be professionally applied only. This product is an integral part of EMC’s Quantum High Solids Repairable Marine Finish System

QUANTUM REDUCERS



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Quantum⁹⁹ Urethane Spray Reducer

This spray reducer is to be used Quantum⁹⁹ topcoats and in Quantum^{UV} varnish as specified on products label under thinning directions and on the Technical Data Sheet.

- Use in Quantum⁹⁹ Polyurethane Topcoat and Quantum^{UV} Urethane Varnish.
- Developed for substrate temperatures between 70°-95°F.

Quantum⁹⁹ Cool Weather/Fast Reducer

Use as specified on products label under thinning directions and on Technical Data Sheet.

- Use in Quantum⁹⁹ Polyurethane Topcoat and Quantum^{UV} Urethane Varnish.
- Developed for substrate temperatures between 55°-70°F.
- Can also be use to clean spray equipment.

Quantum⁹⁹ Warm Weather/Slow Reducer

Use as specified on products label under thinning directions and on Technical Data Sheet.

- Use in Quantum⁹⁹ Polyurethane Topcoat and Quantum^{UV} Urethane Varnish.
- Developed for substrate temperatures between 90°-105°F.

Quantum⁹⁹ Brushing Reducer

Use as specified on products label under thinning directions and on Technical Data Sheet.

- Use in all Quantum⁹⁹ Polyurethanes, Quantum^{UV}, Q45 and Q30 Primers.
- Developed for substrate temperatures between 65°-105°F.

Quantum⁴⁵ Epoxy Spray Reducer

Use as specified on products label under thinning directions and on Technical Data Sheet.

- Use in Quantum⁴⁵ High Build, Epoxy Surfacing Primer, Clear Epoxy Sealer and Quantum³⁰ Corrosion Inhibitor Primer.
- Developed for substrate temperatures between 55°- 95°F.

Quantum^{VOC} Compliant Reducer

350 grams per liter VOC

Ideal in areas with low VOC guidelines.

Use as specified on products label under thinning directions and on Technical Data Sheet. Meets all current VOC guidelines.

- Low VOC reducer with VOC of 350 grams per liter.
- Use in all Quantum⁹⁹ Polyurethanes, Quantum^{UV}, Q45 and Q30 Primers.

Quantum^{VOC} Exempt Reducer

0 grams per liter VOC

This reducer uses exempt VOC compliant solvent to reduce EMC products total VOC. Use as specified on products label under thinning directions and on Technical Data Sheet.

- For use when "O" VOC thinner is desired by the applicator.
- Can be used in all Quantum⁹⁹ Polyurethanes, Quantum^{UV}, Q45 and Q30 Primers.
- Developed for temperatures between 55°-75°F.

QUANTUM ADDITIVES



Quantum³³ RTU Aluminum Surface Conditioner

Quantum³³ is a non-flammable, pre-diluted phosphoric acid based cleaner and conditioner for aluminum. Conditioning with Quantum³³ produces a corrosion free, chemically clean aluminum surface. Quantum³³ should not be used with high copper containing aluminum alloys.

- Ready-to-use as supplied, no complex dilutions required.
- Creates chemically clean surface for priming.
- Enhances corrosion protection of Quantum system.

Quantum SR-002 Surface Prep Cleaner

Formulated specifically as a degreaser and dewaxer to properly clean the surface prior to painting.

- Special solvent blend provides ultimate cleaning which minimizes defects caused by contamination.
- Medium-slow blend designed for two rag wipe-on, wipe-off surface cleaning method.
- Excellent tool and equipment cleaner.

Quantum Urethane Accelerator Solution

Quantum⁹⁹ Urethane Accelerator is to be used to accelerate the dry time of EMC's Quantum⁹⁹ Polyurethane Topcoats and Varnish. This product is for urethane topcoats only – DO NOT USE WITH PRIMERS.

- Accelerates cure and dust free times for Quantum⁹⁹ Polyurethane Topcoat and Quantum^{UV} Urethane Varnish.
- Built-in pot life extender minimizes effect on pot life.

Quantum Fisheye Eliminator

Quantum Fisheye Eliminator is to be used where minor surface contamination is suspected. This additive is to be used with Quantum⁹⁹ Polyurethane Topcoat and Quantum^{UV} Urethane Varnish to prevent cratering, crawling, and fisheyes caused by minor surface/air contamination. Fisheye Eliminator is not a substitute for poor surface preparation and will not overcome severe surface contamination. This product is for topcoats only – DO NOT USE WITH PRIMERS.

- Eliminates fisheyes caused by minor surface and air contamination.
- Not a substitute for poor surface prep.
- Recommended for Quantum⁹⁹ Topcoat and Quantum^{UV} Urethane Varnish.

Quantum Flattening Paste

Quantum Flattening Paste reduces gloss of Quantum⁹⁹ Polyurethane & Varnish to a flat or semi-gloss finish. Best results can be achieved when Quantum⁹⁹ is sprayed.

- Flattening paste is added to the mixed polyurethane and varnish to lower the gloss.
- It can be used to create a semi-gloss or flat level of gloss.

Quantum Cold Cure Epoxy Accelerator

Quantum⁴⁵ Cold Cure Epoxy Accelerator maintains cure times of Quantum⁴⁵ and Quantum³⁰ Epoxy primers in cooler weather and can reduce cure times by as much as 50% in standard conditions.

- Accelerates dust free, recoat, and sandable times of Q45 and Q30 epoxy primers.
- Minimal effect on pot life in standard conditions.

Quantum Anti-Skid Additive - Fine

This anti-skid additive is a hard yet light, dry compound. It is able to resist high traffic on deck and should be mixed with Quantum⁹⁹ Polyurethane and Quantum^{UV} Varnish to create a fine grit footing on deck. This is the "fine" grit particle size.

- It is ideally suited for decks on boats to ensure solid footing.
- This is a "fine" grain anti-skid additive for Quantum Polyurethane and Varnish.

Quantum Anti-Skid Additive - Coarse

Coarse anti-skid additive is a hard yet light, dry compound. It is able to resist high traffic on deck and should be mixed with Quantum⁹⁹ Polyurethane and Quantum^{UV} Varnish when a more rough footing texture on deck is desired. This is the "coarse" grit particle size.

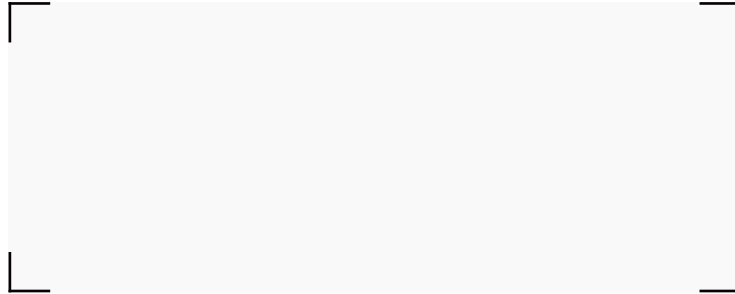
- This is a "coarse" grain anti-skid additive for Quantum Polyurethane enamels and Varnish.
- It is ideally suited for decks on boats to ensure an even greater footing.



Additional information is available on the EMC² web page. The web site has Product Data Sheets showing important application information on all products listed in this book and more. It also offers the option to print product Material Safety Data Sheets (MSDS) on each product. In addition, the web site includes Product System Technical Bulletins.

Refer to www.emc1lc.net for more details.

EMC² products are available from:



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Tech Support: 843-302-6078
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www.emc1lc.net

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