



EPP Rapid Research

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EPP Rapid Research Non-Corrosive Bridge Paint Multnomah County, OR

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Request:

Multnomah County requested research assistance on EPP non-corrosive industrial paints. They are especially interested in additional information on successful public procurements for EPP industrial paints (during the last five years would be best), especially metal coatings for bridges or water tanks.

Key Findings:

The principle contaminate of concern has been VOC's. Trends in the paint industry show that VOC's are dropping. California has the most stringent limitation at 100g/l in the Southern Region and 150 g/l in the Bay Area. This is prompting manufacturers to respond with ultra low VOC paints. In addition, there are some 100% solid content paints with no VOC's, some of which have not been thoroughly tested on bridge applications.

Another area of development is in single coat systems. Arguably, a single coat approach might have less overall environmental impact because less material is used and fewer total VOC's may be released. Differences in preparation and application for different paints may also be significant factors in calculating the total environmental impact resulting from a paint choice. For example if pressure washing is adequate to prepare a surface rather than sandblasting, diesel pollution from the sandblaster is eliminated, there is less disruption of the site and less potential worker safety issues.

Case Studies:

The California list of qualified paints can be seen at:

<http://www.dot.ca.gov/hq/eqsc/QualityStandards/PaintCoating/PaintCoating-B.htm>

California's Industry Paint Specifications are listed at:

<http://www.dot.ca.gov/hq/eqsc/QualityStandards/PaintCoating/PaintCoating-C2.htm>

Manufacturer Responses:

Enviroline

The Enviroline® Series of 100% solids, zero VOC's thick-film coatings and linings are an effective corrosion barrier in almost every aspect of industry. From water tanks, oil and gas storage, wastewater treatment, chemical processing to hazardous material storage, Enviroline coatings and linings provide a leak prevention barrier that resists deterioration from chemical attack, abrasion, impact and cathodic disbondment.

The common bridge painting technique is a three-coat system, however, Enviroline makes a high quality epoxy that can be used as a single coat. This paint is very thick- between 20 and 50 g/l, may not adhere to sharp

corners. This paint requires very high pressure to spray and has a very narrow window of time to add a top coat- for example within 4-6 hours. After that, a top coat will not adhere properly.

The benefit of this single coat is that it is very high quality and the cost is equal to the traditional three-coat system because of the reduced labor for application. It also cures very quickly, so that water can be put back into a tank with 24 hours.

Albert Knopf
503-805-4802

Rustoleum

Rustoleum has an elastomeric coating that is used on many suspension bridges' cables and suspender ropes. Tacoma Narrows Bridge is using this coating for that purpose. This is commonly applied in two coats with an acrylic topcoat if a certain color is requested. This paint is very low in VOC's with only 5 g/l.

Peter Fisher
Rustoleum Technical Support
847-612-5831

Sherwin Williams

When asked for the most environmentally preferable bridge paint solution, Sherwin Williams recommended a low VOC water based zinc primer, a no-VOC epoxy middle coat with a low VOC urethane top coat. The technical rep said that performance of these products would be the same as the common bridge paints that are higher in VOC's but that costs would also be higher by approximately 30%. These products aren't generally used for bridges because of the higher costs. Choice of bridge paint is generally governed by a state's DOT whose interests are generally price and performance, not making above compliance progress towards environmental progress. However, industry trends appear to be moving in the direction of these kinds of products.

"Per our phone conversation, I have assembled a low VOC bridge system for your convenience. While these may not be the products we discussed on the phone, they will provide the lowest VOC's as a system and still provide the required performance. If you have any further questions please feel free to call or e-mail me at your convenience.

Prime coat: Zinc Clad XI (Also on NEPCOAT approved list¹) **Zero** g/l VOC
Intermediate Coat: Macropoxy 646-100 (Also on NEPCOAT approved list) Less than 100 g/l VOC
Topcoat: Hi Solids Polyurethane 100 (Not on NEPCOAT approved list- new product?) Less than 66 g/l VOC

Thank You, "

Matt Smith
Sherwin-Williams
Product Information
Phone: 216-515-5278
Fax: 216-566-1660

Termarust Technologies

¹ NEPCOAT list of qualified bridge paints
<http://www.maine.gov/mdot/nepcoat/pdf/20061005RQPL%20ABCNepcoat.pdf>

Craig makes a good case for this product. It is a single coat product that is used on many bridges in Canada and the Eastern U.S. (see list of bridges on their website). It can be used on all steel structures and chemically stops corrosion, even in connections. They have a 5-Year Warrantee against any corrosion when using this product. The VOC's of the topcoat are between 270-300 g/l. VOC's in the Penetrant are higher, however, the Penetrant is only used in small quantity on connections. (A new Penetrant is almost ready for market that has zero VOC's.)

The product doesn't require sandblasting, only pressure washing as prep. The environmental case for it is that a single coat, without the need for sandblasting has far less environmental impact when the product is considered as a system. One coat uses less material and may contribute less total VOC's even if one or more of the paint coats in a three-coat system has lower VOC's individually. Total cost savings may be as high as 50% because of the reduced labor and reduced preparation that is required. Field tests show that this coating lasts about 25 years.

They also have a product that prevents corrosion in a salty environment. Any color can be added, so that no additional topcoat is required.

A long list of Case Studies on bridges using this paint is available on their website.

Craig Ballinger, Bridge Engineer and Sales Contact
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cballinger@termarust.com
<http://www.termarust.com/>

Additional Resources

The National Association of Corrosion Engineers (NACE)

Great information source for corrosion control technologies and bridge paints. NACE has an internationally active listserv at the following address.

http://www.nacecorrosionnetwork.com/read/all_forums/

<http://www.nace.org/nace/index.asp>

Sherwin-Williams Launches New Fast Clad™ DTM Waterbased Epoxy

<http://news.thomasnet.com/fullstory/24010/2170>

Enviroline Product Information and Case Histories

<http://www.envirolinegroup.com/product-casehist.htm>

Criteria for Purchasing Decision Making:

- Case studies from state, municipal or county governments
- Product performance
- Low VOC's and toxics
- Warrantee
- Cost