



PAINT AND CORROSION LABORATORY FACT SHEET

Research that is Essential, Indispensable, and Connected to our Customers.

PURPOSE

The mission of the Paint and Corrosion Laboratory (PCL) is to provide technical support to the Office of Infrastructure Research and Development to develop and analyze the effectiveness of innovative coatings test procedures while evaluating the durability of new coating systems, especially environmentally compliant materials for the corrosion protection of steel bridges.

DESCRIPTION

The PCL has tested numerous durable and environmentally compliant bridge coatings using both accelerated laboratory tests and natural outdoor exposure. The PCL also has developed innovative cyclic laboratory test methods for evaluating bridge coating performance and highly reproducible techniques for evaluating coating failures. In addition, PCL assists State Departments of Transportation (DOTs) to solve a wide variety of bridge coating problems and recommends appropriate coatings for different environmental conditions.

SPECIAL CAPABILITIES

- Has consistently produced essential bridge coating performance data for DOTs.
- Develops reliable laboratory test methods to study the performance of various bridge coatings.
- Develops rapid forensic analytical techniques for identifying bridge coating type and determining causes of field coating failures.
- Develops easy-to-use and quantitative methods for measuring coating failures.
- Measures coating mechanical properties by various physical test methods.
- Characterizes paint composition using various wet chemistry methods, scanning electron microscopy/energy dispersive analysis (SEM/EDS) and other spectroscopic techniques.
- Performs American Association of State Highway Officials (AASHTO) standard paint tests.
- Determines toxicities of bridge coatings and their disposal options.
- Detects early coating failures using microscopic and spectroscopic techniques.

PRODUCTS AND SERVICES

- Assisted State DOTs in selecting durable coatings that perform well in different environmental conditions.
- Analyzed bridge paint chips and suggested proper procedures for the coating repair and paint disposal.
- Developed test protocols for evaluating bridge coatings. The cyclic test methods have been adopted by the Northeastern Protective Coating Committee (NEPCOAT).
- Recommended rapid and effective physical and chemical techniques to State DOTs and industries to identify causes for coating failures.
- Developed reproducible and quantitative techniques to measure the degree of coating failures. One of them has been implemented by NEPCOAT.
- Established a relative performance chart for virtually all types of commercial bridge coatings.
- Studied performance of waterborne bridge coatings and compared them with zinc-rich coatings.
- Participated in AASHTO Materials Reference Laboratory Proficiency Paint Sample Test Program.

The Turner-Fairbank Highway Research Center (TFHRC) has more than 24 laboratories for research in the following areas: safety; operations, including intelligent transportation systems; materials technology; pavements; structures; and human centered systems. The expertise of TFHRC

scientists and engineers covers more than 20 transportation-related disciplines. These laboratories are a vital resource for advancing this body of knowledge created and nurtured by our researchers. The Federal Highway Administration's Research, Development, and Technology

Service Business Unit operates and manages TFHRC to conduct innovative research to provide solutions to transportation problems both nationwide and internationally. TFHRC is located in McLean, Virginia. Information on TFHRC is available on the Web at www.tfhrc.gov.