



EPOXY COATING

# BULLETIN

ENDUIT D'EPOXY

A REPORT BY THE PROTECTION AND COATINGS COMMITTEE OF  
THE REINFORCING STEEL INSTITUTE OF CANADA

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## Coating Technology Improves in Ontario

As a result of research and studies presented by the participants of the **Transportation Research Board (TRB)** Annual Meeting in January, 1993, and the findings of a **Ministry of Transportation of Ontario (MTO)** study of epoxy coated rebar cored from existing bridge decks, the Ontario epoxy coating members of the **Reinforcing Steel Institute of Canada (RSIC)** have initiated improvements in the coating technology used in their rebar plants. New coating processes are now implemented to improve the adhesion of the epoxy coating to the steel, and new quality assurance tests have been added to prove that adhesion.

RSIC member coating plants in Ontario are adding primer application systems to their processes to increase the adhesion of the coated bar. As bars pass through the coating

line, a primer is applied to the cleaned steel prior to coating. Studies of this method, performed in North America and Europe, have shown dramatic improvements in coating adhesion.

Three tests, developed from the CSA Standard for Pipe Coatings, and the British Standard for Epoxy Coated Rebar, are currently being used to gauge coating adhesion. A hot water test, a cathodic disbondment test, and a salt spray test (see table, right) are currently being proposed by the MTO as proof tests for epoxy coated bar. While the MTO is currently revising the Ontario Provincial Standard Specifications (OPSS) to include these tests, these specifications will not be in effect until late 1993. However, the RSIC epoxy coaters have begun to produce bars with improved adhesion, as measured by the three tests, as of July 1, 1993.

These quality improvements will spread. The Ontario RSIC coaters operate plants outside of Ontario, in Canada, the United States, and around the world, and will transfer the

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### Proposed Epoxy Coated Rebar

#### Adhesion Tests

**1. Hot Water Soak:** sample bars are placed in 75°C tap water for 48 hours. Upon removal, coating is scribed and bar is allowed to cool. Adhesion is rated by the resistance of the scribed coating to prying.

**2. Cathodic Disbondment Test:** holiday free sample bars are intentionally damaged with a 3 mm dia. break in the coating. They are then placed in room temperature, 3% NaCl solution and connected to a 1.5 volt DC power source for 7 days. Upon removal, the coating is scribed. Adhesion is rated by the disbondment radius from the intentional hole to the edge of the area showing firm adhesion.

**3. Salt Spray (Fog) Test:** sample bars are damaged intentionally and placed in a salt spray cabinet for 800 hours. Coating is scribed near damaged areas after removal and allowed to dry for 24 hours. Adhesion is tested by attempts to pry up the coating with a knife.

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The Protection and Coating Committee of the Reinforcing Steel Institute of Canada has produced this report to provide owners, designers, specifiers, and contractors with up-to-date, sound information on the epoxy coated reinforcing steel industry.