Cathodic Disbondment Test for Coated Steel Structures Under Cathodic Protection

Cathodic Disbondment Test for Coated Steel Structures Under Cathodic Protection

This AMPP standard represents a consensus of those individual members who have reviewed this document for its scope, and provisions. Its acceptance does not in any respect preclude anyone, whether he or she has adopted the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not in conformance with this standard. Nothing contained in this AMPP standard is to be construed as granting any right, by implication or otherwise, to manufacture, sell, or use in connection with any method, apparatus, or product covered by Letters Patent, or as indemnifying or protecting anyone against liability for infringement of Letters Patent. This standard represents minimum requirements and should in no way be interpreted as a restriction on the use of better procedures or materials. Neither is this standard intended to apply in all cases relating to the subject. Unpredictable circumstances may negate the usefulness of this standard in specific instances. AMPP assumes no responsibility for the interpretation or use of this standard by other parties and accepts responsibility for only those official AMPP interpretations issued by AMPP in accordance with its governing procedures and policies which preclude the issuance of interpretations by individual volunteers.

Users of this AMPP standard are responsible for reviewing appropriate health, safety, environmental, and regulatory documents and for determining their applicability in relation to this standard prior to its use. This AMPP standard may not necessarily address all potential health and safety problems or environmental hazards associated with the use of materials, equipment, and/or operations detailed or referred to within this standard. Users of this AMPP standard are also responsible for establishing appropriate health, safety, and environmental protection practices, in consultation with appropriate regulatory authorities, if necessary, to achieve compliance with any existing applicable regulatory requirements prior to the use of this standard.

CAUTIONARY NOTICE: AMPP standards are subject to periodic review and may be revised or withdrawn at any time in accordance with AMPP technical committee procedures. AMPP requires that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of initial publication and subsequently from the date of each reaffirmation or revision. The user is cautioned to obtain the latest edition. Purchasers of AMPP standards may receive current information on all standards and other AMPP/NACE/SSPC publications by contacting AMPP Customer Support, 15835 Park Ten Place, Houston, Texas 77084-5145 (Tel: +1 281-228-6200, email: customersupport@ampp.org).

Document History

2022-08-16: Reaffirmed by AMPP Standards Committee (SC) 03, “External Coatings, Buried and Immersed”

2015-03-14: Approved by NACE Task Group (TG) 470, “Cathodic Disbondment Test for Coated Steel Structures Under Cathodic Protection”

AMPP values your input. To provide feedback on this standard, please contact: standards@ampp.org

Cathodic Disbondment Test for Coated Steel Structures Under Cathodic Protection

Foreword

This AMPP standard test method specifies procedures to evaluate cathodic disbondment resistance of the steel structure coating systems under cathodic protection, such as buried or submerged pipeline and tank linings. The standard covers all test specimen geometries and test temperatures. This standard also takes into consideration all test parameters with the goal of the standard to be used during the selection of protective coating systems for use under cathodic protection. This test method is intended for use by facility owners, coating applicators, and coating manufacturers.

Section 1: General

In AMPP standards, the terms *shall* and *must* are used to state requirements and are considered mandatory. The term *should* is used to state something that is recommended, but is not considered mandatory. The term *may* is used to state something considered optional.

1.1 This test method describes an accelerated test procedure for determining comparative resistance to cathodic disbondment of protective coating systems applied to the exterior of steel pipes and structures that are buried in soil or submerged. This test method is intended for use with specimens of coated pipe, a specimen cut from a section of coated pipe, or flat coated steel plates.

1.2 This test method also is applicable to tank linings with an internal cathodic protection system.

1.3 This test method is not intended for tape or sleeve coatings with a soft adhesive that may flow at the test temperature.

1.4 This test method is intended to cover all service temperatures from ambient to elevated temperatures.

1.5 The test results obtained in this method will serve as a ranking of the candidate coating systems in their cathodic disbondment resistance at different service temperatures. This standard test method is not intended to simulate field conditions or predict service life.

1.6 There are many test parameters that may affect the cathodic disbondment test results. This test method has taken all test parameters into consideration and all the test parameters shall not be modified to satisfactorily meet the requirements of this standard.

Section 2: Definitions

Anode: The electrode of an electrochemical cell at which oxidation occurs. (Electrons flow away from the anode in the external circuit. It is usually the electrode where corrosion occurs and metal ions enter solution.)

Anode Isolation: The placement of the anode such that the chlorine gas from the anodic reaction is kept away from the drilled holiday of the test specimen. The chlorine gas may react with the alkaline of the reaction product at the drilled holiday to form hypochlorite, which may attack organic coatings and affect the test results. This phenomenon does not occur in the field because the anode and cathode are far apart and will not produce the hypochlorite. In the laboratory testing of cathodic disbondment, the anode shall be isolated to prevent the dissolved anolyte chlorine gases from migrating to the cathodic sites.

Attached Cell: A cylindrical cell made of plastic or glass that is placed on top of a coated flat or curved plate to hold electrolyte for a cathodic disbondment test.

Cathodic Disbondment (CD): The destruction of adhesion between a coating and the coated surface caused by products of a cathodic reaction.

Cathodic Protection: A technique to reduce the corrosion rate of a metal surface by making that surface the cathode of an electrochemical cell.