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Evaluation of Exterior Protective Coatings for Seawater Immersion Service

ABSTRACT

This updated NACE International standard test method specifies test methods to evaluate the performance of liquid coating systems for seawater immersion services. This test method is intended for use by facility owners and coating manufacturers. The test method covers liquid exterior protective coating systems for offshore platform steel structures, piers, docks, pilings, subsea valves, and wellheads at normal seawater temperature.

Included are four test methods—including cathodic disbondment, seawater immersion resistance, aging stability, and edge coverage—used to evaluate coating systems. The test method also includes two tables; Table 1 details fingerprinting of coating materials, and Table 2 details the test panel geometry, size, substrate material, and minimum quantity.

KEYWORDS

Aging stability test, anode, anode isolation, cathodic disbondment test, coating system, DFT, dry film thickness, edge coverage test, fingerprinting test, flexure strain, high-impedance multimeter, holiday, induction time, liquid exterior protective coating systems, NACE No. 2, near-white metal, reference electrode, seawater immersion resistance test, STG 03, surface profile, synthetic seawater, test panels, TG 264, wet film thickness, WFT.

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Foreword

Exterior surfaces of submerged offshore platform steel structures, piers, docks, pilings, subsea valves, and wellheads are normally protected by sacrificial anodes, impressed current, or mixed-mode cathodic protection (CP) system. The exterior surfaces of submerged steel can be coated with protective coatings before their subsea installation to complement the CP system. The coatings are designed to provide maintenance-free service during the designed service life of the subsea structure.

The purpose of this NACE International standard test method is to specify test methods to evaluate the performance of liquid coating systems for seawater immersion services. This test method is intended for use by facility owners and coating manufacturers.

This NACE standard test method was prepared in 2004 and revised in 2019 by NACE Task Group (TG) 264 on "Offshore Exterior Submerged Coatings: Standard Test Method." This TG is administered by Specific Technology Group (STG) 03, "Coatings and Linings, Protective: Immersion and Buried Service." It is sponsored by STG 33, "Oil and Gas Production—Nonmetallics and Wear Coatings (Metallic)." This standard is issued by NACE under the auspices of STG 03.

In NACE standards, the terms ***shall, must, should,*** and ***may*** are used in accordance with the definitions of these terms in the NACE Publications Style Manual. The terms ***shall*** and ***must*** are used to state a requirement, and are considered mandatory. The term ***should*** is used to state something good and is recommended, but is not considered mandatory. The term ***may*** is used to state something considered optional.

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