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Standard Practice

Application of a Coating System to Interior Surfaces of Covered Steel Hopper Rail Cars in Plastic, Food, and Chemical Service

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Foreword

This standard practice encompasses the requirements for expert application of a quality coating system to the interior surfaces of covered steel hopper rail cars that have been prepared to a specified, recognized standard. Qualified inspection of the completed coating system and testing by the use of adequate, readily available instruments are also covered in this standard.

Customers of plastics and food service products are requiring a higher level of cleanliness and rust-free interior surfaces in covered hopper rail cars. Hopper car owners and coating applicators alike have found the need to reevaluate their specifications and application procedures in an effort to overcome problem areas of application such as weld seams in the vapor space. Coating manufacturers, coating applicators, and those who have contracting authority for hopper car internal coating installation should be able to use this standard to ascertain the facilities, equipment, and personnel needed to satisfy the requirements for hopper car coating systems in critical service. This standard is applicable for hopper car coating systems when the intended service requires the degree of rust-free surface and cleanliness that is being requested for coating systems in the plastic, food, and chemical industries.

Because there was not an industry standard for coating the interior of covered hopper cars that recognized the emerging need for a high-quality hopper car coating system, this NACE standard was originally prepared in 1986 by Task Group (TG) T-6A-56, a component of Unit Committee T-6A—Coating and Lining Materials for Immersion Service. It was revised in 1992 by Task Group T-14C-2—Exterior Coatings for Rail Cars, and reaffirmed in 1997 by Unit Committee T-14C. It was reaffirmed in 2003 by Specific Technology Group (STG) 43—Transportation, Land, and revised in 2007 by TG 332—Application of a Coating System to Interior Surfaces of Covered Steel Hopper Rail Cars in Plastic, Food, and Chemical Service. It is issued by NACE under the auspices of STG 43.

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*, 4th ed., Paragraph 7.4.1.9. *Shall* and *must* are used to state mandatory requirements. The term *should* is used to state something good and is recommended but is not mandatory. The term *may* is used to state something considered optional.

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Section 1: General

1.1 This standard describes a procedure for the application of a coating system to the interior surfaces of covered steel hopper rail cars used primarily in the plastic, food, and chemical industries.

1.2 The requirements for surface preparation, coating application, inspection, and quality tests necessary for internally coating a covered steel hopper car are covered in this standard.

1.3 This standard calls attention to basic safety precautions regarding the handling and use of coating materials and

solvents. Chapter 1 of NACE Publication TPC 2¹ contains more detailed information. Material safety data sheets (MSDS) supplied by the coating manufacturer provide specific safety information.

1.4 Appendix A (nonmandatory) is a suggested inspection report form for covered hopper car coating systems.

1.5 Appendix B (nonmandatory) describes essential facilities and equipment for application of a coating system to the interior of covered hopper cars.

Section 2: Definitions

Catalyzed Coating: A coating consisting of two or more components, which, after combining and mixing of the components, has a limited pot life. One of the components is commonly called a curing agent, converter, or accelerator.

Coat: One layer of a coating applied to a surface in a single continuous application to form a uniform film when dry.

Coating System: The complete number and types of coats applied to a substrate in a predetermined order. (When used in a broader sense, surface preparation, pretreatments, dry film thickness (DFT), and manner of application are included.)

Coating Applicator: Firm that is executing the specified work.

Contracting Authority: Person(s) responsible for the approval of a completed hopper car coating system.

DFT Measurement: An average of three DFT readings.

DFT Reading: A single DFT gauge determination.

Discontinuity: An interruption in the normal physical structure or configuration of a coating such as cracks, laps, seams, inclusions, porosity, or holidays. A discontinuity may or may not affect the usefulness of the coating.

Holiday: A discontinuity in a protective coating that exposes unprotected surface to the environment.

Holiday Detector: A device that locates discontinuities in a coating applied to a conductive surface.

Orange Peel: The dimpled appearance of a dried coating resembling the surface of an orange.

Pinhole: A minute hole through a coat or coats that exposes an underlying coat or the substrate.

Pot Life: The elapsed time within which a coating can be effectively applied after all components of the coating have been thoroughly mixed.

Quality Assurance: Comprises all those planned and systematic actions necessary to provide specified documentation and adequate confidence that the coating system will perform satisfactorily in service.

Quality Control: Comprises those quality assurance actions related to the physical characteristics of the entire coating system's application as a means of providing compliance with specified requirements.

Rust Bloom: Discoloration indicating the beginning of rusting.

Shelf Life: The maximum length of time packaged materials (e.g., coating materials) can be stored at specified conditions and remain in usable condition.