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Standard
Recommended 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 recommended 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 recognizes the emerging need for a high-quality hopper car coating system, this NACE standard was originally prepared by Task Group T-6A-56, a component of Unit Committee T-6A on Coating and Lining Materials for Immersion Service. It was revised in 1992 by Task Group T-14C-2 on Exterior Coatings for Rail Cars, and reaffirmed in 1997 by Unit Committee T-14C. It was reaffirmed again in 2003 by Specific Technology Group (STG) 43 on Land Transportation. This standard 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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Contents

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 2[1] contains more detailed information. Material safety data sheets (MSDS) supplied by the coating manufacturer provide specific safety information.

1.4 Appendix A is a suggested covered hopper car coating system inspection report form.

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

Section 2: Definitions and Acronyms

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, 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: Dry-film thickness.

DFT Measurement: An average of three DFT readings.[2]

DFT Reading: A single DFT gauge determination.

Discontinuity: A void, crack, thin spot, foreign inclusion, or contamination in a coating that significantly lowers its dielectric strength. It may also be identified as a pinhole or holiday.

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.

Pinhole: Defect in the coating that is characterized by small pore-like formations that, when they extend through the coating to the substrate, appear as a discontinuity. A pinhole in the finish or topcoat may not appear as a discontinuity.

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

Quality Assurance: Comprises all those planned and systematic actions necessary to provide specified documentation and adequate confidence that the car 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.

Shelf Life: As defined by the coating manufacturer, maximum length of time before application that a coating can be stored in an unopened manufacturer-sealed container at a temperature range specified by the coating manufacturer.

Section 3: Areas of Responsibility

3.1 Contracting Authority

3.1.1 An inspection of the applicator's coating facilities and equipment shall be performed. Such inspection should be conducted before the coating project is sent out for bids.