

Fiberglass-Reinforced Plastic (FRP) Linings Applied to Bottoms of Carbon Steel Aboveground Storage Tanks

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Foreword, Scope, Rationale.....	4
Referenced Standards and Other Referenced Documents.....	4
Section 1 General	5
Section 2 Definitions	6
Section 3 Linings Materials	7
Section 4 Storage Tank Preparation	7
Section 5 Applicator Qualifications and Submissions	8
Section 6 Surface Preparation	8
Section 7 Holding Primer Application.....	9
Section 8 Caulking and Coving Application.....	9
Section 9 Laminate Application	10
Section 10 Roof Leg Bearing (Striker) Plates	12
Section 11 FRP Lining Inspection, Testing, and Repair	13
Other Referenced Documents.....	14
Bibliography	14
Figures	
Figure 1 Squeegee Application of Caulk.....	9
Figure 2 Schematic of Overlap at Floor Plate and Striker Plate Showing Caulking and Single Laminate Application.....	10
Figure 3 Schematic of Caulking and Single Laminate Applied at Juncture of Skirt Plate and Shell Plate	10
Figure 4 Wet Film Thickness	11
Tables	
Table 1 Items Evaluated by Inspector.....	13

Foreword

Fiberglass-reinforced plastic (FRP) linings are used worldwide to prevent the corrosion and deterioration of storage tank bottoms in petroleum, petrochemical, and other services. Experience has shown that the useful life of an FRP lining may exceed 25 years. API Standard 653 permits a minimum remaining thickness of the tank bottom plate to be 1.25 mm (0.050 in) when lined with FRP compared to a thickness of 2.5 mm (0.10 in) if unlined or lined with a nonreinforced coating system and not equipped with a tank bottom leak detection system.

Scope

This standard specifies the procedures to apply and inspect FRP linings that are applied internally to the bottom of carbon steel aboveground storage tanks (ASTs).

Rationale

This standard will serve as a resource for facility owners preparing specifications to achieve successful lining applications in ASTs in the petroleum/petrochemical industry. The practices described are also useful during preparation of specifications for ASTs in other services. This standard was originally issued in 2002 and has been revised in accordance with AMPP policies for periodic review of all standards.

Referenced Standards and Other Consensus Documents

The latest edition, revision, or amendment of the referenced documents in effect shall govern unless otherwise dated.

AMPP/NACE/SSPC, www.ampp.org:

NACE Publication 6A192/ SSPC-TR 3	Dehumidification and Temperature Control During Surface Preparation, Application, and Curing for Coatings/Linings of Steel Tanks, Vessels, and Other Enclosed Spaces
NACE SP0287	Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using a Replica Tape
NACE SP0188	Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
SSPC-AB 1	Mineral and Organic Abrasives
SSPC-AB 3	Ferrous Metallic Abrasives
SSPC-Guide 12	Guide for Illumination of Industrial Painting Projects
SSPC-PA 1	Shop, Field and Maintenance Painting of Steel
SSPC-PA 2	Procedure for Determining Conformance to Dry Coating Thickness Requirements
SSPC-QP 1	Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
SSPC-SP 1	Solvent Cleaning
SSPC-SP 5/NACE No. 1	White Metal Blast Cleaning
SSPC-SP 10/NACE No. 2	Near-White Metal Blast Cleaning
SSPC-VIS 1	Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

American Petroleum Institute (API), www.api.org:

API Standard 653	Tank Inspection, Repair, Alteration, and Reconstruction
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ASTM International (ASTM), www.astm.org:

ASTM D4285	Standard Test Method for Indicating Oil or Water in Compressed Air
ASTM D2583	Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor (withdrawn 2022)