Surface Preparation Guide

Surface Preparation
To Ensure
Coating Adhesion

To learn more, visit us at www.sherwin-williams.com/im or call 1-800-524-5979 to have a representative contact you.

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Industrial & Marine Coatings
Coating performance is directly affected by surface preparation. Coating integrity and service life will be reduced because of improperly prepared surfaces. As high as 80% of all coating failures can be directly attributed to inadequate surface preparation that affects coating adhesion. Selection and implementation of the proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system. The majority of paintable surfaces are concrete, ferrous metal, galvanizing and aluminium. They all require protection to keep them from corroding in aggressive environments. Selection of the proper coating for surface preparation depends on the substrate, the environment, the coating selected and the expected service life of the coating system. Substrate contamination and the environment will also influence the selection of surface preparation methods.

Previously Coated Surfaces

Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, paint, mill scale, dirt, foreign matter, rust, mold, mildew, efflorescence and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service life of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow in-dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

Ductile Iron

National Association of Pipe Fabricators, Inc. www.napf.com

NAPF 500-03 Surface Preparation for Ductile Iron Pipe and Fittings in Exposed Locations Requiring Special External Coatings and/or Special Internal Linings

This standard summarizes the surface preparation requirements for ductile iron. Included within this standard are the following:

NAPF 500-03-01 Solvent Cleaning

NAPF 500-03-02 Hand Tool Cleaning

NAPF 500-03-03 Power Tool Cleaning

NAPF 500-03-04 Abrasive Blasting Cleaning for Ductile Iron Pipe

NAPF 500-03-05 Abrasive Blasting Cleaning for Cast Ductile Iron Fittings

Attempts to apply shell surface preparation specifications to ductile iron may not be practical. It may actually result in damage to the pipe surface with subsequent reduced coating effectiveness and life expectancy.

Concrete

International Concrete Repair Institute www.icri.org

No. 03732 Guidelines for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

This standard summarizes the capabilities, operating requirements, and limitations of the various methods used to prepare concrete surfaces for the application of protective sealers, coatings, and polymer overlays. Benchmark profiles are included which provide visual standards for purposes of specification, application and verification.

IC-03732 identifies 12 different concrete surface preparation methods and uses these profiles to replicate a visual standard to ensure the specified Concrete Surface Profile (CSP) is achieved.

SSPC Standards

SSPC-SP1 – Solvent Cleaning

Solvent Cleaning is a method for removing all visible oil, grease, oil, dirt, dew, mill scale, rust, paint, oxides, corrosion products and other foreign matter except cleaning. Cleaning shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.

SSPC-SP2 – Hand Tool Cleaning

Hand Tool Cleaning removes all loose mill scale, loose rust and other detrimental foreign matter. All visible defects shall be removed by this process. Mill scale, rust and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble Welding residues and salts by the methods outlined in SSPC-SP1. For complete instructions, refer to Society of Protective Coatings Surface Preparation Specification No.1.

SSPC-SP3 – Power Tool Cleaning

Power Tool Cleaning removes all loose mill scale, loose rust and other detrimental foreign matter. It is not intended that adherent mill scale, rust and paint be removed by this process. Mill scale, rust and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before power tool cleaning, remove visible mill scale, rust, soluble welding residues and salts by the methods outlined in SSPC-SP1. For complete instructions, refer to Society of Protective Coatings Surface Preparation Specification No.2.

SSPC-SP5/NACE 1 – Metal Blast Cleaning

A Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, oil, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except cleaning. Cleaning shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.

SSPC-SP6/NACE 3 – Commercial Blast Cleaning

A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, oil, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except cleaning. Cleaning shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.

SSPC-SP7/NACE 4 – Brush-Off Blast Cleaning

A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, oil, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter, except cleaning. Cleaning shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.

SSPC-SP8/NACE 5 – High and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials

This standard provides requirements for the use of high and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only, with the addition of solid particles in the stream. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.

SSPC-SP9/NACE 6 – Concrete

This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls and structural surfaces. An acceptable prepared concrete surface should be free of contamination such as oil, grease, dirt, dust, mill scale, rust, oxides, corrosion products and other foreign material except cleaning. Cleaning shall be limited to no more than 5% of each square inch of surface area and may consist of light shadows, slight streaks or minor discoloration caused by stains of rust, stains of mill scale or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods. For complete instructions, refer to Joint Surface Preparation Standard SSPC-SP1/NACE 2.