



NanoSlic[®] Coating

Surface Preparation Guidelines

SURFACE PREPARATION METHODS

Minimal Preparation

For coatings requiring only minimal surface preparation, the surface needs to be prepared in accordance to SSPC-SP 1 and SSPC-SP 2 or SSPC-SP 3. Tightly adhered mill scale or previous coating can remain provided it is still remains completely and firmly bonded to the surface of the substrate. If rust scale is present a rust converter can be used. Rust converters are chemical solutions or primers that can be applied directly to an iron or iron alloy surface to convert iron oxides (rust) into a protective chemical barrier. These compounds interact with iron oxides, especially iron(III) oxide, converting them into an adherent black layer that is more resistant to moisture and protects the surface from further corrosion. They are sometimes referred to as "rust remover" or "rust killer".

CHEMICAL CLEANING METHOD

SSPC-SP 1: Chemical Cleaning

This method involves the removal of dirt, oil, grease and other foreign materials with organic solvents, detergents or commercial cleaners using one of several cleaning methods such as wiping, steam cleaning, or vapor degreasing. The final preparation utilizing Alkaline Cleaning is needed no matter what other methods are used. Use one or more of the following techniques in conjunction with Alkaline Cleaning.

Cleaner/Degreaser: Removes dirt, grease, oil, adhesives, road tar, and more. Agitate for one minute before use. Apply directly on the surface, rub with a brush or cloth, and rinse thoroughly with clean water or wipe with a damp cloth. For large jobs dilute Cleaner/Degreaser with water. All surfaces must be dry before coating is applied. Alkaline Cleaning is required after regular cleaner degreasers are utilized.

Steam Cleaning: Recommended for removing grease, oil, salt, acid, alkali, and similar chemical residue from large areas. For maximum effectiveness, steam cleaning should be used in combination with alkaline cleaning. The surface must be thoroughly dry and free of residue before it is coated.

Volatile Solvent Cleaning: Make certain the area is well ventilated. Apply solvent to the surface with cloths, sponges, or brushes and scrub to remove grease and oil. Several successive wipings are usually necessary, using clean cloths and solvent each time and then follow with Alkaline Cleaning.

Alkaline Cleaning: For removal of dust, dirt, wax, grease, oil, fat, salt, acid residue, etc., scrub surface with a strong commercial detergent solution such as trisodium phosphate (TSP), then flush thoroughly with fresh water. Surface must be completely dry and free of any residue before it is coated. NanoSlic PreClean is the preferred and recommended cleaner.



SSPC-SP 2: Hand Tool Cleaning

Loose rust, loose mill scale and deteriorated coatings can be removed by effective use of hand and power tools. Brush-Off Grade Blasting (SSPC-SP 7) cleans to the same requirements and may be used as an alternative to scraping and wire brushing. Prior to scraping and wire brushing, remove grease, oil, salt, chemical dust, and other contaminants by Chemical Cleaning. Removal of heavy rust scale, light mill scale, or previous coatings over extensive areas usually requires Commercial Grade Blast Cleaning (SSPC-SP 6) or Industrial Blast Cleaning (SSPC-SP-14).

Chip, scrape, or wire brush rusted surfaces thoroughly to produce a tightly adhered surface that is clean and free of foreign matter to assure good coating adhesion. Care must be taken with power tools to avoid polishing a metal surface or abrading it too deeply. Tightly adhered coatings which are very hard or glossy should be sanded to remove gloss and slightly roughen the surface. This will contribute to maximum adhesion of the new coating. Examine existing coatings carefully for signs of rust beneath the coating. If present, remove coatings in these areas.

SSPC-SP 3: Power Tool Cleaning

Loose rust, loose mill scale and deteriorated coatings can be removed by effective use of hand and power tools. Brush-Off Grade Blasting (SSPC-SP 7) cleans to the same requirements and may be used as an alternative to scraping and wire brushing. Prior to scraping and wire brushing, remove grease, oil, salt, chemical dust, and other contaminants by Chemical Cleaning. Removal of heavy rust scale, light mill scale, or previous coatings over extensive areas usually requires Commercial Grade Blast Cleaning (SSPC-SP 6) or Industrial Blast Cleaning (SSPC-SP-14).

Chip, scrape, or wire brush rusted surfaces thoroughly to produce a tightly adhered surface that is clean and free of foreign matter to assure good coating adhesion. Care must be taken with power tools to avoid polishing a metal surface or abrading it too deeply.

Tightly adhered coatings which are very hard or glossy should be sanded to remove gloss and slightly roughen the surface. This will contribute to maximum adhesion of the new coating. Examine existing coatings carefully for signs of rust beneath the coating. If present, remove coatings in these areas.

SSPC-SP 11: Power Tool Cleaning to Bare Metal

Power tool cleaning to produce a bare metal surface and to retain or produce a surface profile. This cleaning specification exceeds SSPC-SP 3 Power Tool Cleaning in that it requires complete removal of all visible oil, grease, dirt, mill scale, rust, paint, oxide, corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. If the surface is to be roughened, the surface profile produced shall be not less than 1 mil (25 μ) and shall be to a degree suitable for the specified paint system.

SSPC-SP 15: Commercial Grade Power Tool Cleaning

Power tool cleaning to produce a bare metal surface. Remove all visible oil, grease, dirt, mill scale, rust, paint, oxide, corrosion products, and other foreign material. Random staining is allowed provided it is limited to no more than 33% per unit area of surface. A surface profile of 1 mil (25 μ) shall be produced.



PRESSURIZED WATER CLEANING METHODS

These standards provide 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 without the addition of solid particles in the stream. These standards define four levels of working pressure:

SSPC-SP WJ-1/NACE WJ-1: Waterjet cleaning of metals. Clean to bare substrate.

SSPC-SP WJ-2/NACE WJ-2: Waterjet cleaning of metals. Very thorough cleaning.

SSPC-SP WJ-3/NACE WJ-3: Waterjet cleaning of metals. Thorough cleaning.

SSPC-SP WJ-4/NACE WJ-4: Waterjet cleaning of metals. Light cleaning.

This cleaning standard defines 4 levels of cleanliness for visible contamination by water jetting and 3 levels for non-visible contamination, such as chlorides and other soluble salts. See the full standard for complete definitions on the level of cleanliness.

ABRASIVE BLAST CLEANING METHODS

Abrasive blast is the most effective method of cleaning steel and masonry surfaces prior to coating. It is mandatory for certain specialized applications such as water immersion and high temperature exposure. Recommended for removal of mill scale, heavy rust scale, and previous coatings from large areas. Careful selection of equipment, nozzles, and abrasives are essential to economical operation and achievement of the desired results. Avoid using coarse abrasives. 18–40 mesh sand or grit will provide the 2 to 2.5 mil 50–62 μ) blast profile recommended for use with most coating systems.

For optimum results, follow this sequence:

1. Prior to blast cleaning, remove grease, oil, salt, chemicals, dusts, and similar contaminants by Chemical Cleaning.
2. Prior to blast cleaning, remove all weld spatter.
3. Abrasive blast to one of the grades described below.
4. After blasting, remove all abrasive, dust and grit with vacuum cleaner, clean and dry with compressed air, or a clean brush.
5. Blasted surfaces should be coated on the same day they are blasted before the cleaned surface can become contaminated.

SSPC–SP 5 (NACE 1): White Metal Blast Cleaning

Completely remove all mill scale, rust, rust scale, previous coating, etc., leaving the surface a uniform gray-white color.

SSPC–SP 6 (NACE 3): Commercial Grade Blast Cleaning

Completely remove all dirt, rust scale, foreign matter, and previous coating, etc., leaving shadows and/or streaks caused by rust stain and mill scale oxides. Random staining shall be limited to no more than 33% of each unit area of surface (a unit of area is defined as 9 square inches).

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SSPC–SP 7 (NACE 4): Brush-Off Blast Cleaning

Remove rust scale, loose mill scale, loose rust, and loose coatings, leaving tightly bonded mill scale, rust, and previous coatings. This is an ideal method for removing oxides and/or loose and peeling coatings from galvanized metal. Results are comparable to those achieved by through chipping, scraping, and wire brushing.

SSPC–SP 10 (NACE 2): Near White Metal Blast Cleaning

Remove all rust scale, mill scale, previous coating, etc., leaving only light stains from rust, mill scale, and small specks of previous coating. Random staining shall be limited to no more than 5% of each area of surface (a unit of area is defined as 9 square inches).

SSPC–SP 14 (NACE 8): Industrial Blast Cleaning

Removal of all visible oil, grease, dust, and dirt. Traces of tightly adherent mill scale, rust, and coating residues are permitted to remain on 10% of each unit area of the surface if they are evenly distributed (a unit of area is defined as 9 square inches). The traces of mill scale, rust, and coating shall be considered tightly adhered if they cannot be lifted with a dull putty knife. Shadows, streaks, and discoloration caused by stains of rust, stains of mill scale, and stains of previously applied coating may be present on the remainder of the surface.

CONCRETE, MASONRY, PLASTER & WOOD

NanoSlic is a very thin product in nature and does not lend to these bare surface or any other porous material. The surface will need to be sealed with a comparable coating under the guidelines recommended by the product description prior to coating with NanoSlic.

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