THE COMPLETE VISUAL GUIDE TO SURFACE PREP

Painting a clean surface is imperative for the success of a coating system. There are many different techniques and procedures used to prepare a surface for application.

The most commonly accepted standards for contractors and organizations are the NACE/ SSPC Joint Surface Preparation Standards. These standards do an excellent job of standardizing surface prep results and providing a template to meet job specifications. That said, these standards can be confusing because the numbers, given for each level of surface preparation, either by the Society for Protective Coatings (SSPC) or the National Association of Corrosion Engineers (NACE), don't always correlate. Higher numbers do not necessarily mean a higher degree of surface prep, as one might expect.

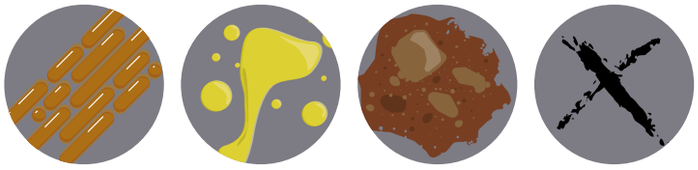
In the interest of making things a little clearer, below is a list of brief explanations of each standard, along with a visual illustration.

SSPC-SP1- Solvent Cleaning

This method of surface preparation is meant to remove soluble substances from steel. Before a paint or other protective coating is applied, a solvent is used to remove all visible oil, grease, dirt, drawing or cutting compounds or other soluble contaminants.

Solvents may include steam, emulsifying agents or other cleaning compounds.

Surface free from:



Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds

SSPC-SP2- Hand Tool Cleaning

Hand tool cleaning refers to surface preparation that uses non-power handheld tools to clean a steel surface. Hand tool cleaning is intended to remove all loose mill scale, rust, paint and other contaminants that may be detrimental to a coating application.

According to the SSPC, “loose” contaminants are those that can’t be removed by lifting off with a dull putty knife.

Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint

SSPC-SP3- Power Tool Cleaning

As in hand tool cleaning, SP3 is a method of steel surface preparation intended to remove all loose mill scale, rust, paint and other contaminants that may be detrimental to a coating application. As it's name suggests, SP3 differs in that it used power tools to clean the surface.

Again, according to the SSPC, "loose" contaminants are those that can't be removed by lifting off with a dull putty knife.

Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint

SSPC-SP5/NACE 1- White Metal Blast Cleaning

This SSPC/NACE joint standard describes the cleaning of a steel surface, previously painted or unpainted, to a white metal condition through the use of abrasive blast media. White metal is a term used to describe a surface that's uniformly free of all foreign matter and white or gray in appearance.

According to the SSPC, a surface blasted to white metal should, without magnification, be free of all visible "oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter."

White metal is uniformly free of all foreign matter and white or gray in appearance

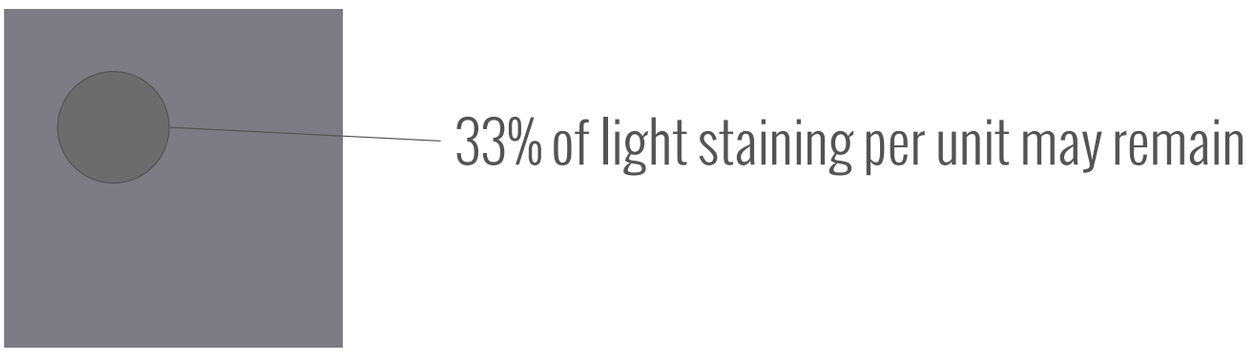
Surface free from:

SSPC-SP6/NACE 3- Commercial Blast Cleaning

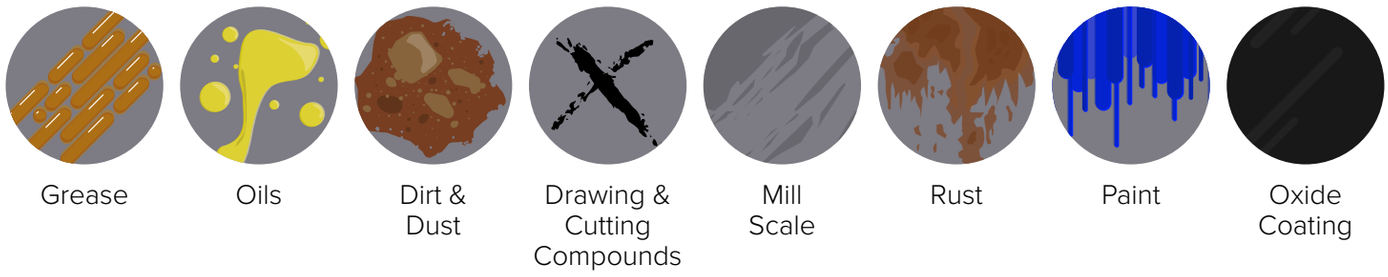
SP6 is another joint standard describing the cleaning of a steel surface through the use of abrasive blast media. It includes instructions for prior to blast cleaning, as well as for the inspection of the cleaning after it has been conducted.

Similar to a white metal blast cleaning, surfaces prepared to an SP6 standard should be, without magnification, free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter.

Random staining from previous exposure to the above is acceptable, however, so long as it does not comprise more than 33 percent of each area “unit”, as described by the standard. Such staining may take the form of “light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coating,” according to the SSPC.



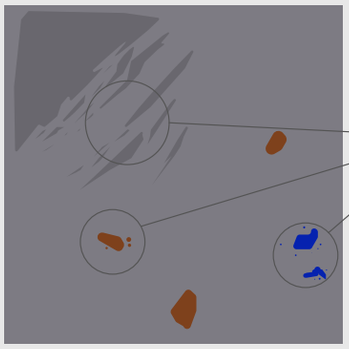
Surface free from:



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

This standard conveys the requirements for cleaning a steel surface, painted or unpainted, with the use of abrasive blast media. It contains descriptions of the required end condition of a surface that has undergone brush-off cleaning, as well as the necessary methods for verifying the asset’s end condition.

All oil, grease, dirt, dust must be cleared from the surface when viewed without magnification. Loose mill scale, rust and coatings must also be removed according to this standard, but tightly adherent mill scale, rust and coatings may remain. These are considered tightly adherent if they cannot be removed by lifting with a dull putty knife.



Tightly adherent mill scale, rust and coatings may remain

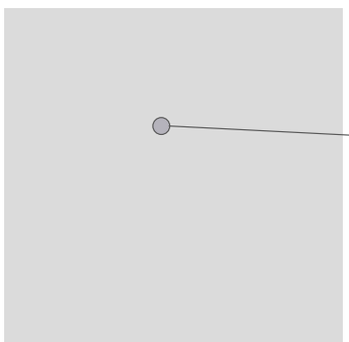
Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint | Oxide Coating

SSPC-SP10/NACE 2- Near-White Commercial Blast Cleaning

This standard conveys the requirements for cleaning a steel surface, painted or unpainted, with the use of abrasive blast media. It also includes instructions for achieving and verifying the standard's required end condition. As with a commercial blast, the prepared surface must be free, when viewed without magnification, of visible oil, dust, dirt, grease, mill scale, rust, coating, oxides, corrosion and other foreign matter, except for a limited amount of acceptable staining.

Unlike with a commercial blast, only five percent of each area "unit" as defined by the standard may exhibit staining. This five percent may consist of light shadows, slight streaks minor discolorations that could be the result of exposure to rust, mill scale or of a previous coating.



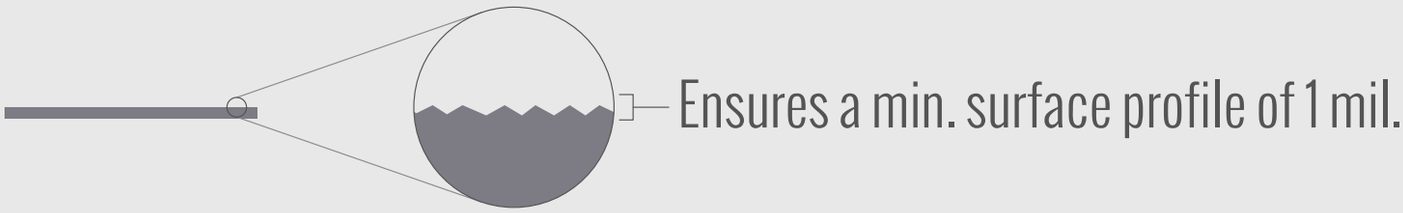
Only 5% of light staining per unit may remain

Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint | Oxide Coating

SSPC-SP11- Power Tool Cleaning to Bare Metal

This standard describes the requirements for taking a surface to bare metal, while ensuring a minimum surface profile of 1 mil (25 micrometers). It is used in situations where abrasive blasting is not possible or feasible. Unlike SP3, this standard requires the creation or preservation of a surface profile. Unlike SP15, this standard does not allow for stains from mill scale, rust or paint to remain on the surface.



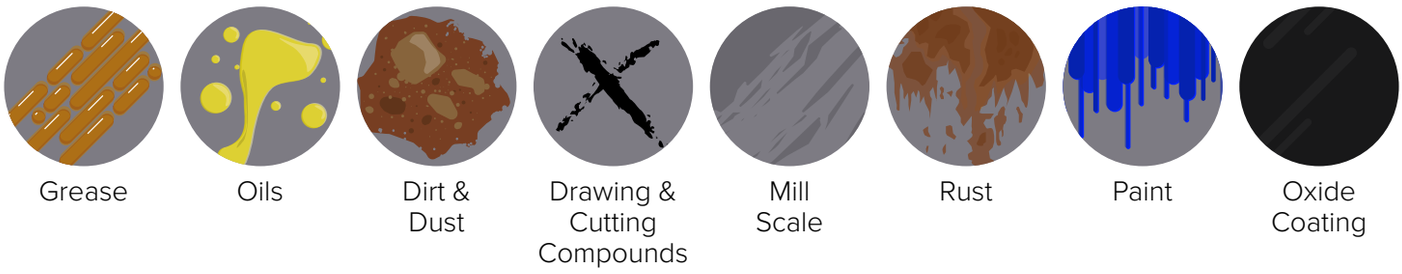
Surface free from:

SSPC-SP13/NACE 6- Surface Preparation of Concrete

This joint standard concerns the preparation of concrete surfaces prior to the application of bonded coating or lining systems. Surface preparation for all types of cementitious surfaces is covered under this standard, which should be free of surface contaminants including laitance, loose concrete and dust.

This standard covers requirements for thermal, mechanical and chemical application methods. Minimum concrete surface strength, surface profile and moisture content should be expressly stated in the project's specification document when necessary.

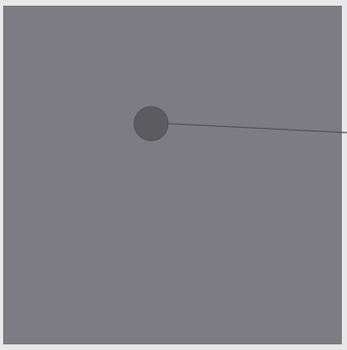
Surface free from:



SSPC-SP14/NACE 8- Industrial Blast Cleaning

This standard conveys the requirements for cleaning a steel surface, painted or unpainted, with the use of abrasive blast media. It also includes instructions for achieving and verifying the standard's required end condition. As with a commercial blast and a near-white commercial blast, the prepared surface must be free, when viewed without magnification, of visible oil, dust, dirt, grease, mill scale, rust, coating, oxides, corrosion and other foreign matter, except for a limited amount of acceptable staining.

SP14 differs from a commercial blast and a near-white commercial blast in the acceptable area for residue and surface stains to remain. This standard allows for tightly adhering mill scale, rust and coatings, as well as surface stains to remain on ten percent of each “unit” area, as described by the standard. Surface stains may consist of light shadows, slight streaks minor discolorations that could be the result of exposure to rust, mill scale or of a previous coating.



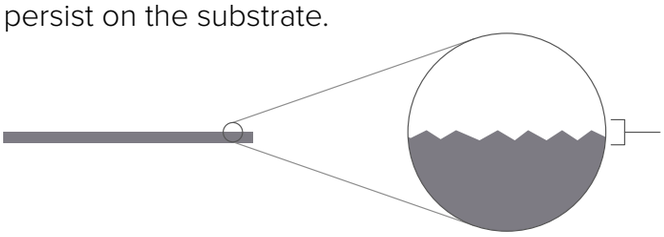
10% of light staining per unit may remain

Surface free from:

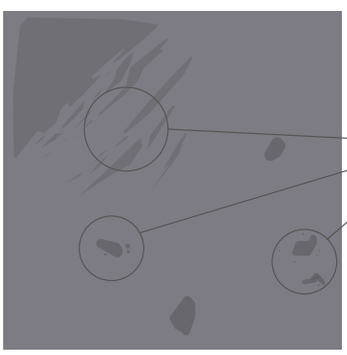
Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint | Oxide Coating

SSPC-SP15- Commercial Grade Power Tool Cleaning

Like SP11, this standard describes the requirements for taking a surface to bare metal, while ensuring a minimum surface profile of 1 mil (25 micrometers). Unlike SP11, SP15 allows for random staining to persist on the substrate.



Ensures a min. surface profile of 1 mil.



Allows for random staining to persist

Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint | Oxide Coating

SSPC-SP16- Brush-Off Blast Cleaning of Non-Ferrous Metals

This standard governs surface preparation for non-ferrous metals before the application of a protective coating. It is used when adding a surface profile to stainless steel, galvanized steel, copper and other metals that are not carbon steel. It requires a minimum surface profile of .75 mil (19 micrometers) and for the surface to be free of loose coating and other contaminants, as verified by a visual inspection.

Surface free from:

Grease | Oils | Dirt & Dust | Drawing & Cutting Compounds | Mill Scale | Rust | Paint | Oxide Coating

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