

## Surface Preparation Standards

Description	Swedish Standard	SSPC Codes	NACE	CDN. Govt. (CGSB)	British Standard
Sweep Blast	Sa. 1	SSPC.SP7	#4	31 GP 404 Type 3	Light blast to brush-off
Commercial Blast	Sa. 2	SSPC.SP6	#3	31 GP 404 Type 2	BS4232 Third Quality
Near White Blast	Sa. 2 ½	SSPC.SP10	#2	–	BS4232 Second Quality
Full White Blast	Sa. 3	SSPC.SP5	#1	31 GP 404 Type 1	BS4232 First Quality
Hand Tool Clean	St. 2 (approx.)	SSPC.SP2	–	31 GP 401	–
Power Tool Clean	St. 3	SSPC.SP3	–	31 GP 402	–
Power Tool Cleaning to Bare Metal	–	SSPC.SP11	–	–	–
Solvent Clean	–	SSPC.SP1	–	–	–
Pickling	–	SSPC.SP8	–	–	–
Weather and Blast*	–	SSPC.SP9	–	–	–
Flame Clean (new steel only)*	–	SSPC.SP4	–	31 GP 403	–

**\*Discontinued**

## Definitions

### Brush Off Blast SSPC-SP7 (SSI-Sa1), or NACE #4

A method in which all oil, grease, dirt, rust scale, loose mill scale, loose rust and loose paint or coatings are removed completely. Tight mill scale and tightly-adhered rust, paint and coatings are permitted to remain. However all mill scale and rust must have been exposed to the abrasive blast pattern sufficiently to expose numerous flecks of the underlying metal fairly uniformly distributed over the entire surface.

### Commercial Blast SSPC-SP6 (SSI-Sa2), or NACE #3

All oil, grease, dirt, rust scale and foreign matter are completely removed from the surface and all rust, mill scale and old paint are completely removed by abrasive blasting except for slight shadows, streaks or discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating that remain. If the surface is pitted, slight residue of rust or paint may be found in the bottom of pits; at least two-thirds of each square inch

of surface area shall be free of all visible residues and the remainder shall be limited to the light residues mentioned above.

### **Near White Blast SSPC-SP10 (SSI-Sa2 ½), or NACE #2**

In this method, all oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint or other foreign matter have been completely removed from the surface by abrasive blasting, except for very light shadows, very slight streaks or slight discolorations caused by rust stain, mill scale oxides or slight, tight residues of paint or coating. At least 95% of each square inch of surface area shall be free of all visible residues, and the remainder shall be limited to the light discolorations mentioned above. From a practical standpoint, this is probably the best quality surface preparation that can be expected to today for existing plant facility maintenance work.

### **Full White Metal Blasting SSPC-SP5 (SSI-Sa3), or NACE #1**

The removal of all visible rust, mill scale, paint and contaminants, leaving the metal uniformly white or gray in appearance. This is the ultimate in blast cleaning. Use where maximum performance of protective coatings is necessary due to exceptionally severe conditions such as constant immersion in water or liquid chemicals.

### **Hand Tool Cleaning SSPC-SP2 (SSI-St2 approx)**

A mechanical method of surface preparation involving wire brushing, scraping, chipping and sanding. Not the most desirable method of surface preparation, but can be used for mild exposure conditions. Optimum performances of protective coatings should not be expected when hand tool cleaning is employed.

### **Power Tool Cleaning SSPC-SP3 (SSI-St3)**

A mechanical method of surface preparation widely used in industry and involving the use of power sanders or wire brushes, power chipping hammers, abrasive grinding wheels, needle guns etc. Although usually more effective than hand tool cleaning, it is not considered adequate for use under severe exposure conditions or for immersion applications.

### **Power Tool Cleaning to Bare Metal SSPC-SP11**

Utilizing same equipment as Power Tool Cleaning to remove all visible coatings and contaminants to bare metal substrate.

### **Pickling SSPC-SP 8**

Pickling is a method of preparing steel surfaces by chemical reaction, electrolysis, or both. The surfaces when viewed without magnification shall be free of all visible mill scale and rust.

## **Solvent Cleaning SSPC-SP1**

Solvents such as water, mineral spirits, xylol, toluol etc., are used to remove solvent-soluble foreign matter from the surface of ferrous metals. Rags and solvents must be replenished frequently to avoid spreading the contaminant rather than removing it. Low-pressure (1500 - 4000 psi) high volume (3 - 5 gal/min.) water washing with appropriate cleaning chemicals is a recognized "solvent cleaning" method. All surfaces should be cleaned per this specification prior to using hand tools or blast equipment.

## **Aluminium**

Remove water-soluble dirt and chemicals with water and detergent; solvent-soluble contaminants with solvent. Rinse, allow to dry, then power or hand abrade to remove the thin film of aluminium oxide. Moderate exposures require only one or two topcoats. Avoid using lead pigmented primers and topcoats. Exposure to corrosive chemicals calls for an epoxy primer followed by an appropriate topcoat for the environment.

## **Brass, Bronze, Copper, Lead**

Remove contaminants with a combination of water, detergents and solvents (same as aluminium). Allow the metal to dry, then power or hand abrade to remove oxides. Conventional oil and alkyd base primers or finishes may be used.

## **Galvanized Metal**

Clean same as aluminium and brass etc, or allow to weather for six months. Caution: Be sure the manufacturer of the galvanized metal has used a paintable "white rust" preventative. Conventional coatings containing oil or alkyd resins must not be used. Specify only special primers made for use on galvanized metal. In severe Type A environments, or in areas of high humidity or continuous condensation, brush blasting is recommended to assure maximum system adhesion and performance.