

# WILKO PAINT, Inc.

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## MANUFACTURERS OF THE FINEST INDUSTRIAL FINISHES

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### SURFACE PREPARATION

The success or failure of a finishing system is directly related to both the quality and thoroughness of the surface preparation employed before painting. Before one selects a finishing system for any exposure, the amount and type of surface preparation that will be done under actual operating conditions must be determined. After these limitations have been established, select the finishing system best suited for the exposure and within the limitations that were established by adaptable surface preparation procedures. Poor surface preparation cannot be overcome by using expensive coatings.

This section contains information on:

- I. Abrasive blast cleaning
- II. Hand tool cleaning
- III. Power tool cleaning
- IV. Solvent cleaning
- V. Surface preparation of miscellaneous metals
- VI. Surface preparation of concrete
- VII. Preparing existing paint for recoating
- VIII. Use of a barrier coat for topcoating conventional paints with heavy duty, strong solvent coatings.

**I. Abrasive Blast Cleaning** (Sandblasting) Precede the blast cleaning with suitable solvent or detergent cleansing to remove chemicals, grease, oil or other contaminants.

#### *Defined Grades of Blast Cleaning*

1. NACE #1 SSPC-5-63 White Metal Blast White metal blast cleaned surface finish. Defined as a surface with a gray - white (uniform metallic) color, slightly roughened to form suitable anchor pattern for coatings. The surface is free of all oil, grease, dirt, rust, paint, mill scale, oxides, corrosion products and all other foreign matter. (Compares to SSPC-SP5-63 White Metal Blast)
2. NACE #2 SSPC-SP 10-63T Near White Blast Cleaning. Near white blast cleaned surface finish. Defined as a surface from which all oil, grease, dirt, mill scale, rust, oxides, paint, corrosion products, or other foreign matter have been removed except for any light shadows, streaks or slight discoloration (of oxide bonded with metal). At least 95% of any given surface area has the appearance of NACE #1, and the remainder of that area is limited to slight discoloration. (Compares to SSPC-SP10-63T, Near White Blast)
3. NACE #3 SSPC-SP 6-63 Commercial Blast Cleaning. Commercial blast cleaned surface. Defined as a surface from which all oil, grease, dirt, rust scale and foreign matter have been completely removed and all rust, mill scale, and old paint have been removed except for slight shadows, streaks or discoloration's caused by rust stains or mill scale oxide binder. At least two-third (2/3) of the surface area shall be free of all visible residues and the remainder shall be limited to light discoloration, slight staining or light residues mentioned above. If the surface is pitted, slight residues of rust or paint are found in the bottom of pits. (Compares to SSPC-SP 6-63, Commercial Blast )

4. NACE #4 SSPC-SP 7-63 Brush-off Blast Cleaning. Brush-off blast cleaned surface finish. Defined as a surface from which all oil, grease, dirt, loose rust scale, loose mill scale and loose paint have been removed, but if tightly adhering are permitted to remain if they have been exposed to the abrasive blast pattern, so that numerous flecks of the underlying metal are uniformly distributed over the entire surface. (Compares to SSPC-SP7-63 Brush-Off Blast)

#### *Additional Suggestions for Abrasive Blast Cleaning Procedure:*

- (a) Strive for highest rate of production attainable with air volume and pressure available.
- (b) Evaluate combination blast and vacuum system to reduce abrasive fall out. Waterblast or sand injected water blast will reduce fall out.
- (c) Precede blast cleaning with appropriate solvent or detergent removal of all oil, grease or chemical contaminants.
- (d) Remove any weld flux and splatter with suitable power tools preceding abrasive blast.
- (e) Use clean, dry 16 - 30 mesh abrasive (or a maximum particle size no larger than passing through 16 mesh screen U. S. Sieve Series). Produces 1-2 mil profile depth
- (f) Remove the blast products and residual abrasive from surface.
- (g) Compressed air must be free of oil and moisture.
- (h) Avoid blasting if surface is to become wet before painting and when the ambient temperature changes are likely to produce dew point conditions.
- (i) Avoid damage to completed work by overblast.
- (j) Re-blast before painting if any rust has formed following blast.
- (k) Height of the profile should not exceed 2.0 mils for most conventional coatings.
- (l) Protect any surface exposed to chemical or moisture contamination with suitable cover until coating is applied.
- (m) Protect bearings, motors, pumps, engine air intakes, compressors, controls and critical orifices from abrasive particulates.
- (n) Make use of visual standards depicting the degrees of cleanliness and depth of pattern.
- (o) Inspect for and remove burrs or sliver following the blast.
- (p) SAFETY PRECAUTIONS:
  - Purge area of all flammable materials or vapors.
  - Equip operators with approved clean air source helmets.
  - Provide filter type respirators and/or goggles for those exposed to dust.
  - Ground blast hose to dissipate static electricity.
  - Contain dust and blasting media and dispose according to local, state or federal regulations.

**II. Hand Tool Cleaning** Method of preparing metal surfaces for painting by removing loose mill scale, loose rust and/or loose paint by hand brushing, hand sanding, hand scraping, hand chipping, or a combination of these methods. It is not intended that all mill scale, rust, and/or paint be removed by this process, only that which is loose.

*Procedures:*

1. Precede hand tool cleaning with suitable solvent or detergent cleansing to remove all oil, grease, chemicals or other contaminants.
2. Remove all loose, non-adherent paint, and feather thick edges of old paint.
3. Remove weld flux and splatter with hand impact tools.
4. Remove dust and residue created by hand tool cleaning.
5. **SAFETY PRECAUTIONS:** Purge the area of flammable materials or vapors. Operators should wear safety goggles. Respirator equipment should be provided if needed.

**III. Power Tool Cleaning:** A method of preparing metal surfaces by removing all loose mill scale and loose paint with power driven wire brushes, grinders, sanders or a combination of these methods. It is not intended that all mill scale, rust, and/or paint be removed by this process, only that which is loose.

*Procedures:*

1. Precede power tool cleaning with suitable solvent or detergent cleansing to remove all oil, grease, chemicals or other contaminants.
2. Do not burnish steel surfaces to a detrimental (polished) degree.
3. Remove all loose, non-adherent paint, and feather thick edges of old paint.
4. Remove all weld flux and splatter.
5. Remove dust and residue created by power tool cleaning.
6. **SAFETY PRECAUTIONS:** Purge the area of flammable materials or vapors. Operators should wear safety goggles. Respirator equipment should be provided if needed.

**IV. Solvent Cleaning:** A procedure for removing detrimental foreign matter such as oil, grease, soil and other contaminants from steel surfaces by use of cleaning compounds, solvents, emulsions, steam cleaning or similar materials and methods which involve a solvent or cleaning action. Solvent cleaning is used prior to application of the paint and with other specified surface preparation for the removal of rust, scale or paint.

*Procedures:*

1. Soil, cement splatter, and drawing compounds are removed with stiff brushes, scraping, or in combination with alkaline cleansers, i.e. 2 oz. tri-sodium phosphate and 2 oz. detergent to 1 gallon of water.

2. Oil or grease may be removed by:
  - (a) Solvent wiping or washing, followed with a thorough solvent flush or wiping with clean rags to avoid the spreading of oil over the surface.
  - (b) Emulsion cleaners.
  - (c) Spraying surface with solvent, and using a final solvent flush.
  - (d) Vapor degreasing.
3. Steam cleaning, incorporating detergents or cleaners, may be used provided the surface is steamed or washed with hot water in the final stage to remove any/all detrimental residues) Tri-sodium phosphate (see above mixture)
4. Remove welding electrode deposits from weld and adjacent areas using a thorough fresh water scrubbing, unless the surface is to be thoroughly hand or power toll cleaned, or abrasive blasted.
5. **SAFETY PRECAUTIONS:** Use safety solvents, provide adequate ventilation, and keep vapor content in the air below the minimum threshold values. Safety goggles and clothing must be worn when using strong solvents, acids or alkaline solutions.

**V. Surface preparation of miscellaneous metals**

1. Surface Preparation of aluminum:
  - (a) Degrease and apply a phosphate type conversion treatment (No. 850.01 RustSol) or degrease and apply vinyl wash primer (603.08 Chromate Free Vinyl Wash)
  - (b) A good method of surface preparation for aluminum prior to application of industrial coatings is a very light sandblast. Because of the nature of the aluminum, the sandblasting should be done using a very fine grade of sand, 80 mesh or finer. Only a very light etch is necessary; the gun should be held 2-3 feet from the surface and not closer, as is the case with steel. This will prevent warping or other distortions. Excellent adhesion of appropriate coatings is obtained by this method.
2. Surface Preparation of Copper: Light blast with fine particle abrasive.
3. Surface preparation of Galvanized Metal and Stainless Steel:
  - (a) New work must be washed with phosphoric acid solution (No.850-01 Rustsol) then thoroughly cleaned to remove all residue and metal salts.
  - (b) Practical treatment for structures in place is to remove surface contaminants such as dirt or rust with a wire brush. This should be followed by a thorough washing with a commercial degreaser to insure the complete removal of all residue and/or processing oils.
  - (c) The most trustworthy wash primer to use on galvanizing or stainless steel after cleaning is No.603-08 Primer Vinyl Wash.
  - (d) Refer to "Painting Galvanized Surfaces"

**VI. Surface Preparation of Concrete**

Refer to section "Concrete Floors."

## **SURFACE PREPARATION Page 3**

### **VII. Preparing Existing Paint for Recoating**

1. If existing paint is alkyd or silicone alkyd enamel or primer, aluminum paint, modified phenolic or any other aged, well cured conventional coating which exhibits gloss or high sheen:
  - (a) Remove oil, grease and contaminants with solvent wash, suitable detergent or trisodium phosphate solution.
  - (b) Apply No. 104 Solv-Prep with saturated rags in a cleansing motion to dull the finish. Apply paint shortly after this treatment. CAUTION: Use rubber gloves to prevent skin irritation from Solv-Prep.
2. Vinyls, Latexes, and Silicones.
  - (a) Remove chalk, contaminants, grease and oil and with mineral spirits, naphtha, a suitable detergent or tri-sodium phosphate solution. Rinse thoroughly to remove residue. Do not use strong solvents such as Xylol, Toluol, M.E.K., etc.
  - (b) Allow to dry, then recoat with suitable product. Refer to TDS of topcoat for proper application procedure and for testing for lifting.
3. Epoxies, Urethanes, and Polyesters:
  - (a) Remove oil, grease and contaminants with solvents or suitable detergents.
  - (b) Mechanically abrade the surface with sandpaper or sanding screen, or shower abrasive blast to insure adhesion of new material to aged, hard cured, films.

### **VIII. Use of a Barrier Coat for Topcoating Conventional Paints With Heavy Duty, Strong Solvent Coatings.**

Some high performance coatings contain Strong solvents which, when applied to conventional paints, solubilize and subsequently lift them. Barrier coatings containing weak solvents are available which are compatible with the existing conventional films, and when cured, will accept strong solvent topcoats.

1. Universal primers, such as Wilko No. 497.108, or barrier coat epoxy primers such as 342.46 or 347.67, which use weaker solvents may be used to protect previously applied coatings.
2. Wilkopon epoxy primers are reduced to application viscosity with No. 13 Thinner when used as barrier coats.
3. Barrier coatings must be tested in an inconspicuous area before proceeding with the project.