Surface Cleaning and Preparation

Surface preparation is a ***critical*** step towards successful vinyl graphic installations. Unfortunately, it is also a step easily overlooked and often misunderstood. This Technical Assistance Guide provides the proper procedures for cleaning and preparing various surfaces for optimized pressure sensitive graphic applications.

When using any solvent-based cleaners, be sure to wear gloves or other Personal Protective Devices (PPD's) as recommended by the manufacturer's guidelines and warnings. Read all instructions on the container or contact the manufacturer for more complete directions for ventilation, use and disposal.

As the towels or cloths become dirty, throw them away and use new ones. Dirty rags do not clean! Make sure all surfaces are completely dry prior to application. If need be, use a heat gun to remove moisture, especially around rivets and along seams. Always reference the Performance Guide (available on the MACtac website) for appropriate application temperatures.

There are basically two kinds of surface contamination that must be considered and removed prior to applying your graphic designs:

Organic Contaminates: Examples include dirt, grime, bug spatters, bird droppings, tree sap, spilled food, etc.

Petrochemical Contaminates (petroleum based): Such as wax, road tar, grease, oils, gasoline, pollution, etc.

To properly remove these contaminates a three step process is recommended:

STEP 1. Remove organic contamination by washing the surface with a commercially available detergent and water (1-tbs per gallon) and a lint free cloth. A good automotive soap used sparingly in the water works well. Do not use soaps containing creams, waxes or oils because these will further contaminate the surface. Also, understand that some window cleaners contain waxes and/or silicones. Dry the surface with a soft, clean, lint free cloth and allow porous materials to dry completely.

STEP 2. Remove petrochemical contaminates by wiping a lint free cloth soaked with a solvent-based cleaner. Using a good automotive tar and wax remover will do the job in most cases. Other options include Sherman Williams Sher-Will-Clean®, DuPont Prep-Sol™ or Xylol. Weak solvents such as glass cleaners or alcohol will not remove many contaminates. Strong pure solvents, such as paint thinner, acetone and toluene may damage the finish, test first in an inconspicuous area. Use a clean, lint free cloth to dry the surface prior to evaporation.

STEP 3. A final wipe down over the area with Isopropyl Alcohol (IPA), with a clean, lint free towel just prior to application will remove any dust, solvent or detergent residue left on the surface. If you are using industrial grade IPA, mix it in a ratio of 70% IPA to 30% water. If you are using rubbing alcohol, do not dilute.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

The following is a list of specific substrates and their special cleaning considerations. MACtac always recommends you **test first** for suitability.

1) Metal:

1.1 Stainless Steel - Clean using step 1, followed by step 2, followed by step 3.

1.2 Base Steel - Do not apply graphics directly to untreated or unpainted steel. Any rust spots should be completely refinished, primed and painted. Then follow section 4 on Painted Surfaces for proper preparation.

1.3 Steel (Phosphate-coated galvanized) - Remove Zinc Oxide Salts (white powder) with cleaning pad and diluted phosphoric acid (use personal protection equipment). Then thoroughly rinse with water to remove acid. Allow to completely dry 24 hours. Clean surface using Step 3 just prior to graphic application.

1.4 Steel (Electronically galvanized) - Degrease, coat with a good phosphate coating, prime and paint. Follow section 4 on Painted Surfaces for proper preparation.

.

1.5 Aluminum (etched and degreased or anodized) - Use Step 3 just prior to application.

1.5 Aluminum (Uncoated and non-etched) - If surface is pitted or oxidized degrease and use an acid etch or coat with an amorphous chromate or non-chromate conversion coating. Follow with Step 3 just prior to application.

1.7 Chrome - Clean using step 1, followed by step 2, followed by step 3.

1.8 - Not warranted metals: Brass, Copper, Lead, Magnesium, Tin, tin plate or tin alloys.

2) Wood: - Wood contains a certain amount of natural moisture and will absorb moisture from the atmosphere if not properly sealed first. Therefore all surfaces, including both sides and all edges must be coated with a high quality paint or sealant (select one that does not purposely chalk, bleed or contain ingredients that purposely migrate to the surface). Interior wood surfaces must be at least primed (sealed). Exterior wood surfaces must be primed and painted on all exposed surfaces including edges with good quality paint designed for wood surfaces to insure good adhesion. Matte or flat finished paints are not recommended. Follow all manufacturers' recommendations for preparing the surface and applying the paints. Follow section 4 on "Painted Surfaces" for final cleaning details.

2.1 General Use Plywood, Exterior Grade Plywood & Fiberboard - Fill all holes, and dents with wood filler. Smooth surface using sandpaper or steel wool. Wipe down with Naphtha or similar solvent to remove any wood dust or surface resins. Allow to dry 24 hours and then prime and paint all edges. Allow paint to completely cure before applying graphics. Follow section 4 on "Painted Surfaces" for final cleaning details.

2.2 Hardwood - Fill all holes, and dents with wood filler. Smooth surface using sandpaper or steel wool. Wipe down with Naphtha or similar solvent to remove any wood dust or surface resins. Allow to dry 24 hours and then prime and paint all edges. Allow paint to completely cure before applying graphics. Follow section 4 on "Painted Surfaces" for final cleaning details.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

2.3 High Density Overlaid Plywood (HDO) - Sign grade (pre-primed) - Seal all edges. Lightly scuff the face with fine sandpaper or 0000 steel wool, then wipe lightly with tack cloth to remove any dust. Follow section 4 on "Painted Surfaces" for final cleaning details.

2.4 High Density Overlaid Plywood (HDO) - Exterior grade - Seal all edges. Prime and paint the surface. Follow section 4 on "Painted Surfaces" for final cleaning details.

2.5 Medium Density Overlaid Plywood (MDO) - do not use oil treated - Seal all edges. Lightly scuff the face with fine sandpaper or '0000' steel wool, then wipe lightly with tack cloth to remove any dust. Follow section 4 on "Painted Surfaces" for final cleaning details.

3) Plastics and Rubber

3.1 Polycarbonate (a.k.a. Lexan®) & Fiberglass - Use Step 3 just prior to application. Test first for out gassing (especially with polycarbonate and fiberglass). These plastics usually have a trapped moisture layer close to the surface that will release when warmed up causing bubbles to form under your graphics. If you see bubbles forming on your test piece, the plastic must be oven baked for 3 - 5 hours @ 158°F (70°C) (See TA2076 for specifics regarding outgassing). Test again after baking. If drying is not possible, then we do not recommend application to these surfaces.

3.2 Polyethylene & Polypropylene - Clean using step 1, followed by step 2, followed by step 3. Using flame-treated PE and PP materials is the best option.

3.3 Polystyrene and Styrene - Clean using step 1, followed by step 3. Do not use strong solvents on this surface.

3.4 Acrylic, ABS, PET and PETG - Clean using step 1, followed by step 3.

3.5 Expanded foam board (Sintra®) - . Lightly scuff the face with fine sandpaper or '0000' steel wool, then wipe lightly with tack cloth to remove any dust followed by Step 3.

3.5 Rubber and caulking Materials - Not warranted. Graphic films have poor adhesion to these materials. For more information about special adhesive systems for these surfaces contact your MACtac sales representative.

4) Painted Surfaces - Any surface that needs to be painted should always be thoroughly cleaned and coated with a strong bonding primer. Paint finish should be semi-gloss or satin finish and not 'scrub-able' for best adhesion results. Allow paint to thoroughly cure prior to graphic application. Follow paint manufacturers recommendations for cure. MACtac recommends a minimum of one week at nominal temperature and humidity.

Avoid using:

1. Oil alkyd primers or paints as these are extremely slow drying (months).
2. High matte latex paints.
3. Highly pigmented or flat metallic paints which tend to chalk or bleed.
4. Low, and no VOC paints may require special attention. Always test first!
5. Paints that purposely include ingredients that migrate to the surface, including; waxes, silicones or anti-fouling or anti-fungal agents (typically paints that are promoted as 'easy clean').
6. Painted drywall is not a warranted application. Reference ***TA2500 Drywall Applications*** for additional details.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

4.1 Two part Urethane paint systems (often used in marine and automotive applications) employ a chemical cure. This cure will result in out gassing if the graphic is applied too soon. Test the surface by applying a small piece of film for 24 hours. If out gassing shows up under your sample test piece, remove and retest for an additional 24 hours. Continue until the outgassing has stopped. Clean using step 1, followed by step 2, followed by step 3.

4.2 Powder Coat Paint - (May require special adhesive contact your MACtac sales representative.) Clean using step 1, followed by step 2, followed by step 3.

4.3 Latex - Some latex paint formulations do not allow pressure sensitive films to adhere. Test adhesion of the paint to substrate prior to application. Clean using step 1, followed by step 3. If necessary, repeat Step 3 and re-test adhesion. Repeat until you get good adhesion.

4.4 Enamel or Oil -Based - Clean using step 1 followed by step 2, followed by step 3.

4.5 Baked Enamel - Clean using step 1, followed by step 3.

4.6 Textured Paints - Clean using step 1, test with tape for dust, if present repeat Step 1.

5) Building Materials

5.1 Drywall - Ensure no presence of drywall dust and seal the wall with a high quality primer. Follow section for painted surfaces, above. Reference ***TA2500 Drywall Applications*** for additional details.

5.2 Concrete, Sealed and Painted - Intended for indoor or well protected outdoor application only. Surface must be sealed and painted according to paint manufacturers' recommendations to create a non-porous surface. Clean using step 1 followed by step 3.

5.3 Concrete Bare - Not warranted. Graphic films have poor adhesion to these materials. For more information about special adhesive systems for these surfaces contact your MACtac sales representative.

5.5 Wall coverings - Use on vinyl coated or latex based, smooth wall coverings only. Make sure all edged and seams are securely adhered to the wall. Then use Step 1, followed by Step 3.

a) Painted drywall is not a warranted application. Reference ***TA2500 Drywall Applications*** for additional details.

5.6 Vinyl Wallboard – First wallboard must be cleaned with a good soap and water and allowed to dry. Next lightly sand with 80 grit sandpaper using circular motions. Sponge off any residual grit and dust from sanding. Prime with a good gripping primer intended for vinyl surfaces and then paint. Follow section (4.3) above for painted surfaces.

5.7 Fiberglass Reinforced Plywood (FRP) - Test first for out gassing (see section 3.1). If surface is chalky use buffer to remove chalk. Then clean using step 1 followed by step 3. Do not use strong solvents on this surface.

5.8 Stucco – If the stucco is extremely textured, even materials designed form rough surfaces won't bond well. Prep the wall by lightly dusting or a wipe down with Isopropyl alcohol. Allow plenty of time to completely dry before application.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920

6) Miscellaneous Surfaces

6.1 Paper-based Poster board (Foam-Cor®, Gatorfoam®, etc.) - Remove dust with tack cloth or tack roller.

6.2 Glass & Porcelain - MACtac accepts no liability for glass breakage due to temperature differences across the glass which can be caused by sunlight on dark areas of the graphic. Size, thickness, quality of cut, edge treatment, tinting and frame design effect temperature stress. Clean using step 1, followed by step 2, followed by step 3.

6.3 Banners - Clean using step 3.

MyBinding.com
5500 NE Moore Court
Hillsboro, OR 97124
Toll Free: 1-800-944-4573
Local: 503-640-5920