

We not only want you to be happy with the quality of our product, we also want to help you be successful in your application of our product. The following are general recommendations that should be taken to apply self-adhesive products. The surface applied to should be as smooth as possible. 50-60 PSI should be applied with a 1- 2 second dwell. Application at room temperature will achieve ultimate bonding strength within 72 hours. Application at 120-150° F will achieve ultimate bonding strength within 24 hours. Specific information on preparation and application is listed below.

TEMPERATURE

For best results the application surface and surrounding ambient atmosphere should be 50° F or above.

CLEANING SOLVENTS

Many of the following solvents are either flammable, toxic or both. Manufacturer recommendations for precautions should be followed.

Mild Cleaners: Standard commercial detergent solutions, mild soap, or warm water.

Solvents: Low boiling hydrocarbons, e.g. Shell X20, X55, X60 or equivalent; Heptane, toluol or xylol, and keytones (acetone, M.E.K.). Care should be taken to ensure plastic or rubber surfaces are not detrimentally affected by contact with the solvent. Use personal protection equipment recommended on SDS when handling solvents.

APPLICATION METHODS

When using a plastic squeegee to apply a film to an application surface, it may be wise to wrap the squeegee in several layers of soft cloth to avoid hairline scratches on the film and/or application surface.

Dry-Method—Labels 12" x 12" or smaller

MATERIALS: 1. Squeegee or stiff cardboard or clean cloth larger than the label (if possible)

2. Pin or needle
3. Proper cleaning material

- A. Clean and dry the application surface
- B. Mark the desired label position
- C. Keeping fingers away from the adhesive, peel backing paper approximately 1" from the top of the label. Fold down and crease the backing paper.
- D. Align and apply the label starting at the top. Remove the backing paper a little bit at a time, and squeegee as you go. Use firm, overlapping strokes with the squeegee, stiff cardboard or clean cloth.
- E. If air bubbles occur, puncture with a pin or needle and smooth down with the squeegee.

Wet Method—Labels over 12" x 12" or smaller labels of intricately die cut shapes

This method is useful in hot weather because it minimizes the chances of label tearing and pre-adhesion. (Not to be used for applying film to aircraft.)

- MATERIALS:
1. Squeegee
 2. Sponge
 3. One (1) gallon cold water in bucket
 4. Liquid household detergent
 5. Clean cloth
 6. Pin or needle
 7. Scissors
 8. Proper cleaning material
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- A. Clean and dry the application surface.
 - B. Mark the desired label position. If application surface carries hinges, door openings or hardware, cut the label and apply in smaller sections.
 - C. Prepare a wetting solution of 2 or 3 teaspoons of liquid household detergent (not soap) in one (1) gallon of cold water. As an alternative, Windex or mineral spirits can be use used if temperatures are below 50° F.
 - D. With the label face down, remove the backing paper slowly to expose the adhesive.
 - E. Using a sponge, flood the application surface and adhesive side of the label with the wetting solution.
 - F. Position the label and squeegee flat from top to bottom with light, over-lapping strokes.
 - G. Dry entire area with a clean cloth and re-squeegee the label with firm strokes working from the center outward toward each edge.
 - H. Allow to dry for twenty-four (24) hours and re-squeegee.
 - I. If air bubbles occur, puncture with a pin or needle and smooth down with the squeegee.

SURFACE	TYPICAL PREPARATION	COMMENTS
METALLIC		
<u>Ferrous</u> Wrought iron Cast iron Mild steel Galvanized steel Chrome-plated steel Tin-plated steel Stainless steel	Remove oil and grease with solvent. Remove rust and scale with abrasive or wire brush. Bond or prime immediately after cleaning wrought iron, cast iron and mild steel.	Metallic surfaces frequently coated in oil and grease from machine operations or for protection can cause adhesion failure if not properly cleaned prior to application. Cast iron is porous and should be sealed for maximum adhesion.
<u>Non-Ferrous</u> Aluminum Lead Zinc Copper Brass Bronze Cupro-nickle	Solvent degrease and abrade where necessary to remove surface roughness or loose particles	Cooper and copper alloys are not generally suitable surfaces for adhesive-backed nameplates.
PLASTIC		
<u>Thermoplastic</u> Shellac Cellulose acetate Cellulose acetate butyrate Ethyl cellulose Cellulosic polymer Polystyrene Acrylics ('Plexiglas', 'Perspex')	Clean with solvent or detergent solution where necessary.	If any doubt exists as to the nature or characteristics of a plastic, refer details and a sample to your 3M sales representative.
Polyvinyl chloride (P.V.C.) Polyvinylidene chloride Polyamides (nylon) Polyurethanes A.B.S. Styrene acrylonitrile Polycarbonates Polyethylene ('Polythene') Polypropylene Flourethylenes ('Teflon') Acetals	Some plasticized thermoplastics, particularly plasticized P.V.C., are not suitable surfaces for adhesive-backed nameplates. There is no known surface treatment to remedy this. Clean mold release agents with solvent. Polyethylene, polypropylene, fluoroethylenes, and acetals are easy release surfaces. Bond strengths can be improved by complicated surface treatment.	Thorough testing is required for flexible, plasticized surfaces, as plasticizer migration can cause bond failure. Often a change to a non-migratory plasticizer will solve the problem. Rigid plastics or formed plastics usually have mold release agents present on the surface. Thorough testing is required on these surfaces. New adhesive systems have been developed which will adhere to polyolefin plastics.
<u>Thermosetting</u> Phenolics ('Bakelite') Urea formaldehyde Melamine Polyester (Terylene) Epoxies Silicones	Remove mold release agent with ketone solvent and/or by sanding.	Surfaces frequently are coated with release agents from the molding process. Refer applications on silicone surfaces to your 3M sales representative. Special tapes have been developed which adhere to silicones.
PAINTS AND COATINGS		
<u>Lacquers</u> Acrylics Cellulose nitrate Vinyls <u>Others</u> Enamels Urethanes Epoxies Polyesters Silicones	Clean with detergent or solvent where necessary to remove surface contaminants. Remove loose or flaking particles with abrasive.	Adhesive-backed nameplates normally bond well to clean, unified paint surfaces, excepting silicone based paints (e.g. hammertone). Where staining is undesirable, thorough tests should be carried out.
<u>Miscellaneous</u> Timber Fibreboard Paper	Remove oil with solvent degreaser. Porous surfaces should be primed with thin film of lacquer or adhesive.	Timber is commonly oiled.
Cement Plaster Masonry Foam	Remove loose particles before priming.	
Rubbers (synthetic and natural)	Remove release agent or dust where necessary and solvent.	Rubbers are difficult surfaces and thorough testing is required.
Irregular Uneven Textured Embossed Engraved	Remove irregularities with abrasive where appropriate. Fill irregularities with liquid adhesives.	Use tapes with high holding power. Apply high pressure to bond. Use tapes with conformable non-elastic backing (e.g. foil, crepe paper, foam).
Fabric	Prepare according to nature of material.	Subject bond to high pressure or heat for improved adhesion.