

# TECH Insights

## Preparing walls for applying self adhesive films

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### Overview

The information in this document is designed to provide a general understanding of how to prepare walls prior to applying self adhesive films for wall graphic applications.

ORAFOL warrant its material to be free of manufacturing defects, however ORAFOL cannot pre-determine compatibility of its products when applied to the broad variety of walls and wall finishes.

Wall graphics may need to be applied to surfaces including internal and external walls and may also include covered outdoor areas, underground areas, high humidity areas as well as areas subject to pollutants and chemicals. The variety of walls areas is endless, just like the many types of wall construction materials.

Wall construction materials may be timber, gyprock, fibrous cement, masonry, brick & stone or could include a variety of composite materials including plastics, aluminium or glass.

The information in this document is designed to assist the material specifier and application specialist with a basic understanding of how to appropriately prepare the wall surface and test for compatibility between the self adhesive film and the wall to which the finished wall graphic will be applied.

### Inspection is key

Irrespective of the wall construction a smooth, well prepared wall surface is critical for adhesion of self adhesive films for wall graphic applications. This guideline is designed to assist you to achieve a smooth and properly prepared surface and a quality finished project.

Preparing your wall can be quite simple if the wall is in good, clean, solid condition. However, preparation can become complex if the wall surface is not in a suitable condition. Therefore, inspection is key.

Debris of any type may interfere with the adhesive performance and may lead to delamination of the wall graphic from the wall. All debris must be thoroughly cleaned and dried prior to the application of any self adhesive graphic wall film. Painted walls should be thoroughly inspected for adhesion of the paint to the base surface. This can be done with adhesive tape or the self adhesive film.

A small section of self adhesive film can be applied to the painted surface, left to bond for 24 hours, then removed to determine if the painted surface is adequately bonded to the base material. Any delamination of paint could result in future problems. Any delamination of paint indicates that the painted surface needs rectifying before proceeding to apply self adhesive film.

## Variety of wall areas

- Internal
- External & Covered outdoor
- High humidity
- Cold climate

All of these wall areas may carry different requirements in terms of wall construction materials, the finished coating on the wall, surface preparation, choice of self adhesive film, the end use application, the overall durability requirements and the expected life of the final wall graphic.

When managing projects in these areas consideration should be given to the purpose and the type of wall construction, the coating on the wall, preparation of the coating, the likelihood of adverse weather (heat, rain, wind, snow, hail) having some impact on the wall, moisture from external or internal environment, chemicals from immediate environment, cleaning chemicals, pollutants from environment, eg mining or manufacturing.

**Internal** walls can vary considerably. They may be sheeted gyprock with painted surface. In these instances consideration must be given to the type of paint and how long the painted surface has been allowed to thoroughly dry. Paint adhesion to the base material must be checked by applying a small piece of self adhesive film to the paint, allowing to bond for at least 24 hours. Then remove the film to check for any paint delamination. If there is any paint delamination from the base material this must be rectified before proceeding. This test will also give some indication about the adhesion of the film to the painted surface. It may also indicate if a coating of Viponds Self Adhesive Prep Coat is required. If a strong bond is not achieved we suggest you discuss this with ORAFOL who can recommend a self adhesive film with a higher tack adhesive and / or an alternate preparation method.

**External & Covered outdoor** walls can vary considerably. They may consist of materials including fibrous cement, timber, stone or brick, cement block or cement render. There are many variables to consider with all external walls as well as the considerations necessary to manage the environmental elements that may impact the final wall graphics.

**High humidity** areas can be problematic if care and consideration is not given to the surface, the application process and the choice of self adhesive film. In these instances we refer to bathrooms, saunas etc. These areas can carry a broad temperature range as well as high to very high levels of humidity. Firstly the space must be managed to standard temperature and humidity (18-24 degrees C / 35-50% RH) where test film should be applied to the wall surface. Then allowing the temperature & humidity to raise to levels the space will operate, test the adhesion of the film to the surface. In these instances a self adhesive film carrying a solvent based adhesive is recommended.

**Cold climate** areas can be troublesome if care and consideration isn't given to the surface, the application process and the choice of self adhesive film. In these instances we refer to cool rooms & refrigeration units which carry a range of wall surfaces including concrete, aluminium, plastic materials or metal surfaces. These wall surfaces may be coated or uncoated and these areas may be subjected to very low sub zero temperatures. Firstly the space must be managed to standard temperature and humidity (18-24 degrees C / 35-50% RH) where test film should be applied to the wall surface. Then allowing the temperature & humidity to reach the levels the space will operate, test the adhesion of the film to the surface. In these instances a self adhesive film carrying a solvent based adhesive is recommended.

## Example of a difficult application

### Undercover car parks.

This area may be regarded as an internal area of concrete construction which may be affected by moisture, humidity and pollutants.

Prior to preparing the concrete surface the construction should be allowed to cure for at least one to two months to ensure concrete is completely dehydrated. In these areas it is difficult to know what surfaces may carry a sealer and what areas are completely unsealed. Concrete efflorescence is another major consideration as the salts migrating to the concrete surface along with the moisture may adversely compromise the adhesive on the graphics film. Efflorescence should be treated prior to applying any self adhesive Prep Coat.

#### **1. Preparation**

To prepare the smooth steel trowel concrete surface, you will need to clean the surface with an acid etch solution. Prepare a solution of 1 part spirits of salts (33% hydrochloric acid) and 3 parts water. Apply liberally and scrub the surface with a stiff broom. Allow at least 10 minutes for the solution to react before thoroughly washing with water to remove all traces of reacted salts. On smooth steel trowelled concrete repeat the procedure. Under normal drying conditions (above 15°C and low humidity) it will touch dry in 60 minutes.

#### **2. Sealer**

When completely dry we then recommend applying Vipond's CONCRETE and MASONRY SEALER. This is a water thinned acrylic clear for sealing concrete and masonry. It penetrates the surface to form a thin coating that will prevent efflorescence coming to the surface. It is used to prevent alkaline salts (efflorescence) in new concrete and masonry. It has exterior durability and may be used as a clear coat to seal and protect concrete and masonry surfaces. The sealer is ready for use and can be applied with a brush, roller or spray. One coat is sufficient when it is used as a sealer but at least two coats are required when being used as a clear coat. but should be left to fully cure for 1-2 days.

#### **3. Surface Prep**

After the concrete sealer is completely dried and cured we recommend applying one coat of Vipond's SELF ADHESIVE PREP COAT. Vipond's Self Adhesive Prep Coat has been especially formulated to enhance the adhesion of self adhesive digital prints onto internal and external surfaces. It is a low VOC water based paint that dries quickly with minimal odour. Available in matt, satin and semi gloss sheen levels. Do not apply if air or surface temperatures are below 10°C or above 30°C. Longer drying times are required in colder (<15°C) conditions or high humidity (>55% RH).

#### **4. Apply self adhesive film**

After following the product recommendations for drying & full cure you can then apply your choice of self adhesive film. Products for this application may include;

- ORAJET® 3164HT Promotional Monomeric High Tack Film – short term
- ORAJET® 3554 Brick Stone Film – medium term
- ORAJET® 3954 Brick Stone Film – long term
- ORAFOL also recommend printed self adhesive films carry an appropriate over laminate.
- Refer PDS for recommended over laminate for each self adhesive print film.

## Variety of Wall surfaces

As previously mentioned there are a broad variety of wall surfaces that may need to be addressed. These surfaces may include;

- Painted plaster board - Interior
- Textured painted walls – Interior
- Sealed (painted) concrete walls – Interior & Exterior
- Unsealed concrete walls – Interior & Exterior

### Painted plaster board - Interior

For this application we will assume that all painted walls are coated with “Wash & Wear” type paints. These are typically the most difficult surfaces in relation to painted plaster board projects. We will also assume the painted plaster board wall is free of defects, cracks, chips, mould, dirt, contaminants, fixtures, loose sections, loose materials, punctures or wounds. We also assume the adhesion of the paint to the base material is solid and sound. If the surface is not in this condition proper attention to wall rectification must be conducted prior to any further activity related to applying self adhesive film.

#### 1. Preparation

Clean the painted plaster wall surface with sugar soap / water solution. This will effectively remove stains and greasy contaminants providing a clean surface to work with. Manufacturers recommendations for mixing concentrations as well as application procedures should always be followed.

#### 2. Surface preparation

After the wall surface is completely dried we recommend applying two coats of Vipond’s SELF ADHESIVE PREP COAT. Vipond’s Self Adhesive Prep Coat has been especially formulated to enhance the adhesion of self adhesive digital prints onto internal and external surfaces. It is a low VOC water based paint that dries quickly with minimal odour. Available in matt, satin and semi gloss sheen levels. Do not apply if air or surface temperatures are below 10°C or above 30°C. Viponds Self Adhesive Prep must be dried for at least 24 hour for clear and white paint, and 48 hours for coloured paint in 15°C to 25°C ambient temperature and less than 55% RH conditions before ORAFOL self adhesive films can be applied. Longer drying times are required in colder (<15°C) conditions or high humidity (>55% RH).

#### 3. Apply self adhesive film

After following the product recommendations for drying & full cure you can then apply your choice of self adhesive film. Always refer to PDS applicable to your chosen product & ensure you pre-test product suitability prior to proceeding with the full project. Products for this application may include many ORAJET® self adhesive films with a range of different adhesive characteristics.

These options may include;

- Permanent adhesive
- Removable adhesive
- High Tack adhesive

ORAJET® self adhesive film choice may include the following film types;

- Monomeric – short term applications
- Polymeric – medium term applications
- Cast – long term applications

ORAJET® self adhesive film choices include;

- ORAJET® 3162 Promotional Monomeric – Removable – short term
- ORAJET® 3164 Promotional Monomeric – Permanent – short term
- ORAJET® 3169 Intermediate Polymeric – Removable – medium term
- ORAJET® 3554 Polymeric High Tack – medium term
- ORAJET® 3551 Premium Polymeric – medium to long term
- ORAJET® 3954 Premium Cast – long term
- Refer PDS for recommended over laminate for each self adhesive print film.

## Textured painted walls – Interior

For this application we will assume that all textured painted walls are coated with “Wash & Wear” type paints. These are typically the most difficult surfaces in relation to textured painted wall projects. We will also assume the painted textured wall is free of defects, cracks, chips, mould, dirt, contaminants, fixtures, loose sections, loose materials, punctures or wounds. We also assume the adhesion of the paint to the base material is solid and sound. If the surface is not in this condition proper attention to wall rectification must be conducted prior to any further activity related to applying self adhesive film.

### **1. Preparation**

Clean the textured painted wall surface with sugar soap / water solution. This will effectively remove stains and greasy contaminants providing a clean surface to work with. Manufacturers recommendations for mixing concentrations as well as application procedures should always be followed.

### **2. Surface preparation**

After the wall surface is completely dried we recommend applying two coats of Vipond’s SELF ADHESIVE PREP COAT. Vipond’s Self Adhesive Prep Coat has been especially formulated to enhance the adhesion of self adhesive digital prints onto internal and external surfaces. It is a low VOC water based paint that dries quickly with minimal odour. Available in matt, satin and semi gloss sheen levels. Do not apply if air or surface temperatures are below 10°C or above 30°C. Viponds Self Adhesive Prep must be dried for at least 24 hour for clear and white paint, and 48 hours for coloured paint in 15°C to 25°C ambient temperature and less than 55% RH conditions before ORAFOL self adhesive films can be applied. Longer drying times are required in colder (<15°C) conditions or high humidity (>55% RH).

### **3. Apply self adhesive film**

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ORAJET® self adhesive film choice may include the following film types;

- Monomeric – short term applications
- Polymeric – medium term applications
- Cast – long term applications

ORAJET self adhesive film choices include;

- ORAJET® 3164HT Promotional Monomeric High Tack Film – short term
- ORAJET® 3554 Brick Stone Film – medium term
- ORAJET® 3954 Brick Stone Film – long term
- ORAFOL also recommend printed self adhesive films carry an appropriate over laminate.
- Refer PDS for recommended over laminate for each self adhesive print film.

## Sealed (painted) concrete walls – Interior & Exterior

For this application we will assume that all sealed (painted) concrete walls, interior or exterior are coated with “Wash & Wear” type paints. These are typically the most difficult surfaces in relation to sealed (painted) concrete wall projects. We will also assume the sealed (painted) concrete wall is free of defects, cracks, chips, mould, dirt, contaminants, fixtures, loose sections, loose materials, punctures or wounds. If the surface is not in this condition proper attention to wall rectification must be conducted prior to any further activity related to applying self adhesive film.

### **1. Preparation**

Clean the sealed (painted) concrete wall surface with sugar soap / water solution. This will effectively remove stains and greasy contaminants providing a clean surface to work with. Manufacturers recommendations for mixing concentrations as well as application procedures should always be followed.

### **2. Surface preparation**

After the wall surface is completely dried we recommend applying two coats of Vipond’s SELF ADHESIVE PREP COAT. Vipond’s Self Adhesive Prep Coat has been especially formulated to enhance the adhesion of self adhesive digital prints onto internal and external surfaces. It is a low VOC water based paint that dries quickly with minimal odour. Available in matt, satin and semi gloss sheen levels. Do not apply if air or surface temperatures are below 10°C or above 30°C. Viponds Self Adhesive Prep must be dried for at least 24 hour for

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## Unsealed concrete walls

### – Interior & Exterior

Prior to preparing the concrete surface the construction should be allowed to cure for at least one to two months to ensure concrete is completely dehydrated. Unsealed concrete walls, interior or exterior may be affected by many environmental effects including efflorescence. Simply stated, efflorescence occurs when water containing dissolved salts are brought to the surface of masonry, the water evaporates and the salts are left on the surface. If proper preparation is not followed prior to the application of self adhesive film the salts will

most likely cause the self adhesive film to delaminate from the concrete surface. Areas like unsealed concrete walls, interior or exterior, can be some of the more difficult surfaces for self adhesive films, therefore proper preparation and manufacturer recommendations should always be followed.

### 1. Preparation

To prepare the smooth steel trowel concrete surface, you will need to clean the surface with an acid etch solution. Prepare a solution of 1 part spirits of salts (33% hydrochloric acid) and 3 parts water. Apply liberally and scrub the surface with a stiff broom. Allow at least 10 minutes for the solution to react before thoroughly washing with water to remove all traces of reacted salts. On smooth steel trowelled concrete repeat the procedure. Under normal drying conditions (above 15°C and low humidity) it will touch dry in 60 minutes.

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- Refer PDS for recommended over laminate for each self adhesive print film.

## Removing existing Self adhesive film

The best way to deal with existing self adhesive film is to remove it by stripping it away. ORAFOL do not recommend applying self adhesive film over aged self adhesive film. Peel and scrape the existing film away. For difficult sections a heat gun may be useful to warm and soften the adhesive. In some cases a solvent remover or a steamer may be necessary. The degree of difficulty can vary depending on the preparation used prior to application, the type of wall surface and the adhesive characteristics of the self adhesive film.

Once the self adhesive film is removed make certain that all previous adhesive is thoroughly cleaned away. Fill in holes, dents or cracks with a quality filler then smooth damaged areas by sanding the surface. Apply the appropriate primer and Prep Coat based on the type of wall construction.

A smooth, well-prepared wall surface is critical for adhesion of self adhesive films for all wall graphic applications.

## Printing & Laminating

There are three critical steps that need to be followed when producing your wall graphics.

1. Use the correct colour profiles. Check for the latest updates at: [https://www.orafol.com/en/americas/support /// ICC Profiles](https://www.orafol.com/en/americas/support///ICCProfiles)

The profile will automatically synchronize the ink levels, heater settings, and feed speed necessary to help ensure quality printing.

2. When utilising solvent or eco-solvent inks: Prior to trimming or laminating, it is important that the graphic sit for 48-72 hours, to allow the ink to thoroughly out-gas. Prints heavy in ink saturation need to cure and out-gas for approximately 72 hours. This is crucial to ensure your wall graphics do not start curling around the edges.

Keep in mind that due to widely varying production shop environments, curing times may vary.

3. For best results on contour-cut wall graphics, leave a 20-25mm unprinted, white border all the way around the printed area to minimize potential edge curling that typically occurs when contour cutting through a printed bleed.

When choosing a laminate, it is important to know what the lighting conditions are in the room. If there is an abundance of artificial or natural light, you may choose a matte or semi-gloss laminate to reduce light reflection or glare. Review product technical data sheets at [www.ORAFOL.com](http://www.ORAFOL.com) to assist in choosing the correct overlaminate for the specific ORAJET Digital Printing Media.



## Installation

When installing your graphic, always apply the material using a dry application method; under no circumstances should a wet application be used.

Also be careful when using a heat source during installation as this can cause the material to warp or stretch and not register during panel installations. Lay the graphic, image-side down, on a flat surface and pull back the liner about 6-12 inches. Sharply crease the liner while holding it away from the adhesive. Align the graphic on the wall and use finger pressure to tack in place. Using a Squeegee, work from the centre to the edge, then return to the centre and work to the opposite edge. Use overlapping strokes while applying a small portion of the graphic at a time.

If your graphic is made up of more than one panel, avoid using horizontal seams when possible. When the entire graphic has been applied to the wall, reapply pressure with the squeegee around the edges of the graphic multiple times to ensure a good bond. Post heating the graphic edges is recommended between 100 °F - 150°F. If the graphic will come into contact with regular cleanings, such as mopping, soil removal, etc., graphics should be sealed in those areas. This is especially important where the graphic is terminated at the floor.

Use of a clear silicone sealant along the edges of the graphic is recommended to assist in these sections where wet cleaning can compromise the wall graphic.

## Test, Test, Test.

As explained many times through this technical advice there are so many variables to contend with when applying self adhesive films to walls. These variables are far too numerous to mention all, however this paper does cover many.

Not only are there variables in wall types, there are variables to consider in terms of location. **For these reasons we strongly advise testing.** Test product onto the wall surface on site before undertaking the full project. The onus is on the installer to confirm suitability of individual products for specific applications, before proceeding.

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For more information contact your local ORAFOL representative

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