

# Study of Evolution and Changes of Interior Wall Cladding with Time

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**Abstract** - The purpose of this research is analyzing and understanding basic needs of wall cladding. This study basically include and focuses on interior wall materials which are available in market to give an aesthetic appeal to our walls. I have focused on working out various option to understand what type of wall cladding material will be best suitable for which place. So, it is aesthetical effective and purposely according to weather and thermal resistance. We have summarized various installation process and figure out the constraints and viability at the place.

Research has helped me to define that wall cladding takes place according to clime surrounding. Thus, to make aware about eco- friendly material which provide natural aesthetic beauty or impact on wall.

**Key Words:** Wall cladding, aesthetic appeal, thermal resistance, clime surrounding

## 1. INTRODUCTION

**WALL Cladding** is the application of one material over another to provide a skin or layer. In construction, cladding is used to provide a degree of thermal insulation and weather resistance, and to improve the appearance of buildings. Cladding may also be a control element for noise, either entering or escaping.

Wall cladding is quite popular these days both in residential and commercial structures and is primarily used for protection and aesthetic purposes, with some materials having more of one trait than the other. Available in a multitude of designs, textures and materials, they help bring your interiors, exteriors and bathroom to life by lending a vibrant and elegant look to the otherwise dull walls. It can be attached directly to the frame or to an intermediate layer of battens or spacers thus providing a decorative layer to the exterior or internal walls.

### 1.1 Uses

- The illusion of height
- As a shelving agent
- As a statement bed head
- To draw the eye of a feature piece
- To anchor a fireside
- Bathroom

### 1.2 Advantage

- It is an instant and dramatic solution to transfer a space without any additional element and easiest and least experience way to give a new life to an old space.
- Wall cladding adds a protective layer to the wall that is cleanable and washable, it adds depth and texture that a plain coat of paint cannot achieve.
- Wall cladding can also make your walls sound proof if done a certain way.
- Cladding protects the building from pollution, dirt can impart a very shabby look to the building when only paint is used as a finishing surface.

### 1.3 Disadvantage

- Cladding can be very expensive, depending upon the material. While timber cladding can result in a large bill due to the increased amount of labour required.
- Depending upon the size of the structure and the material used, the installation of siding can take a long time. This also depends upon the quality of the original structure, which must be sound enough to support the cladding.
- While cladding is low-maintenance—requiring a simple wash on a regular basis—if it is broken or dented, its aesthetic qualities are reduced and it may be difficult to repair the damaged part. This is especially common with metal cladding, which can easily be dented. Also, if the cladding is not installed properly, the underlying structure can be damaged.

### 1.3 Tips for installation

#### • Direction Matters

Generally speaking, vertically laid material will give the illusion of height – while horizontal boards make small spaces seem larger. Keep that in mind when selections for your space.

#### • Keep It Simple

Add character, not clutter. When determining what style of cladding to use be mindful that multiple styles may not look great together. A vertical bead board wall clash with a horizontal shiplap wall nearby, for example. Experts caution that while one style per space is encouraged, a maximum of

two styles should be used in each space. A maximum of three styles throughout the entire house is recommended.

- **Start Level**

When installation cladding in plank form, it is vitally important that the first board/plank installed in plumb and level. You may want to have an extra pair of eyes and hands available to help guide that first piece into place. Failing to take the extra time upfront can cause big problems during the rest of the process.

## 2. MATERIAL

### 2.1 Wallpaper

Wallpaper is a material used in interior decoration to decorate the interior walls of domestic and public buildings. It is usually sold in rolls and is applied onto a wall using wallpaper paste. Wallpapers can come plain as "lining paper", textured, with a regular repeating pattern design, or, much less commonly today, with a single non-repeating large design carried over a set of sheets. The smallest rectangle that can be tiled to form the whole pattern is known as the pattern repeat.

### Installation

Like paint, wallpaper requires proper surface preparation before application. Additionally wallpaper is not suitable for all areas. For example, bathroom wallpaper may deteriorate rapidly due to excessive steam. Proper preparation includes the repair of any defects in the drywall or plaster and the removal of loose material or old adhesives. For a better finish with thinner papers and poorer quality walls the wall can be cross-lined (horizontally) with lining paper first. Accurate room measurements (length, width, and height) along with number of window and door openings is essential for ordering wallpaper. Large drops, or repeats, in a pattern can be cut and hung more economically by working from alternating rolls of paper.

#### Wallpaper adhesives

Most wallpaper adhesive are starch or methylcellulose based.

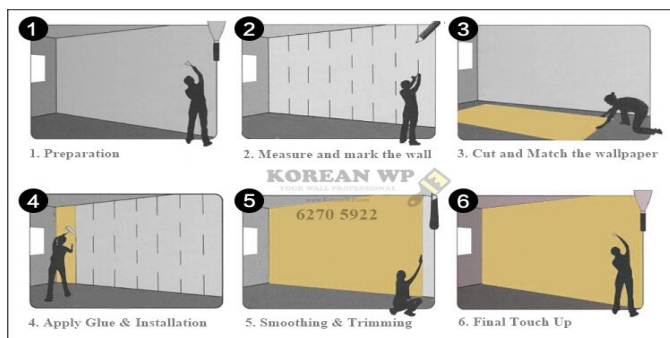


Figure 1 Installation of wallpaper

### 2.2 Artificial grass wall

An artificial Green Wall is a wall covered with artificial plant. Flat, monotone walls are now a thing of the past because there is such a wide variety of textured textiles to pick from. However, it is not realistic to be able to apply and maintain natural growing products inside such as grass. In fact, grass and other natural living organisms aren't even the easiest to maintain outside. When artificial grass is applied to cover walls it applies a natural, eco-friendly appearance that will last a lifetime and requires zero maintenance.

### Installation

Wall coverings are easier than installing artificial grass traditionally. You can either screw the artificial grass up against the surface whether that is concrete or wood, pin the grass up with nails or staples or simply glue it down - whatever you feel is the most secure. As the backings of the grass are made from a rigid polypropylene membrane they won't rip when the grass is secured down.



Figure 2 Installation of artificial grass wall

### 2.3 Mosaic tile

Historically, mosaics were first painstakingly applied as individual tiny tiles to create a unified large surface with intricate patterns, but modern mosaics consist of convenient sheets of pre attached tiles that are remarkably easy to install. In many ways, working with modern mosaics offer some advantages to working with standard ceramic or porcelain tile.

Modern mosaic tile is a product in which smaller ceramic tile squares—generally 2 inches square or smaller—are glued onto sheets of mesh fiberglass. The tiles are spaced on the sheets so the gaps between tiles are precisely the proper width for grout seams. This makes mosaic tile much quicker to install than using individual small tiles.

Mosaic sheets can be composed of tiles of the same color, or they can use tiles of varying colors and different shapes for

design effects. Most mosaic sheets are traditional ceramic tile, but there are also mosaics that use porcelain tile, glass tile, natural stone, or even unglazed terra cotta tiles. Mosaic sheets are usually made with small square tiles, but some mosaics consist of sheets of small rectangular tiles or other geometric shapes. They may even mix shapes within the same sheet. There are also narrow sheets of mosaic tiles that are used for borders and for other accent applications.

### Installation

Surface preparation for a mosaic tile installation is exactly the same as for standard ceramic tile. Surfaces must be perfectly flat and smooth. In modern tile work, the underlayment for mosaic tile is generally cement board applied over a plywood subfloor or directly against wall studs. Mosaic tile can be laid directly on plywood or wallboard (in non-wet locations), but cement board offers the best underlayment and is the preferred choice for professionals.

As with any tile job, a good installation with mosaic tile requires a well-planned layout to ensure that grout seams run perfectly square. Professionals are very careful when planning layouts to minimize the amount of tile cutting necessary. Drawing precise layout lines will ensure a good installation.

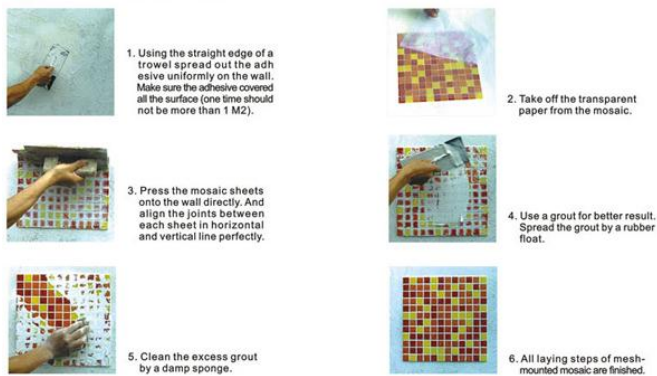


Figure 3 Installation of mosaic tile

### 2.4 3D Wall panel

A 3D wall panels give you the opportunity to add a modern and stylish look to any room. They are affordable, easy to clean, and versatile in design options. 3D panels also called as GYPSUM PANEL, today they are one among the most popular decorative panels in the market today. They are made of a mix of plaster and other materials. These panels are quite strong but must not be used in areas which endure regular and repeated mechanical impact, such as in narrow corridors. They are also sensitive to moisture and can be used ideally in office, living room or bed room but not in a balcony. 3D panels look quite stylish.

There is a new type of eco-friendly 3d wall panel made out of the fibrous residue of sugarcane. This fibers of crushed sugarcane stalks, remaining after raw sugar is extracted

from the juice of the sugarcane by shredding it, is now the raw material, called BAGGASSE that forms the base of this easily installed eco-friendly product. The raw material used for these 3d wall panel is 100% recycled, compostable and is therefore 100% biodegradable.

### Installation

Tools required during installation process are tape measure, hammer, acrylic primer, spirit level, tile adhesive, filler, combed trowel, hand saw, sandpaper, screwdriver, scraper, sponge, pencils and safety gear.

- Before you are going to install the tiles, clean and free of loose paint on the surface.
- Plan ahead the layout of the panels on the wall.
- Using a level you may draw the panels on the wall before installing them.
- Apply glue on wall and panel.
- First install the full panels, do all the cutting at the end.
- Prime panels.
- Use the sand able drywall compound to fill the gaps between panels and sand them smooth (use fine sandpaper - 220 and up and do not apply too much pressure on the panels once sanding)
- Apply coat of primer over the joints and paint the panels.

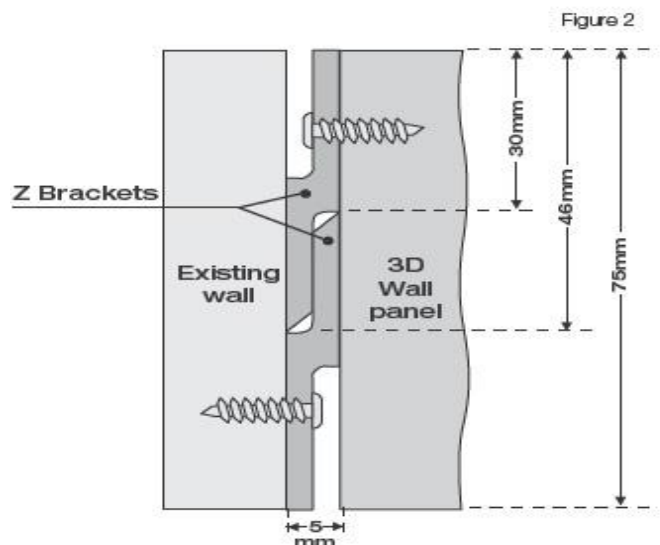


Figure 4 Installation of 3D wall panel

## 2.5 Leather wall faux panel

Panels have 3 layers: top layer – waterproof Polyurethane; second layer (filler) – sound/waterproof Polyurethane foam; the third layer (backboard) – soundproof PVC. Front side of the tile made out of waterproof PVC faux leather (pleather) – same kind of material that you'll find widely used in furniture and clothing production and mimics the look and feel of real leather very closely. 3D LT89 Faux Leather panel is available in various colors, textures and patterns. All sides and corners are impeccably finished.

### Installation

The 3D leather panels can be installed permanently on the wall, or as temporary modular panels that can be removed from the wall at any time:

- Measure the area, decide on a layout and mark the wall.
- Using regular hot glue gun, drop a few melted hot glue dabs on the corners, and the centre (back side of the tile) and press the tile to the wall. (We would suggest using “No more nails” adhesive, sold in tubes or “Power Grab” adhesive).
- Hold it for about a minute to let the glue harden and cool.

## 2.6 PVC sheet

PVC is known as Polyvinyl Chloride. **Polyvinyl chloride** is the world's third-most widely produced synthetic plastic polymer, after polyethylene and polypropylene. About 40 million tones are produced per year. PVC comes in two basic forms: rigid (sometimes abbreviated as RPVC) and flexible. The rigid form of PVC is used in construction for pipe and in profile applications such as doors and windows.

Pure polyvinyl chloride is a white, brittle solid. It is insoluble in alcohol but slightly soluble in tetrahydrofuran.

### Installation

The tools we need for installation are tape measure, J-trim, table saw, masonry nail, hammer, straightedge, wafer-head screws, screwdriver, pry bar.

Measure the height and width of the walls you plan to cover with plastic wall panelling. Purchase the correct panels for your space to create the fewest number of joints between panels. For example, if you have a 9-foot ceiling, don't buy panels that are 8 feet tall; buy 9- or 10-foot panels.

- Cut your J-trim to the height and width of your walls using a table saw with a fine-tooth blade. Plan to put the trim at the beginning and end of the panelling and along the top and bottom. This helps the

panelling lock securely in place and provides a finished edge.

- Place the J-trim on the edge of the first wall and nail it in using masonry nails and a hammer. Many types of J-trim have evenly spaced holes along the entire length, so choose holes about 18 inches apart for your nails. Install the trim along the floor, ceiling and end corner as well.
- Measure the height between the top and bottom pieces of J-trim and cut your plastic panelling to fit using your table saw. Measure where you should cut on the panels, then draw a line using a pencil and straightedge. Follow the line with your table saw to make a clean, straight cut. Measure and mark the locations of light switches and wall outlets, then cut out the rectangle shapes with a utility knife. You may have to score the panelling several times around your rectangle outline before the knife cuts through the plastic.
- Slide the tongue side of the first panel into the J-trim at the beginning of your first wall, the ceiling and the floor, and nail it in place using masonry nails. These nails often come in colours to match your trim, so use those if possible to reduce the need to cover nail heads with coloured putty. Drive wafer-head screws through the panelling into the studs where possible, placing them about 18 inches down each stud. Make a small pencil mark on the floor or ceiling where the studs are to help you find them once you've put the panel against the wall.
- Slide the tongue of the next panel into the groove of the first panel as well as the J-trim on the ceiling and floor. Nail it into the trim and studs, just like you did with the first panel. Continue nailing the panels around the room, using the panels with holes for wall outlets and light switches in the right places. Slide the final piece into the outer piece of J-trim and nail it in place to create a finished edge.

## 3. CONCLUSIONS

The purpose of this dissertation was to analysis and understand basic needs of wall cladding. This study basically included and focused on interior wall materials which are available in market to give an aesthetic appeal to our walls. Thus dissertation focuses on working out various options to understand what type of wall cladding material will be best suitable for which places so that it is aesthetical, effective and according to sound proofing, weather and thermal resistance. We have summarized various installation process and figured out the constraints and viability at the place.

Research has helped me to define that wall cladding takes place according to climate surrounding. Eco-friendly material have also been studied which provides natural aesthetic beauty and impact on wall.

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