

Understanding Wallcoverings

Overview

This section provides an overview of the many issues that are important in understanding how wallcoverings are created, how they are sold, what special characteristics they possess and how to identify various wallcoverings.

Key Points

Key chapters in this section include grounds and substrates; types and usage; ratings; characteristics; symbols; pattern and run numbers; packaging and sizing; types of printing; and pattern matches.

GROUNDS AND SUBSTRATES

Overview

There are many different grounds and substrates used to make wallcoverings. The combinations or constructions of these various materials provide the individual characteristics typical in each type of wallcoverings (degrees of strength or durability, scrubbability, washability, stain resistance, abrasion resistance, colorfastness, etc). The specific qualities of an individual wallcoverings product will be listed on the label, bolt, or sample book.

Most wallcoverings consist of three layers, each of which performs an important function. Starting from the surface of the wallcoverings and working to the back, the layers are:

- The Decorative Layer – The thinnest layer in most cases, this is comprised of the inks applied to the top of the intermediate layer. This decorative layer supplies the “look” of the product and is normally the major reason wallcoverings are chosen. The decorative layer may also have a protective polymer coating to provide added performance characteristics.
- The Intermediate Layer – This layer, also called the ground, provides the surface upon which the decorative layer (ink) is printed. It also provides the background color that, while often off-white, can be any color depending upon the design. This layer can range in thickness from less than one mil to as much as 10 mils as in heavier-weight, "solid-vinyl" products. Note that a mil is 1/1000 of an inch.
- The Third Layer – The substrate or backing is the portion of the wallcoverings that goes against the wall. The surface of wallcoverings products usually commands the majority of attention paid to wallcoverings, but the backing of these products is just as important from a functional value. This backing can be of a wide variety of materials ranging from woven and non-woven fabrics to lightweight paper products.

The various types of backings are:

- Paper Backings – used on paper-backed vinyls, vinyl coated papers and specialty products.
- Woven Fabric Backings – commonly referred to as scrim or osnaburg. Scrim is used mostly in light construction areas while osnaburg is installed in medium to heavy usage areas such as commercial corridors.
- Non-woven Fabric Backings – in different grades these offer improved printing techniques while maintaining the tear strength qualities necessary for commercial installations.
- Latex Acrylic Backings – used on fabric wallcoverings to allow for stability and improved hanging qualities.

TYPES AND USAGE

Overview

Wallcoverings can be used in virtually any residential or contract environment. Since there are many different types of wallcoverings on the market—some for very specific uses—it is important to understand the qualities of each type and in what type of environment the wallcoverings will be used.

Key Points

- When selecting wallcoverings the first variable to consider is the amount of traffic the area will receive.
- Paper and natural wallcoverings are most appropriate where traffic is minimal. They are more delicate than their vinyl counterparts yet offer ample durability and a special style to a variety of placements.
- Vinyl and synthetic textiles, with their maximum durability and ease of cleaning, are especially appropriate for hospitals, sporting arenas, schools and other high traffic situations.
- While wallcoverings are categorized by residential and contract segments, it is not uncommon to use residential wallcoverings in contract settings, like assisted living facilities for a homey feel, for instance, or to use contract wallcoverings in some of today's more avant-garde homes.

CONTRACT WALLCOVERINGS

Contract wallcoverings are produced specifically for use in hotels, apartment buildings, office buildings, retail outlets, schools and hospitals. They are manufactured to meet or surpass minimum physical and performance characteristics set forth in Federal Specifications CCC-W-408.

The most popular types of wallcoverings for contract installations are as follows:

Fabric Backed Vinyl – wallcoverings that have a woven substrate of fabric or a non-woven synthetic substrate. In either case, the substrate is laminated to a solid vinyl decorative surface.

General categories of these types of wallcoverings include:

Type I (Light Duty) – For use in areas of light abrasion.

Type II (Medium/Heavy Duty) – For use in areas of average to heavy scuffing.

Specialty Wallcoverings

A special category of wallcoverings is used in highly specialized circumstances or for areas of light traffic. Many of these types of wallcoverings have been replaced by vinyl wallcoverings that simulate the same look with greater durability. Nonetheless, many of the types of wallcoverings outlined below have historical importance, and can be produced by specialty manufacturers or custom firms. They are highly decorative, and appropriate for use in any contract area where a dramatic look is desired.

- Natural Textile Wallcoverings – natural textiles usually laminated to a backing to enhance dimensional stability and to prevent the adhesive from coming through to the surface. These backings are usually acrylic or paper. Textiles are manufactured in a variety of widths and are constructed of natural fibers. Natural textiles can be finely designed or coarse in texture depending on the desired look.

Specialty Wallcoverings (cont.)

- Polyolefin/Synthetic Textile Wallcoverings – woven and non-woven looking wallcoverings developed to give the aesthetic appearance of a natural textile while adding an increased value in stain and abrasion resistance. These products are generally put up with an acrylic or paper backing. Many of these products are comprised of polyolefin yarns, which are olefin fibers made from polymers or copolymers of propylene. These types of wallcoverings are appropriate for higher traffic areas.
- Acoustical Wallcoverings – designed for use on vertical surfaces, panels, operable walls and any place sound reduction is a primary factor such as meeting rooms, offices, theaters, auditoriums, restaurants as well as corridors and elevator lobbies. These products are predominantly made of man-made polyester and olefin fibers, and are tested for a special sound absorption rating known as a Noise Reduction Coefficient (NCR) rating. This rating indicates the amount of sound absorbed into the wall. The higher the number, the more noise absorption.
- Cork and Cork Veneer – with variegated texture with no definite pattern or design. Cork veneer is shaved from cork planks or blocks and laminated to a substrate that may be colored or plain. Offers some degree of sound resistance; can be used as bulletin boards.
- Digital Wallcovering: Borders, Murals, and Wallcovering. Unlimited supplies of designs, ideas, and colors. Digital Wallcoverings allows the person the freedom to express any theme, style or design on a ground of their choice.
- Wood Veneer – wood wallcoverings are mostly laminated to fabric backing. They are usually made in sheets 24 inches wide and provided in any length up to 126 inches long. Due to characteristics relative to environmental and grain matching, wood veneers are used mostly in the office or conference room environment along with some other specialty areas, such as large columns.
- Foils – a thin sheet of metallic material with a paper or fabric substrate. Require a very smooth surface and extreme care when installing. Usage is limited; highly decorative.
- Liner Paper – blank stock-type wallcoverings. Comes in different weights such as light, medium and heavy. Can be plain paper stock or a non-woven type material. Liner can be used on almost any wall surface, such as plaster, sheetrock (drywall), paneling and cinder block. Its purpose is to provide a smooth surface for the installation of wallcoverings.

RATINGS

Overview

The federal government mandates that residential and contract wallcoverings must achieve certain performance measures. Wallcoverings are typed by the American Society for Testing and Materials (ASTM). Specifications and performance requirements are set forth in CCC-W-408, issued by the General Services Administration. All testing on wallcoverings must be conducted by a certified testing facility.

Key Points

Testing guidelines focus on requirements for sixteen wallcoverings characteristics.

1. Color fastness
2. Washability
3. Scrubbability
4. Abrasion Resistance
5. Breaking strength
6. Crocking
7. Stain Resistance
8. Tear Resistance
9. Blocking Resistance
10. Coating Adhesion
11. Cold Crack Resistance
12. Heat Aging Resistance
13. Flame Spread
14. Smoke Development
15. Shrinkage
16. Mildew Resistance

The type and specifications of each individual wallcoverings product determines its most appropriate use. The type and specifications of individual products will be listed on the label, bolt, or sample book using international symbols.

WALLCOVERING CHARACTERISTICS

Overview

While the Federal Government ratings are important, it is also important to understand the definition of each wallcoverings characteristic. The more a designer knows about which characteristics, the better choices they can make in specifying the proper wallcovering.

Key Points

A listing of the most important or common characteristics and definitions are as follows:

- Washable – wallcoverings that can withstand occasional sponging with a prescribed detergent solution.
- Scrubbable – wallcoverings that can withstand scrubbing with a brush and a prescribed detergent solution.
- Stain Resistance – the ability to show no appreciable change after removal of different types of stains such as grease, butter, coffee, etc.
- Abrasion Resistance – the ability to withstand mechanical actions such as rubbing, scraping or scrubbing.
- Colorfastness – the ability to resist change or loss of color caused by exposure to light over a measured period of time.
- Peelable – the decorative surface and ground may be dry peeled leaving a continuous layer of substrate on the wall. This remaining substrate can be used as a liner for hanging new wallcoverings. It must, however, be scraped off to prepare the wall for paint. Peelable wallcoverings are usually paper-backed vinyl products in which a layer of solid vinyl is adhered to a substrate.
- Strippable – wallcoverings that can be dry stripped from the wall leaving a minimum of paste or adhesive residue and without damage to the wall's surface. Be sure to note the difference between strippable and peelable.
- Unpasted – the substrate of the wallcoverings has not been pre-treated with an adhesive. An adhesive must be applied to the wallcoverings or wall (depending on type and manufacturer's instructions) to apply wallcoverings to the wall surface. Common in specialty and non-woven contract wallcoverings.
- Self-adhesive – found in some wallcovering borders & dry erasable wallcoverings, the substrate has been treated with a self-sticking adhesive. No water is needed to activate adhesion.

The specific characteristics of an individual wallcoverings will be listed on the label, on the bolt or designated in the sample book using international symbols.

PATTERNS AND RUN NUMBERS

Overview

Pattern and run numbers are two important keys to keeping wallcoverings matched throughout a job. Understanding these two codes will help the designer eliminate pattern or color variances in design jobs.

Key Points

During the manufacturing process, a pattern and dye-lot or run number is printed on each roll of wallcoverings. The pattern number identifies a particular design and color. The dye-lot number represents a particular group of rolls that are printed on the same print run.

The dye-lot number will change each time there is a change in the printing process. Different dye lot numbers could signal variables such as changes in tonal color, vinyl coating and/or consistency of the embossing process being used during the production of wallcoverings. Any of these variables could show a slightly different color in the wallcoverings, sometimes visible only when two different dye-lots are compared with each other.

It is very important that the interior decorator and installer check each individual roll in any wallcoverings shipment to ensure uniformity in color and pattern. It is also important to record pattern numbers and dye-lot or run numbers for future reference in case additional material is required.

PACKAGING AND SIZES OF WALLCOVERINGS

Overview

The packaging and pricing of wallcoverings remains a mystery to many consumers. Although not complicated, the reasoning behind the practice is misunderstood.

Key Points

- Wallcoverings come in different lengths and widths and, although usually priced by the yard or single roll, are packaged as double roll bolts. This is done to provide more usable wallcoverings from the same run and dye lot.
- Extra wallcoverings allows for a margin of error during hanging, and will help avoid the problem of finding the same dye lot or printing run when reordering product to complete a project, or if the wall needs repair later. Wallcoverings are manufactured in different widths, primarily due to different equipment in different manufacturing facilities.

Contract, or commercial, wallcoverings are manufactured specifically for commercial use and are 54 inches wide and are sold by the lineal yard. A lineal yard is any width by the length of 36 inches.

TYPES OF PRINTING

Overview

Different types of printing provide different visual effects for wallcoverings. It is important to recognize that each process is capable of yielding attractive, stylized and salable products. Each process enables the manufacturer to produce a specific characteristic look.

Key Points

Common types of printing are:

- **Screen Printing**

Screen printing is accomplished in two ways, using either flat or rotary screens. Hand screens, commonly called silk-screen printing, are carried out by using flat mesh screens held within a frame. The design image area is reproduced onto the mesh screen. The screen or mesh area is covered with a resist, such as wax, which plugs or blocks all of the screen openings, except in the area of the design image. Ink is then applied to the flat screen. A rubber squeegee is then used to push the ink along the screen surface. In this way ink is forced through the openings in the design area onto the wallcoverings. Ink cannot be applied in the areas previously blocked by the resist. One screen is needed for each color. This process is most often used for specialty and customized products.

- **Rotary Screen**

Rotary screen is a high-speed production technique to replace hand screen-printing. In this system, a rotary or round screen mesh cylinder is employed. Ink is fed into the inside core of the cylinder and an internal squeegee blade is used to press or apply ink through the image area of the screen. The ink will not flow through the rotary screen where a resist has been used to block or seal the mesh where printing is to take place. Rotary screen-printing is used for designs where a bright, solid color laydown is required. These include graphics, contemporary and traditional floral paisley, geometrics, etc. It is also used for expanded vinyl prints. A specially formulated ink is used to print the design. It then goes through a heat tunnel, which activates a blowing agent causing the ink to expand, creating a puffed, or three-dimensional look.

- **Gravure Printing**

Gravure printing is the one process which offers the designer the opportunity of achieving a complete, continuous color deposit ranging from 100 percent full tone down to almost a 5 percent tone. Gravure is the costliest manufacturing process since the cylinder used requires copper plating and a special photochemical engraving or etching process. Printing is accomplished via tiny cells or ink reservoirs that are engraved into the surface of the print cylinder. In contrast to surface printing, with gravure the ink is held within tiny cells engraved into or below the cylinder surface. The deeper the cell, the darker the tone printed. By varying the size and placement of each cell, varying amounts of ink can be deposited onto the wallcoverings by pressing the inked cylinder against the web. Pressure causes the ink to flow from within each cell onto the wallcoverings. This process is the most versatile since it can duplicate a complete range of visual effects, and is able to give an almost photographic effect.

- **Digital Printing**

Used mostly for borders and murals, digital printing is defined as one of several non-impact technologies where the image or pattern is created, manipulated and finalized by electronic systems and printed by a computer controlled printer.

PATTERN MATCHES

Overview

How patterns come together to create a design is one of the most important elements to understanding wallcoverings. Although paperhangers will figure out the pattern match in most jobs, the interior designer should understand these concepts to ensure quality work, or to create custom looks (going against basic pattern guidelines.)

Key Points

All wallcoverings, except some textures and murals, have a pattern repeat. The repeat is the vertical distance between one point on the pattern to the identical point vertically. This pattern repeat is an integral part of the design. The repeat can range anywhere from less than an inch up to as much as the width of the wallcoverings strip or more.

There are three major types of pattern matches:

- **Random Match** – the pattern matches no matter how adjoining strips are positioned. Stripes are the best example of this type match. It is recommended to reverse every other strip to minimize visual effects such as shading or color variations from edge-to-edge. Note also that stripes, or any random match, will produce much less waste since there is no repeat distance to take into account.
- **Straight Across Match** – the design elements match on adjoining strips. Every strip will be the same at the ceiling line.
- **Drop Match** – has several different types:
 - **Half-drop Match** – a match where every other strip is the same at the ceiling line and the design elements run diagonally. It takes three strips to repeat the vertical design. If you numbered the strips consecutively, the odd numbered strips (1, 3, 5 and so on) would be identical and the even numbered strips (2, 4, 6, and so on) would match one another.
 - **Multiple Drop Match** - a match that takes four or more strips before the vertical design is repeated. Similar to drop match except it takes more strips to repeat the first strip. This type of match is rare, except in high-end wallcoverings.