



The anatomy of wallcoverings: Wallcoverings have changed more in the last 50 years than in the previous 500

By James Turner

[Adhesive Chart \(see below\)](#)

[Roller Size Chart \(see below\)](#)

History: The first recorded use of wallcoverings was in ancient Egypt. Papyrus reeds were beaten by hand, pressed, and handpainted. It wasn't until the invention of the mechanical printing press in the 14th century in Germany that wallpaper became commercially available. Wallpaper usage grew, and by the 16th century it could be found across Europe and in China. By the late 1600s, English stationery makers were printing rolls of wallpaper. Most papers were block printed in a repeated pattern and could receive additional hand coloring. Marbleized and flocked papers that imitated cut velvet were highly prized, as well as handpainted and block printed murals from China. Wallpaper, naturally, was limited to the well-to-do.

It wasn't until the last 200 years that wallpaper as a decorative option became available to the mass public. This was fostered by two events. First, the Industrial Revolution in England, Europe, the U.S., and Canada, with its steam and later electrical power, allowed manufacturers to decrease production time and increase volume. Second, in the late 19th century, an Englishman invented a printing machine using engraved cylinders and continuous rolls of paper stock. What once may have taken days or weeks to create would now take minutes. Wallcovering became affordable to the developing middle class of the industrialized countries of Europe and America.

Usage skyrocketed. In the United States alone during the first part of this century there were over 200 million single rolls sold per year. It wasn't until the development of vinyl latex paint that wallpaper usage in America began to decline.

Composition. The raw materials used to manufacture wallpaper changed little from its noble beginning in Egypt until quite recently. It was still a wood pulp product (vegetable cellulose), printed using water- or oil-based inks. After World War II, wallpaper evolution took a major leap. Wallcoverings with washable surfaces, pre-trimmed, and finally prepasted made wallpaper, as well as vinyl and fabric, a popular decorative option. During the 1950s and 1960s, there were greater advances in wallpaper design and production than during any previous period. Advances in printing machine technology and plastic coatings made the products more durable and easier to maintain. Wallcovering anatomy has changed more in the last 50 years than in the previous five centuries.

At the risk of oversimplification, all rollage wallcovering can be classified under three general headings: pulp papers, vinyls, and laminates. Pulp papers are 100 percent wood cellulose fiber, or may have synthetic fibers and/or latex resins added for strength and stability. Pulp papers also may have a thin acrylic coating. Vinyls are an oil-based product where resins and pigments are heated and compressed to form a thin sheet that is heat-bonded to cotton or a non-woven synthetic backing. Laminates are usually a two-layer construction. Top surface materials may be natural products, like grasses, fabrics, cork, or wood; or synthetic, such as vinyl, mylar, foil, polyolefin, etc. The substrate may be paper, paper fortified with resins or synthetic fibers, a natural woven fiber (cotton), or non-woven synthetic.

Depending on the generation of the wallcovering installer, we have certain preferences about what are the best wallcoverings. For installers in their late 50s and 60s, there is no finer wallcovering than plain unpasted pulp papers. Using a wheat or a fortified wheat paste, these papers relax uniformly, are tacky, dry quickly, and do not shrink. The veterans of our trade wax nostalgically about the good old days when paper was paper and every job was a piece of cake. The mere thought of Naugahyde and heavyweight vinyls remind them of nightmare installations. Just imagine trying to install heavy vinyl armed with wheat paste, molasses, Adhesium, and Elmer's glue. Not a pretty sight.

However, for baby boomer paperhangers, nothing beats the ease and speed of cloth-backed vinyls. With their modern heavy-duty clay and clear adhesives, these vinyls lay down, do not expand measurably, or shrink at the

seams during their slow drying. Using modern contract wallcoverings, a production paperhanger could easily cover 1,200 square feet of wall per day.

Many installers have been known to praise their favored wallcovering to the exclusion of all others. What is at the root of these preferences? First and foremost, ease of application. We all want our jobs to go smoothly, hassle and headache free! However, most paperhangers would have to admit they do not hang primarily unpasted pulp paper or true cloth-backed vinyl.

No rules: Construction of modern wallcoverings is driven by forces paperhangers often don't consider. A wallcovering manufacturer has the following priorities:

1. The "paper" must be dimensionally stable enough to run through a printing press.
2. It must be affordable.
3. It must be consumer driven/ friendly.

These three factors have shaped the direction of modern wallcoverings. According to industry figures, over 80 percent of all rollage sold is to the do-it-yourself market. The greatest demand is for products that are washable, scrubbable, prepasted, easy to install, and strippable. In fact, the majority of products sold on the market today fall into the third class of laminated wallcoverings.

To the chagrin of the installer, these products often cause us the most headaches. However, this need not be so if two things could always be remembered. First, they are not a pulp paper; and, second, they are not a cloth-backed vinyl! Laminated wallcoverings have their own set of rules. And what are these rules? *There are no rules*. Each and every wallcovering is unique. Because of their unique construction -- coating, inks, color, top surface, and substrate -- there is only one safe way to insure consistent, professional results day after day: *test, test, test!*

Don't panic. We're not going to hang two sheets, leave, and come back tomorrow. The required testing only takes a few minutes *before* you begin cutting and pasting your materials.

First, read the manufacturer's instructions. No, this is not a joke. Yes, many of them are very generic. Occasionally, specific instructions are given on booking times and adhesive recommendations. Manufacturers have spent considerable time, money, and effort in determining how to successfully install their materials -- believe it or not!

Second, tear a small corner of the material. This will give you a clue as to what the substrate may be: paper or non-woven. Paper needs more moisture in the adhesive to relax. Non-woven backings require less moisture. The wallcovering may tear easily, revealing that it is a surface-printed paper. If the backing separates from the face, it may be a vinyl film, custom-screen vinyl, mylar, or foil. Merely by tearing a small piece of the goods we can know if we have a low- or high-moisture wallcovering.

Third, check to see if the backing is prepasted by running your finger on the back or wetting it if necessary. If it is prepasted, before deciding to repaste it with your favorite concoction of clay/clear/cellulose and water, fully wet the back of a six-to-12-inch length with water and book it for at least three to five minutes. Preferably, place the test strip in a plastic garbage bag to accelerate the wetting out. For your later strips, this technique will keep the edges from drying while booked and will make your seaming quite effortless.

After waiting, open the test strip and check the adhesive for tack and thickness. You might be pleasantly surprised. Manufacturers have designed prepasted products for the DIY market using water trays that saturate the face and back of the wallcoverings. Too often, professional installers use their own concoctions that make these papers difficult if not impossible to hang. Diluted clear or clay adhesives do not have the required moisture to reactivate the dried adhesive, leading to dry edges, freezing, bubbling, expanding on the wall, and a host of other problems. Prepast activators work beautifully on most prepasted papers, especially in pasting machines.

If the paper is unpasted, paste the wallcovering with a suitable adhesive diluted to the proper consistency and book for at least three to five minutes, possibly longer. Again, use the plastic bag technique. The recommended adhesive chart will help guide you in your selection. Contrary to popular belief, one adhesive will not successfully install every wallcovering. The true professional knows that a wide selection of adhesives is required to produce the highest quality finished product efficiently and profitably. On examination, the wallcovering should be completely relaxed,

supple, and tacky. This is our goal. If it's not, adjust either the moisture content of the adhesive, or the booking time, or both.

As a general rule, most wallcoverings do not require much adhesive to bond to a properly prepared wall -- especially when primed with a pigmented acrylic wallcovering primer. The common notion that if a little is good, more must be better does not hold true for adhesives. In fact, it's just the opposite. The more adhesive present in solids and thickness, the more the wallcovering may shrink before the seams have set.

As wallcovering installers, we cannot control our client's wallcovering selection, its composition, and manufacturing limitations. Most often, we don't know what we are truly hanging until the wrapper is off the material. Therefore, we have to make the most of what we can control: primer, adhesive selection, dilution, and booking time. On some days, we may not fully understand the best approach to the installation until the final strip hits the wall. However, if we take a few minutes after setting up the table and before pasting up, we can be highly rewarded. In looking for the clues and secrets that wallcoverings contain, our jobs become easier, faster, and more profitable. Over time, we gain an understanding of the ever-changing variety of wallcovering products on the market. Our work becomes more of an enjoyable challenge -- and less a frustrating chore.

Jim Turner, with 23 years of commercial and residential experience, is owner of Regency Wallcraft. He is an IBPAT-certified paperhanger, an NGPP member, and has served as president of the Northwest Chapter and as NGPP western regional director.

Adhesive Chart			
Type of Wallcovering	Recommended Adhesive	Booking Time	Additional Notes
Vinyl -- Fabric-Backed Light Weight	Light Duty Premix Clear or Clay	None to 10 min	-
Vinyl -- Fabric-Backed Medium & Heavy	Heavy Duty Premix Clear or Clay	None to 15 min	-
Vinyl -- Paper-Backed	Any of the Above	None to 10 min	Paste surface or backing
Vinyl -- Non-Woven-Backed	Any of the Above	None to 10 min	-
Mylar -- Fabric-Backed & Non-Woven	Any of the Above	None to 10 min	-
Mylar -- Paper-Backed	Any of the Above	None to 10 min	Paste surface or backing
Foil -- Fabric-Backed	Any of the Above	None to 10 min	-
Foil -- Paper-Backed	Any of the Above	None	Dry hang
Fiberglass Paintables	Any of the Above	None	Dry hang
Regular Wallpaper -- Uncoated, Unpasted ¹	Wheat, Cellulose, Light Duty Premix	To 10 min	Do not use clear adhesives
Vinyl or Acrylic Coated Paper	Dry Vinyl, Light Duty Premix	To 10 min	-
Prepasted -- Paper Substrate	Water or Activator	5 to 15 min	-
Prepasted -- Non-Woven Substrate	Activator, Diluted Clear or Clay Premix	5 to 10 min	-
Kraft Paper -- Uncoated	Clear Premix	10 to 15 min	Depends on weight
Grasscloth	Wheat, Cellulose, Clear, Light Duty Premix	To 5 min	-
Burlap -- Paper-Backed	Clear, Light Duty Premix	None to 5 min	-
Cork -- Paper-Backed	Wheat, Cellulose, Clear Premix	None to 10 min	-
Fabrics -- Paper-Backed	Clear Premix	None to 5 min	May dry hang

Fabrics -- Acrylic-Backed	Clear Premix	None	Dry hang
Fabrics -- Unbacked	Clear Premix	None	Dry hang
Blank Stock -- Paper	Use adhesive recommended for top paper	None to 5 min	-
Blank Stock -- Non Woven	Heavy Duty Clay or Clear Premix	None to 5 min	-
Blank Stock -- Tarkett	Heavy Duty Clay Premix	None to 5 min	-
Borders -- Prepasted over wallcoverings	Diluted VOV adhesive	None to 2 min	-
Borders -- Inlaid	Refer to above wallcovering types	5 to 10 min	-

1 Do not use clear premix adhesive on European pulp papers. Surfactants (soap) used in manufacturing adhesive may cause oily stains. Also premixes containing PVA, PVC or other resins and additives may cause staining.

Note: Booking time can vary somewhat, due to differences in weight and substrate. Remember to thin adhesives as necessary to prevent excessive build-up on back of paper. Delay rolling seams until paste has had a chance to set. Premature rolling squeezes out paste, resulting in poor adhesion, loosening or curling seams.

Rollage Size Chart

U.S. Standard Roll

36" wide wallpaper is usually 12 feet long per single roll	30 usable SF
Double-roll bolts are usually 24 feet long per bolt	60 usable SF
28" wide / 5 yards long (15 ft) = 36 SF per single roll	30 usable SF
28" wide / 10 yards long (30 ft) = 72 SF per bolt	60 usable SF
27" wide / 5.33 yards long (16 ft) = 36 SF per single roll	30 usable SF
27" wide / 10.66 yards long (32 ft) = 72 SF per bolt	60 usable SF
27" wide / 16 yards long (48 ft) = 108 SF per triple	90 usable SF
24" wide / 6 yards long (18 ft) = 36 SF per single roll	30 usable SF
24" wide / 12 yards long (36 ft) = 72 SF bolt	60 usable SF

Metric or Euro Rolls

27" wide / 4.5 yards long (13.5 ft) = 28 SF per single roll	24 usable SF
27" wide / 9 yards long (27 ft) = 56 SF per bolt	48 usable SF
24" wide / 4.66 yards long (13.98 ft) = 28 SF per single roll	24 usable SF
24" wide / 9.33 yards long (27.99 ft) = 56 SF per bolt	48 usable SF
20.5" wide / 5.33 yards long (16.5 ft) = 28 SF per single roll	24 usable SF
20.5" wide / 11 yards long (33 ft) = 56 SF per bolt	48 usable SF

Typical packaging unit

Note: Watch for rollage length changes in the future. Rumor has it that some manufacturers are considering shortening double-roll bolts to approximately 24 to 27 feet. They reason that consumers use only three eight-foot strips per bolt and the balance is wasted.