

Mastering Mounting

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Dry Mounting: Some Like It Hot

Over the past three months, I have discussed “Wet Mounting to Last the Test of Time,” “Sprays and Mounting for the Health Conscious,” and “Time, Temperature, Pressure, and Moisture.” This month, we’ll conclude the four basic categories of mounting with a discussion of dry mounting. The previous articles have dealt with cold methods of mounting, sometimes using a cold vacuum frame purely manually, but always cold—without heat. But, some like it hot!

Dry (Or Is It Hot?) Mounting

So why call it dry mounting rather than heat mounting? Good question. Well, it seems that both wet and spray methods involve moisture and/or moisture control during the mounting process, but pressure-sensitive adhesives seem rather dry. Perhaps it’s a little like the ‘acid-free’ terminology arguments, but here is one theory of its derivation.

The labeling of dry mounting occurred a long time ago when wet mounting was the primary alternative. Wet mounting involved slathering adhesives onto boards with a brush in order to prepare it to glue the paper down. A new mechanical method of mounting came onto the scene which used totally dry rolled tissues with no application of wet adhesives using a brush. Hence, the term became “dry” rather than “wet” mounting. And the name has stuck (no pun intended). Perhaps it might be better to identify the two basic categories of mounting as cold mounting and hot

mounting. Nevertheless, it remains, and will remain ‘dry mounting.’

Dry mounting utilizes heat in order to activate the adhesives. Rather than using a vacuum frame, which applies pressure and air suction without heat, a vacuum press is used to integrate heat into the equation. “Press” generally denotes the use of heat when discussing mounting, laminating, and any mechanical or vacuum equipment.

Spray and wet glues may also be used in these presses, and the heat will, in fact, expedite the bonding. However if the potential and equipment exists for dry mounting, the question remains: Why select a cold adhesive? Dry mount heat-activated adhesives, films, and laminates should be used with heat systems. They have been designed to work under heat and pressure to create their bond.

A combination vacuum press is one that may be used with the heat turned on or left off, using the cold vacuum suction only. The ability to use heat within the combination vacuum press not only ensures all aspects of laminating and creative applications, but in many cases creates the most long-term bond. The very fact that it is a vacuum system also provides the benefits of consistent routine mounting quality from job to job and operator to operator.

Mounting Consistency

The mounting stage of framing is where the most damage can occur. Because of temperature (of the materials), relative

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humidity (air moisture), and moisture accumulation (within the mounting materials themselves), numerous problems can crop up when dry mounting, including the conversion of moisture to steam. These problems often appear to be greater with dry mounting than with any other mounting process. But once the basic techniques are learned and the press procedures are followed, there is a consistency that develops and comfort level that is attained by the operator.

Consistency is often the most important issue when mounting, and this applies to any type of mounting. Understanding what to expect from the mounting process, what the end product should look like, and what potential problems could occur, is the mark of an experienced and confident mounter. Since framers are problem solvers, we are responsible for knowing these things about mounting.

Think through the project. A routine mounting of a poster to foamboard should result in a particular and expected look. If, however, the poster is nonporous Duralux paper, then a nonporous tissue should never be selected for bonding. Think through your materials and procedures every time something occurs that is slightly out of the norm. Think about the potential results and consider the materials.

Dry Mount Adhesive Review

Adhesives are easiest to understand when broken into four specific categories (“Adhesives Revisited”, *PFM* September 1998). By taking the time to analyze the various tissues, you will be better prepared to select the proper adhesive to fit your needs. All heat-activated adhesives can be placed into the following categories: *type of bond* (permanent or removable); *physical composition* (tissue-

Diagram 1.



Diagram 2.

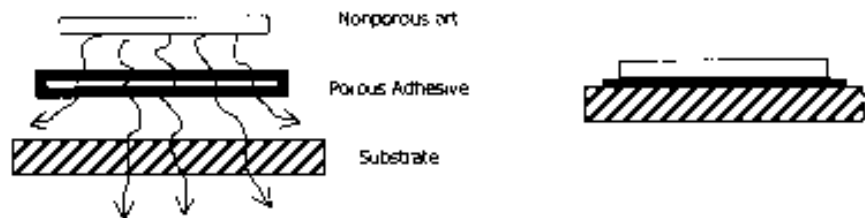
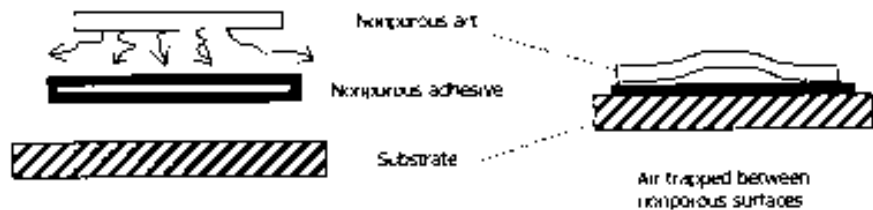


Diagram 3.



core or film); *degree of porosity* (breathable or nonbreathable); and *acidity level* (tissue pH).

Type of Bond (Permanent or Removable)

Dry mount adhesives are available as both permanent and removable. A permanent adhesive bonds within the press. All layers of the mounting package (top release material, art, adhesive, substrate, and bottom release material) must reach the required bonding temperature and remain there during the required time allotment to set the adhesives. When removed, they will already be bonded.

Once removed from the press, a removable adhesive bonds as it cools under a weight. It becomes removable through the reapplication of heat, which reactivates the adhesive and allows the art to be separated from the

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mounting substrate. All mounted items should be placed under a weight when removed from the press (regardless of whether permanent or removable) to expedite cooling and help reflaten bowed substrates.

Physical Composition (Tissue or Film)

Dry mount adhesives come in two basic compositions: *tissue-core* and *film*. Tissues have a center core (or carrier) of either porous tissue (such as ColorMount, TM-2, Trimount, "Super" Unimount, or Promount) or nonporous glassine-type material (such as MT-5, TM-1, or Poster-mount), with adhesive applied to either side of the carrier for mounting (see Diagram 1).

Pure film adhesives (such as Fusion 4000, TM-3, Flobond, Acid-Free Mounting Film, or Versamount) are 100% adhesive with no carrier or tissue in the center. This makes them translucent when unmounted and clear when mounted. Some films may even be pieced or overlapped, as it will melt into itself during bonding. You should test this prior to using it on a project.

Degree of Porosity (Breathable or Nonbreathable)

Degree of porosity is the extent to which an adhesive is permeable by moisture or air. This is an extremely important designation when selecting a tissue for compatibility with other mounting materials. If a nonporous/nonbreathable material, such as a photograph or heavily lacquered print, is to be mounted, the adhesive must remain breathable to allow for air (or steam) to be forced out through the mounting layers (see Diagram 2). If this is not allowed, the project will suffocate.

By using a nonporous adhesive with a nonporous

Diagram 4.

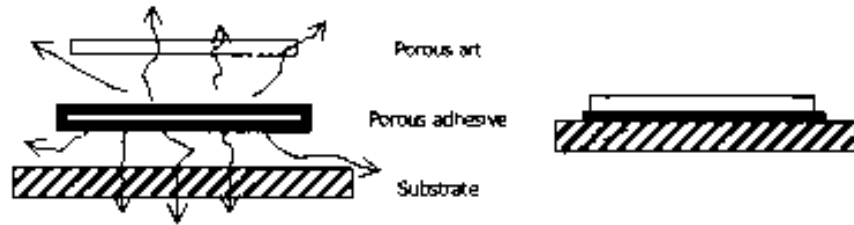
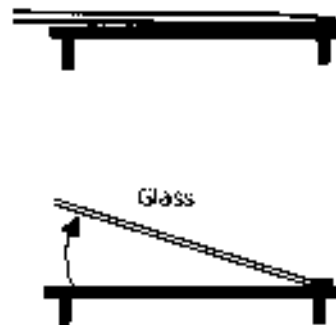


Diagram 5.



Diagram 6.



Allow the front edge of the glass to stick beyond the edge of the work table 1". Screw a 1x2" board at the back edge as a stop. This allows for easy lifting.

Lift the glass to slip the warm newly mounted project beneath the cool, heavy, clear glass to bond and/or flatten.

photo, there is much greater potential for air to be trapped between the two items, creating bubbles in the completed mounting (see Diagram 3). If porous art is to be mounted to a porous substrate, essentially any tissue may be used to mount it simply because air will always be able to be forced out through and around the porous art and substrate (see Diagram 4).

Acidity Level (or pH)

Most dry mount adhesives are inert (or stable) and will not react with other materials to create a new chemical reaction. It is the carrier sheet that needs to be checked for pH levels. Many manufacturers have developed tis-

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sues using acid-free or buffered carrier papers in conjunction with dry mounting adhesives and have named them accordingly. These tissues mount at lower temperatures, are porous, removable, and have a neutral pH. Yet they do not meet conservation standards.

Basic Principles

Dry mounting is the application of posters, photographs, or fabrics to a substrate using heat-activated adhesives in a pressure controlled piece of equipment. Dry mounting is the most time-effective, clean, and foolproof method for mounting, and by far the most permanent.

There are two basic types of heat-producing dry mount presses, mechanical (or softbed) and hot vacuum. One is not better than the other, just different. The “right” press to use varies by each case. The most obvious operational differences between basic equipment types involve the elements of time, temperature, pressure and moisture (see sidebar). Mechanical presses were designed to control only two of these elements without manual intervention, while the hot vacuum press assists in controlling all of them automatically.

When properly adjusted, the pressure of a mechanical softbed press averages 2 to 4 psi, whereas a hot vacuum press is approximately 12 to 14 psi (that’s pounds per inch not vacuum). This lower poundage does not inhibit the ability of a mechanical press to produce as good a mounting as a vacuum press, and many vacuum systems have the ability to lessen the vacuum pressure, and in turn psi. Hardbed presses (used more commonly in Canada) average 4 to 5 psi with average wheel tightening, though additional rotations continue to increase pressure up to twice that of vacuum poundage. Hydraulic hardbed presses claim 500 psi.

Mounting Package and Technique

Mounting is simple and consistent, whether in a mechanical press or hot vacuum press. Set the time and

CONSIDERATIONS IN DRY MOUNTING

Time

The time needed to dry mount a project varies upon the adhesive, mounting size, thickness, selected temperature, and item being mounted. Dwell time is the time the artwork remains in the press to adequately heat all materials and activate and create the bond. An average dry mount time is four minutes in a vacuum press and one to two minutes in a mechanical press.

Temperature

All adhesives have manufacturers’ suggested temperatures for use in order to achieve the best results. There is not a standard, ideal temperature to be used in every heat-mounted situation. Average temperatures run 180° to 190°F.

Pressure

Pressure is the force that squeezes the air from between the substrate, adhesive, and artwork being mounted—holding them in place while the bond is created. A mechanical press must be manually set in order to apply the appropriate pressure for the thickness of the substrate. A vacuum press conforms to various substrates without manual adjustment.

Moisture

When existing moisture is heated in a press, the vapors may become trapped between the layers being mounted, sometimes as steam. Pre-drying materials are required when mounting in a mechanical or hardbed press. In a vacuum press, moisture is pulled out automatically by the draw of the vacuum removing the air.

temperature based upon manufacturers’ specifications for selected adhesives and make certain the press is warmed to the proper temperature prior to mounting.

The suggested mounting package varies depending upon the manufacturer and the press (see Diagram 5). For the Hunt VacuSeal or 500T-X Mechanical Press, Corona, and Print Mount systems, the correct mounting package from top to bottom include: release material (single- or double-sided release paper or board); poster; adhesive; substrate; and release paper (not release board).

During a recent lecture tour, I noted a large 4' x 8' Corona Press had a sheet of ¼" masonite in the bottom. This was not something I'd seen before and, in many cases with vacuum systems, not the norm. The Corona has the deepest drop of all presses and a waffle pattern

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diaphragm. It was advised by the manufacturer to insert the wood.

Hot Press varies a little with its basic package. It is occasionally suggested to use the press foam against the rubber bladder to help dissipate the air to the outer edges, not unlike the white felt in the bottom of a VacuSeal. Though this may be an integral part of the press, it should not really be considered part of the mounting package. The basic Hot Press mounting package would be similar to above: release material (polyester or paper); poster; adhesive; substrate; and release material. The loose press foam would lie beneath the mounting package.

Weighting During Cooling

Once assembled and mounted, the piece should be cooled. Though the selected adhesive may have bonded in the press as it reached temperature, using a weight expedites cooling, reflattens the substrate, and reinforces good mounting technique. Removable tissues bond as they cool, making a weighted cooling station mandatory. A tempered plate glass that is $\frac{1}{4}$ "-thick and slightly larger than the press platen makes a perfect weight. It is cool, heavy, and may also be used as a cutting surface (see Diagram 6).

Selecting A Mounting Method

So, what is the right method of mounting? It depends entirely upon the project. Matching the correct technique to the requirements will often be decided by heat and moisture tolerances. Thermographic faxes and tickets; digital phase change and thermal transfer prints; 4-color dry pigment copies; some batiks; wax transfers; and crayon drawings are all heat-sensitive so a cold mounting method is suggested. Some of these, like the thinner wax rubbings and lightweight digital images, do not tolerate a great deal of moisture during mounting either and might do best with a dry pressure-sensitive mounting technique. Still others should never be mounted at all using solidly affixed methods, like Ilfochrome Classics (aka Cibachromes).

Knowing what to do and when to do it is half the

battle. Being knowledgeable and up to date on the most current mounting methods makes the most valuable framer. Mounting methods are only altered to fit a demand. When the process is messy or time consuming, or simply wrong for the project, only then is an alternative method sought. And when all else fails and common sense must prevail—do it preservationally, using approved, sound, conservation methods. Once adept at all the options, lacing becomes no more difficult or terrifying than facing the jaws of an unfamiliar mechanical press. Then again, some will always like it hot! ■