

# Mastering Mounting



by  
Chris A. Paschke,  
CPE, GCF

## *Dry Mounting: Revisited and Restored*

I recently encountered a short written history of dry mounting and noticed an interesting parallel between the history of handling photographs and that of digital prints and fine art of today. In order to better compare them let's take a look at an abbreviated history of dry mounting in general.

### ***Abridged History of Mounting***

Whether for holding things together or for repairing little accidents of time and misfortune, there has always been a need for adhesives. From the early 1800s to 1945, adhesives included protein-based (hide glue, gelatin); sugar-based (dextrin); starch-based (arrowroot, wheat, corn, potato, rice); vegetable- or gum-based (arabic); rubber-based (rubber cement); and assorted combinations of these materials. Extensive moisture was necessary when bonding any of the above adhesives that introduced expansion, stretching, cockling, and/or curvatures in both photographs and paper prints. Rubber cement was least moisture inducing, but contained sulfur that discolored and often failed shortly after mounting.

In an effort to keep moisture to a minimum, a thin paper carrier was developed with thermoplastic adhesive on either side that was activated by heat. Dry mounting had arrived. The term "dry mount" was originally used to distinguish this new dry technique from traditional damp and wet techniques of mounting. The first dry mount tissue patent was issued by the "Derepas Brothers" in France

in 1901. In 1903, a British Company called the Adhesive Dry Mounting Company, Limited, received patent #17,327 "An Improved Process for Mounting Photographs, Engravings, and the like, and as a Means for Carrying the same into Practice." As stated by the British company, they had developed a material capable of mounting "...photographs, engravings, or documents of any kind, on Bristol board or cardboard..."

The Kodak Company started manufacturing dry mount tissue with what might have been the Derepas formula in 1906. And by 1915, the self proclaimed "pioneers and originators of dry mounting," the Adhesive Dry Mounting Company, Limited, adopted the anagram ADEMCO for their company.

### ***Early TTPM***

The new thermoplastic adhesives used thin silk paper or Japanese paper as a carrier which was dipped into an alcoholic solution of shellac then dried. In 1907, recommended temperature tolerances for photograph mounting were published in *The Photographic Monthly* as follows:

Carbon and gum prints	140-150°F	(60-65°C)
Gelatine-chlorides (strongly alumed)	165-175°F	(75-80°C)
Albumen	195°F	(90°C)
Platinum, plain-salted silver, and print with matte faces, no gelatine	95-205°F	(90-95°C)

With very thick papers it was stated, "...these temperatures may be increased a little and the time could be lengthened to 15-20 seconds for bonding." This is the first indicator of time, temperature, pressure,

moisture (TTPM) rules. It is interesting that even with the later development of more heat tolerant, resin-coated (RC) photos, suggested mounting temperatures have remained very similar even today. Note the lower temperatures suggested for carbon prints at 140-150°F, partnered with the short dwell time of less than 15 seconds. Sounds like the low temperature, short dwell time heat-activated (HA) boards (such as SpeedMount™) that have been developed for heat-sensitive digital images today.

The same article goes on to say, "...To remove a mounting, heat a metal plate to 250°F or 300°F (120-150°C) and lay the print upon it, raise the corner, and the whole print can be stripped without injury." The warmth of the highly heated metal plate beneath would penetrate the photo from behind without risking surface damage while still reactivating the adhesive for removal.

### Early Equipment

Presses and irons were also developed to accommodate the new techniques and materials. The first commercial dry mount presses were advertised in 1904, and by 1906, advertisements for tacking irons, called touchers or fixing irons, began as part of the "Adhero" Dry Mounting Machine system sold by the Adhesive Dry Mounting Company.

Machines introduced in 1906 were pressure-controlled by a central screw and wheel system, similar to letter and book presses or clamp or lever models. These machines were initially heated by burning paraffin, oil, gas, or alcohol, but in 1907 were adapted for use with electricity. The style and design of these early presses varies little from current hardbed and softbed (mechanical press) models. Seal Products, Inc., founded in Connecticut in 1936, developed its first dry mount mechanical press in 1947. Heated vacuum presses did not emerge until the 1970s.

### Photographs and Adhesives

Dry mounting is historically the mounting process of choice by photographers for photographs. The photo-

graphic industry standard has always been to develop materials and processes to shorten working times, often implementing higher bonding temperatures. Then, "in August 1934 Kodak introduced an improved [Type-I tissue] with better adhesion and requiring less heat" (Wilhelm 1993). Here again, lower temperatures were being potentially less damaging to surface emulsions.

In 1941, a Kodak Chemical Plant employee, Mr. Wentworth C. Eaton, cited most dry mounts as being

comprised of rubber-wax (cohesive tissues) or shellac (thermoplastic resin). Photos using a faster developing process and waterproofed print papers might melt at the higher 175-210°F temperatures required for mounting with shellac-based, dry mount tissues. In that same year, Kodak released a lower 150°F temperature mounting tissue using a wax adhesive called Thermount Tissue, which was marketed until 1957. Kodak continued to make Type-I shellac-based, dry mount tissue until February 1974 when it introduced Type-II, a synthetic adhesive.

Seal Products released its first dry mount adhesive, Foto-Flat, in 1938. Specifically designed to target the lower temperature requirements of photographs it was a synthetic, removeable tissue that was impervious to moisture and unaffected by climatic temperature changes.

### Low Temperatures Continue

History continued and time marched on. Numerous dry mount products have been developed by many companies. From 1938 to date we have seen tissues come and go; companies fuse; and formulations change, lowering tissue bonding temperatures. Then came heat-activated boards that were very innovative in the early 1990s.

Though pressure-sensitive coated boards and materials had been around, this was the first time a dry mount adhesive was pre-applied directly to the mounting substrate. They were clean, easy to use, priced right, and huge time-savers that were marketed



Photo 1: Wavy Collaged Original—This wavy 14"x14" collaged original has layers of kozo and embedded papers onto Stonehenge 90# backing, having been wet applied with acrylic medium. Hence, the edges do not lie flat beneath the window when traditionally hinged.



Photo 2: Sized Materials—Materials were cut to size including: Artcare Restore as the 3/16" substrate; the double Alpharag mats (top #8646 Khaki, bottom #8647 Pearl White) were assembled with Bevel Accent spacer between prior to mounting; and TruVue conservation glass.



Photo 3: Tack—Since this mat unit was to be linen hinged along the left edge to the backing after mounting, tack the artwork in place after it has been centered beneath the mat prior to mounting.

for use “with posters, paper artwork, photographs, newsprint and fabrics.”

As with many traditional photographs, heat sensitivities have once again emerged as an issue with the technologies of today. For home/office inkjet printers that use thermal bubble jet technologies (most Hewlett Packard printers), low bonding temperatures are a must.

The demand for lower temperature adhesives has been met over and over again with products bonding between 150-175°F, including Single Step Plus and SpeedMount. Even with the above mentioned HA boards, as the mounting challenges changed from traditional RC photo to digital photo to paper-based art, so has the amount of time the board must remain under heat and pressure to effectively activate and bond. Remember the chart above printed in 1907 for photo tolerances and the heat comments below it concerning variables?

Most current HA boards require from 15 seconds up to three minutes to mount assorted items, with SpeedMount suggesting the shortest dwell time. This is an important factor with Hewlett-Packard printed digital photos or heat-sensitive, laser color images. Both images tolerate 150-155°F temperatures for up to 30 seconds, but will often surface damage (even at that low temperature) with a dwell time of one minute or more.

### ***Removable or Reversible?***

As an industry spokesperson for mounting, I have been the voice of framers to manufacturers for almost 20 years now, always demanding more. During the 1990s, amidst the onslaught of the early heat-sensitive digital images and dropping adhesive temperatures, my ongoing plea was for a pressure-activated tissue adhesive (not pressure-sensitive or pressure-sensitive activated) that could be bonded by only the pressure in a cold frame, mechanical, or heat vacuum press. (They appear to still be working on that one.)

But, every now and then a new mounting technique or product comes along that makes one sit up and take notice—something that didn't fill any specific void or request.

Throughout history, dry mounting has never been noted as a reversible technique, but at times merely a removable one. And no dry mount adhesive could ever



*Photo 4: Completed Collage—Because of the thicker collaged layers of the original art, this image required 160°F for one minute to mount using two release papers rather than a top board. The completed image now shows smooth lines all along the window edge.*

be totally removed. This is true because the very heat that bonded the adhesive also encouraged absorption into the mounting, so even when removed there would always remain a limited amount of adhesive in the document or artwork.

So recently, we have been introduced to Artcare Restore™. And why is it different? By all accounts the adhesive used with this foamboard is inert, pH neutral, and does not appear to leave any adhesive residue once an image has been removed. All adhesive seems to brush away. Adhesives notoriously will show up under a black light, like white

fuzzes. During testing it was found that, even under a black light, when removed there is no white remaining, and any residue adhesive will dust off with your fingertips. Perhaps we simply need to trust the unknown.

This new product looks like any HA pre-coated foamboard though it does have a slight tooth to the matte finish adhesive side. I have completed my own testing in relation to mounting and removing images from photo to digital to newspaper, and have decided to believe in this as a revolutionary new type of product, a new adhesive concept altogether, not unlike the dry mounting of 1906.

### ***The Ultimate Test***

I am a purist when it comes to framing my own artwork for my gallery. I only mat with 100% cotton museum boards, UV conservation glazing, and always use preservation hinging techniques. I have created hundreds of originals, some published, some stored. Since I paint many of my images with sumi inks and collage, there are numerous variations in paper weight, multiple layers, and much moisture present during creation. Hence the edges warp like watercolors can. Hinging still may result in wavy edges beneath the window (see Photo 1). Though I consider this an intricate part of the creation it has never bothered me, but clients would rather they not warp.

To frame one of my originals, I sized all materials and prepared to mount (see Photo 2). Notice the completed double mat has already been completed. Tack the centered artwork to hold it in place for mounting (see Photo 3). Because of the thicker collaged layers, this image required 160°F for one minute to mount using release papers. The completed image shows smooth lines

at the window edge (see Photo 4).

### ***Dry Mounting in the 21st Century***

It has been established that lower temperatures are safer for mounting. This is why the low temperature HA boards have worked so well with photographs since their release. Adhesive reformulations over the years have lowered tissue adhesive temperatures from 225°F to that of 190°F. There are lower temperatures, less adhesive absorption, and less potential for damage. Yet, any adhesive absorption is not preservation. The framing industry and conservators alike have had a tough time accepting new practices. Dry mounting a traditional canvas is wrong, while dry mounting a digital canvas is becoming the correct way to present it.

Throughout the history of dry mounting, innovations in the formulations of dry mount adhesives have evolved, first to meet the needs of photographic materials and technologies, and now to do

the same with digital photographs, prints, and canvases. Photography has dictated many new products over the past 100 years.

We would never consider using masking tape or corrugated cardboard to frame today, but we did at one time. Perhaps a few years from now we will think back to the days we would never consider dry mounting an original and think that sounds odd too. Today my horse wears plastic horseshoes; I send my articles via e-mail attachment to *PFM*; and I mount some of my original art with a reversible foamboard. Who knew? So get those wrinkles out of that watercolor, and welcome to the 21st century! n

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#### ***Research materials include:***

“Origins and Development of Dry Mounting”, paper by Stephanie Watkins, The American Institute for Conservation (AIC), 1993.

Mounting, Laminating and Texturing, Seal Products, Incorporated, 1990.

“The Permanence and Care of Color Photography,” Henry Wilhelm & Carol Brower, 1993.

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Chris A. Paschke, CPF, GCF, Mounting Editor, owns Designs Ink in Tehachapi, CA, featuring commercial custom framing, fine art/graphic design, and industry consulting. Specializing in mounting, matting, design creativity, and fine art, she works with industry leaders and has taught for the National Conference. She has written two books on mounting: “The Mounting and Laminating Handbook” (now in its second edition) and “Creative Mounting, Wrapping, and Laminating.” She can be contacted at [www.designsinkart.com](http://www.designsinkart.com).