

Mastering Mounting



by
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CPE, GCF, CMG

Photo Bond Failure

Photos, photos everywhere...but how do you mount them? Traditional photos are easy to troubleshoot, with surface damage of high gloss photos and orange peel the two dominant issues. But with the advent of

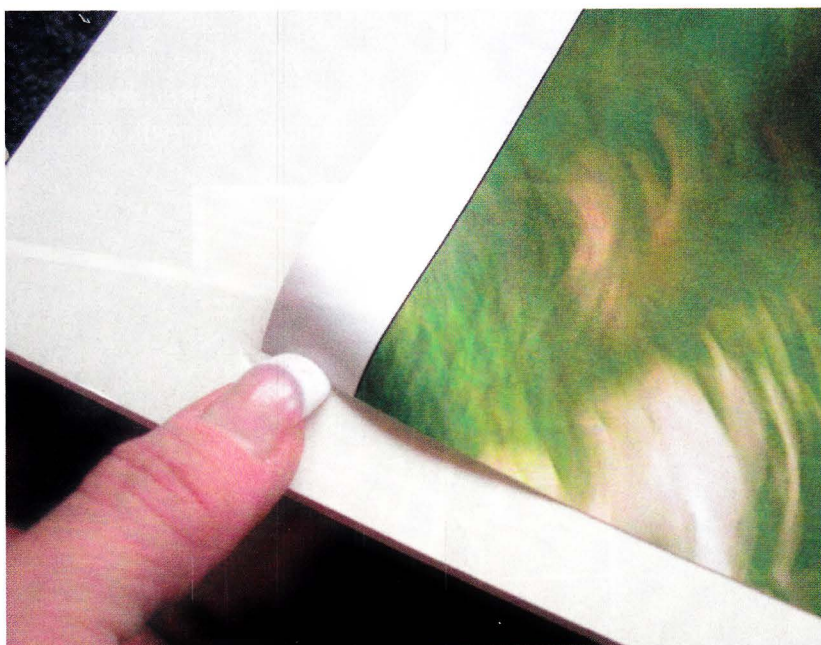


Photo 1: By pushing the corner of this Xerox wide format photo it is easy to see there is no bond between the image and the HA board it was mounted to.

digital photos came a plethora of media from photorealistic papers to vinyl banners needing to be mounted. Though the comfort zone for mounting digital materials is widening as manufacturers are trying harder to accommodate the end users with information on how to best protect and handle these photo materials, there are still mounting problems.

Digital Evolution

In "Digital Discussions" in the June 2007 issue, I reviewed the newest trends in photo technologies facing framers. Then in "Digital Printing" in the summer PFM Production, the newest printers and how they might fit into today's frame shop were presented. The best news is when the printer, ink, and media are all under your control during the selection process, mounting of the resulting images will have been tested for mounting compatibility. But this is not always the case.

The likes of the HP Designjet Z2100 and Z3100, Canon imagePROGRAF iPF8000 and iPF9000, Epson Stylus Pro 7800 and 9800 inkjet printers, and more prevalent small-scale dye-sublimation printers are retiring the use of RA-4 developing on traditional photo papers. There have been heat-sensitivity issues with swellable receptor coatings, although there are none for microporous coatings of surface images. But some of the newest photo papers are also having heat-bonding problems.

Perhaps the answer remains with high tack pressure-sensitive rollers that have been used for many years in the sign and graphics industry. Again, I believe that the roller machine may very well be the next piece of equipment needed for any competitive framer.

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Media Variables

It used to be said that once a mounting technique like dry mounting was mastered, then it should be a routine that would always be able to produce an identical predictable outcome. So mounting a photo was the same every time. With the variations in today's photo media, this is becoming nearly impossible to achieve.

A photorealistic paper (substrate media) is less expensive than real photobase paper. Its receptor inkjet coatings produce a fairly recognizable photo image, but only one side has a polyethylene coating compared to two-sided, resin-coated papers. Thus they do not have the weight and feel of traditional RC photos. True photobase papers are two-

sided polyethylene-sealed sheets that look and feel more like traditional RC photos, being heavier with greater flat-laying characteristics while still being a coated digital media.

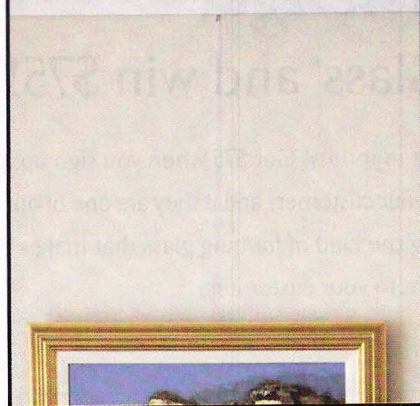
Bond Failures

One recent issue with some digital photos is their tendency to not stick when traditionally dry mounted. In the past six months there have been numerous discussions about this. The question is, why have Kodak, Epson, and Xerox photo papers bonded perfectly in the past but have recently begun to bubble, lift, or not bond at all?

In a recent case study, one framer who had been mounting Kodak digital photos onto 3/16" foamboard with standard dry

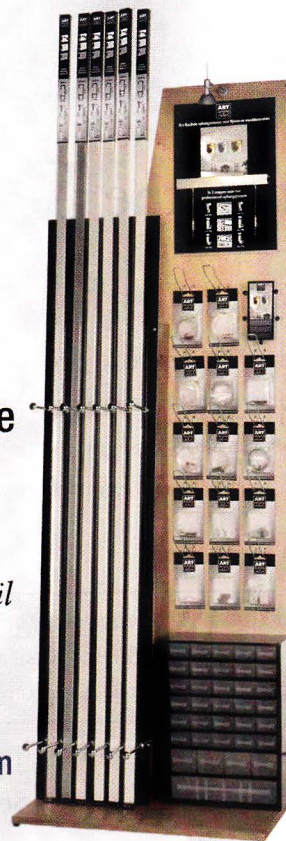
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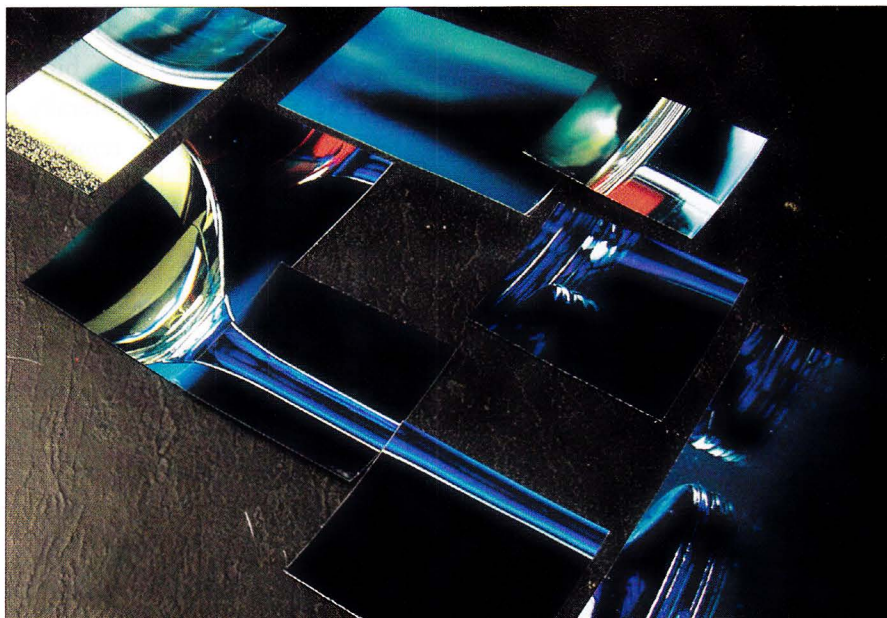


Photo 2: A large-format 30"x40" Xerox inkjet print on photorealistic paper was cut into smaller pieces that could be mounted to assorted HA boards and with roll adhesives to test bond strength.

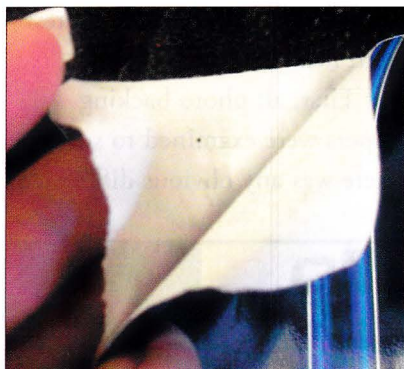


Photo 3: The layers of this Xerox print were split with a blade at the corner and peeled back to expose the polyethylene layer on the back.



Photo 4: Once split, the paper core may be peeled back separating the image from the support materials much as with any traditional RC photo, exposing the sheer nature of the thin-coated backing.

mount tissues without problems now found that they were bubbling in the center, peeling, or lifting when cool. This is not unique. Another framer who had been successfully dry mounting traditional photos for nearly 20 years recently was faced with inconsistency when mounting Epson pigmented digitals on Premium Luster Paper and Kodak Photo Inkjet images. Again, the problem was interior bubbles.

Upon examination of the failed bond, the bubbles had not

been the result of poor technique or delamination of the substrate but rather the fact that the digital photo media had not bonded to the melted adhesive in spots. In both of these actual cases, the adhesive had bonded well to the foamboard substrate but not to the back of the digital image.

Recently, while I was running product tests, a Xerox wide-format inkjet print on photorealistic paper refused to bond to the selected substrate regardless of length of time or temperature

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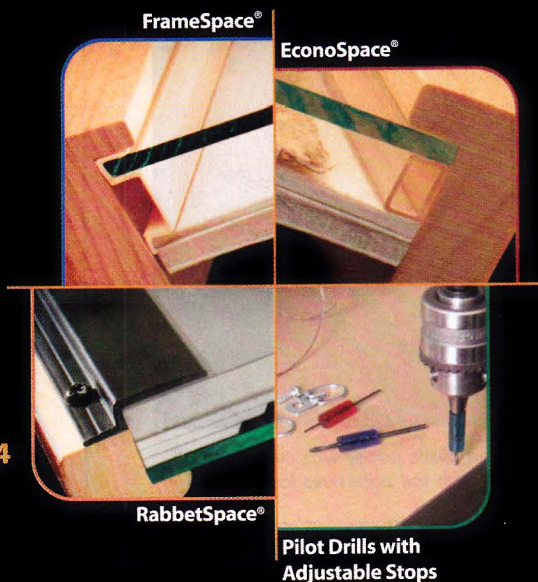
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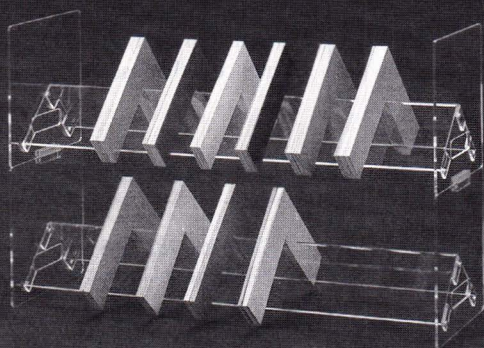
adjustments (Photo 1). All other test materials bonded fine, but not the Xerox image. It literally fell off the board when removed from the press.

Research

This prompted further investigation, and something of a pattern emerged for traditional mounting methods. A large Xerox print was cut up (Photo 2) for test mounting in both 210M-X Mechanical Press and a 1985 vintage 4060 VacuSeal. In the first two reported cases, the bond failure occurred when unidentified mount tissues were used on $\frac{3}{16}$ " foamboard, while my Xerox test used heat-activated board.

First, all photo backing papers were examined to see if there was any obvious difference

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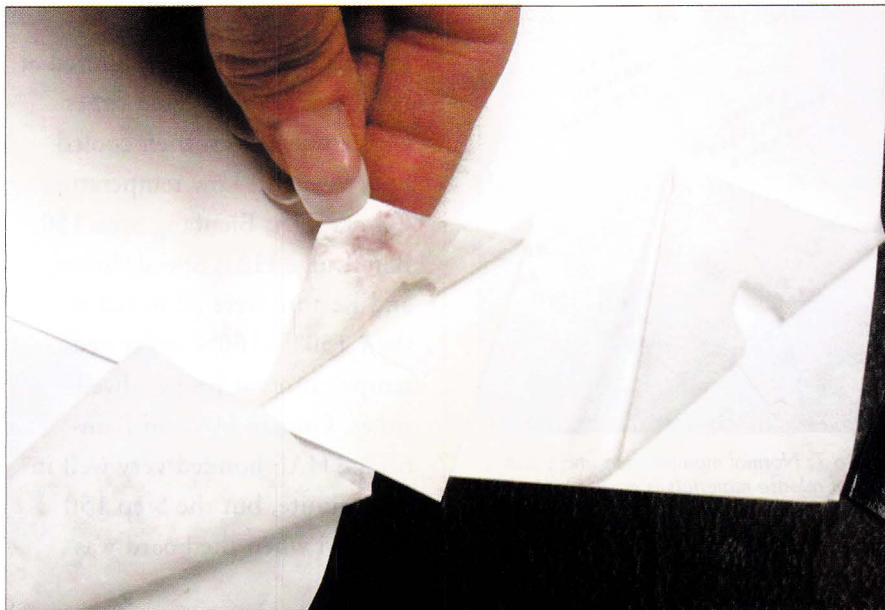


Photo 5: Xerox photorealistic paper, Epson Photo Paper, and Kodak Photo Paper (left to right) all have a sheer layer of nonporous polyethylene lining the back. They all appear the same, yet some bond and some do not.

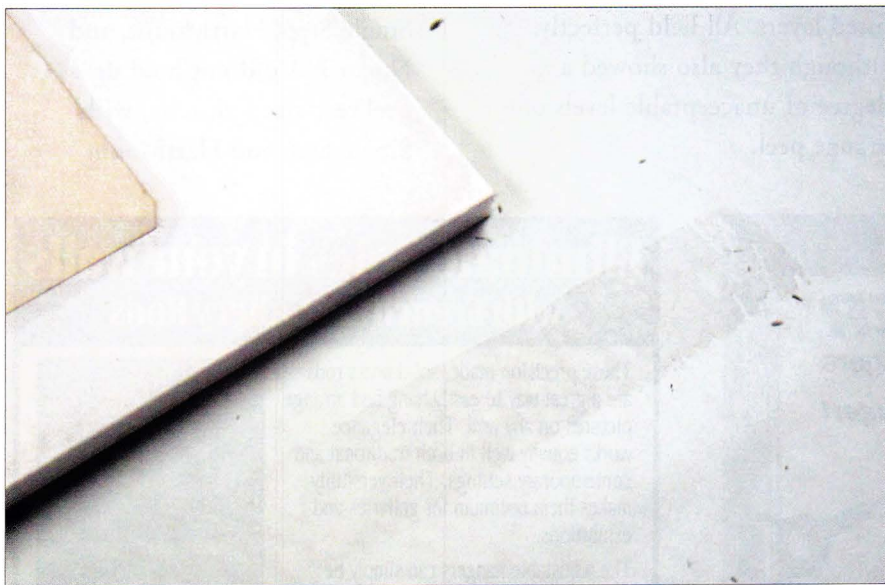


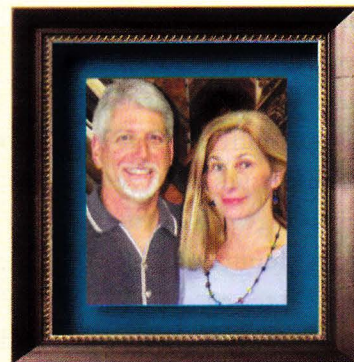
Photo 6: A strip of excess adhesive has transferred from the exposed edge of a Bienfang HA Step 150 foamboard to the Bienfang single-sided release paper.

among the Epson, Kodak, and Xerox photo papers. All were fairly typical looking photorealistic papers that had a polyethylene-coated back layer that felt much like any nonporous RC backing layer that can be split with a blade (Photo 3) and peeled easily (Photo 4). The images were of varying thickness, but the backing

layers seemed very similar to each other (Photo 5).

To date, I have not tested the newest Kodak and Epson papers; just the available Xerox inkjet. The issue here is not bad products but new and somewhat incompatible products. As new media come on the market, new challenges arise.

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Rolled Adhesive Results

Commonly used rolled adhesives (tissues and film) designed especially for photos and digital giclees were selected for the test along with heat-activated foamboards. All images were mounted to $\frac{3}{16}$ " foamboard and $\frac{3}{16}$ " non-porous Alcan GatorBoard in a mechanical press. Rolled adhesives included Bienfang Rag-Mount, BufferMount, and Color-Mount tissues and ClearMount film along with Drytac GicleeMount and Flobond film. All were tested at 180°F–190°F for one minute then cooled under weight.

All mounted images were checked for T-peel/tear strength against the ISO 18932 Adhesives standard, and the shear strength of the bond when vertical stresses



Photo 7: Normal maintenance and cleaning of release materials is easy. Once adhesive has cooled, it may be brushed off with a clean lint-free rag or with your fingers, as shown in this photo.

were applied was examined. The boards were also twisted to encourage bond release and to showcase bubbles between poorly fused layers. All held perfectly, although they also showed a degree of unacceptable levels of orange peel.

Heat-activated Results

HA foamboards were mounted at manufacturer suggested times and temperatures, then cooled under weight. Low temperature Gilman HA; Bienfang Step 150; Bainbridge HAF, SpeedMount, and Restore were all tested at their 150°F–160°F suggested temperatures at proper dwell times. Gilman HA and Bainbridge HAF bonded very well in one minute, but the Step 150 bubbled when the board was twisted.

The higher temperature 180°F–190°F boards included Alcan HA; Bienfang Single Step; HartMount; and Nucor HA. The Single Step, HartMount, and Nucor HA did not hold up to peel tear-strength tests, with Single Step and HartMount

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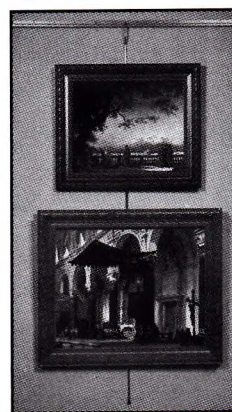
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easily bubbling and/or falling off.

The results remain inconclusive because not every available industry tissue, film, or HA board has been tested. Nor were they tried with all available photo images. All tests should also be performed in all available presses and rollers. Despite this, the results indicate that there is something amiss between the adhesive and the backing layer of the digital image.

Conclusions

There is no hard evidence as to why current images are failing to bond. One hypothetical explanation for failure offered by a scientist at the Image Permanence Institute is that photo manufacturers used to create a tooth on the back of RC photo paper bases that would allow them to be marked with pencil and to increase image adhesion. It is possible that this procedure has been eliminated from current digital papers, so there is little tooth for adhesive to grab onto, resulting in bad adhesion and bubbles.

One solution might be to pre-mount the adhesive to the back of the photo before mounting it to a substrate for better initial bond. Another might be to use a roller and high-tack, pressure-sensitive film.

The bottom line, at this time, is that you just don't know what the result will be.

Adhesive Residue

Another issue encountered during mounting can be adhesive transfer. Release paper needs to

be routinely checked and wiped between mountings with a soft, clean, lint-free rag to remove any adhesive that may have adhered during mounting. This can occur when rolled adhesive layers are cut larger than the mounted photo or when exposed edges of HA boards come in contact with release materials (Photo 6). It is part of routine mounting maintenance to check and wipe clean release materials (Photo 7). Adhesive residue will transfer to the next mounting project if not removed from release materials.

Afterthoughts

In the past decade I have many times yearned for the good old days of only needing to mount RC, fiber base, and Cibachrome photos, but those days are long gone. There were photo issues with those old images—curling, yellowing, orange peel—but they did stay put once mounted. (Scuffing and orange peel are still issues, even with digital photos.) Today you must be technological-savvy just to identify the kind of photo print at the front counter, and even then you still don't know if it will stay bonded. ■

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* and can be contacted at www.designsinkart.com.

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