Mastering Mounting

by Chris A Paschke, CPF GCF, ***Picture Framing Magazine**, August 2016*

"Creative Designing with 415 Tape"

Mounting comes in many forms from rolled tissues to pressure-sensitive tapes, and understanding their proper use and full potential may expand your design horizons as well. A pressure sensitive adhesive (PSA) is a permanently tacky substance that adheres to a given surface when light pressure is applied and maintains a fine balance between adhesion, the holding power of the adhesive on external substrates and cohesion--the holding power of the combined internal components of the adhesive.

3M™ 415 Polyester Double-Sided Tape is a double coated transparent tape commonly used by the Library of Congress, archivists and framers for Mylar encapsulation of documents, prints, photographs and delicate items that cannot tolerate alternative mounting methods. It consists of a high tack acrylic adhesive applied to polyester film carrier which adds strength and ease of application. It won't dry up, crack, yellow, has excellent UV resistance, good resistance to solvents and is most commonly available 1/4" and 1/2" wide. And since the polyester backing helps control adhesive creep and ooze--better than adhesives with no carrier—it is easier and cleaner to apply than ATG.

Basic Encapsulation

Using Mylar and 415 the creation of encapsulation envelopes are fairly quick and easy. Encapsulation helps provide support for fragile documents and protection from dust, dirt and oily finger prints during handling and storage. Detailed instructions are available in most conservation manuals, PPFA recommended reading and many PFM articles., but the basic step-by-step is:

1. Run a strip of 415 double sided, pH neutral adhesive on all four sides of the bottom piece of polyester (Mylar).
2. Align and center the document.
3. Remove the Kraft paper liner from the tape.
4. Cover with another sheet of polyester and compress to remove all air.
5. Press to seal the edges.

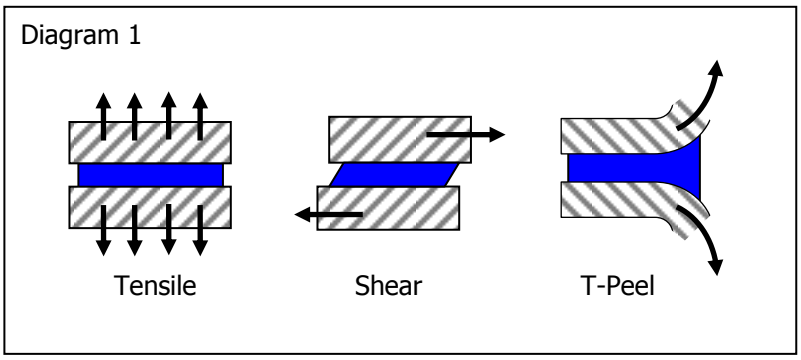
But encapsulation is only part if the story. Beyond the narrow rolls of 1/4" and 1/2" wide from framing suppliers including United Manufacturers and Lion, it is also available 3/4", 1", 1-1/2", 2", 3", 4", 6", 18", 27" and in corresponding metric sizes from museum sources Gaylord, University Products, Talas, and Hollinger Metal Edge; Conservation Support Systems and Conservation Resources in UK; bulk and case orders are available from Uline and industrial sources like RS Hughes and Can-Do Tape. Check with individual companies and refer to the resources below for sizes available as not all companies carry all 3M widths.

PSA Adhesion

The strength and ease of use of 415 makes it invaluable for bonding other things, like wood fillet to glass.
Adhesion is the attraction force between adhesive and substrate, which depends on the adhesive, the substrate, and the application conditions such as: application pressure, time period of pressure, and temperature during application. For our purposes there are three basic adhesion challenges for pressure-sensitives when considering the correct adhesive for a framing project: tensile, shear, and peel strengths.

Tensile strength is tested by evenly pulling two layers apart after curing and is mainly important for single-sided tapes where the backing for the particular application has to withstand tensile stress such as carton sealing tapes or strapping/bundling applications. The tensile strength of tape is usually not important for double-sided tapes, as long as the bonding materials are not stretchable.

Shear strength is the ability of an adhesive to resist creep or slippage when pulled directly across in opposite directions. Peel strength is the force required to remove a mount after a length of time at a specific speed as a 90 degree peel or 180 degree T-peel. This is important when one or both of the bonded layers is flexible. **(diagram 1)**



A good resource and PDF guide for tape comparisons and conversions is available from 3M at
http://multimedia.3m.com/mws/media/1012104O/3m-converter-markets-selection-guide.pdf

The Design
I routinely sell small 6" x 6" prints as framed 7-1/2" x 7-1/2" for $30.00 each at local galleries and in my shop. They are my own images inexpensively framed using closeout mouldings, neutral colored mat scraps cut into window mats with small 1" borders and end cuts of UV glass, all considered scrap materials, and all bringing in additional dollars. A recent high end client selected a set of four white line images from the "Girlfriends" series, but wanted different frames, something a step up and more unique for the art.

We all appreciate the wonders of added profits resulting from the use of fillets and stacked mouldings. But more than just a pretty detail, the use of unrelated fillets can seal the deal when there just isn't another frame design option, and this was exactly the case with this client. We looked at numerous narrow black mouldings both metal and wood but all seemed too wide to maintain the proper proportion, and none accented the white lines in the art. The tall LJ Gramercy cap was too wide at 5/8" and too tall at 1-1/2" for the small matted print. **(photo 2)**

photo 2
The tall LJ 147790 Gramercy cap was too wide at 5/8"
and too tall at 1-1/2" for the small matted print.

LJ Gramercy 135790 wood fillet, however, has the same thin silver line at the top edge which nicely replicated the white line in the art while still being delicate enough not to overpower anything. So after much deliberation the LJ Gramercy fillet and narrow Nielsen 3350 matte black metal frame were the final selection. **(photo 3)**

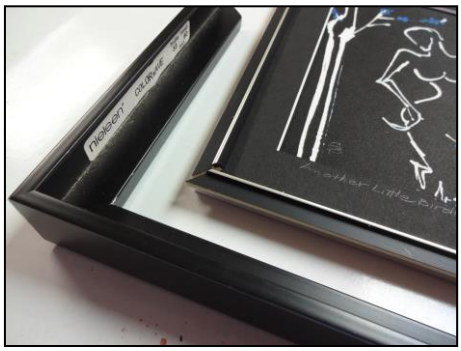


photo 3
LJ Gramercy 135790 wood fillet has a thin silver line
at the top edge and the N3350 has a very narrow 1/8" face.

Project Girlfriends
The frame face is too narrow to attach the 3/8" wide wood fillet to the underside lip of the narrow 1/8" rabbet so the alternative was to select an adhesive to bond the fillet to the UV glazing instead. **(photo 4)** There is less control over ATG tape because of it being 100% film adhesive with no carrier, so it can move. Since 3M 415 is acrylic on a polyester carrier it is not self shaping and cannot be pulled apart without cutting the carrier. This insured the tape would stay where aligned. Since the fillet is 3/8" wide using 1/4" 415 assured that no adhesive would peek out from beneath the fillet after being applied to the glass. **(photo 5)**

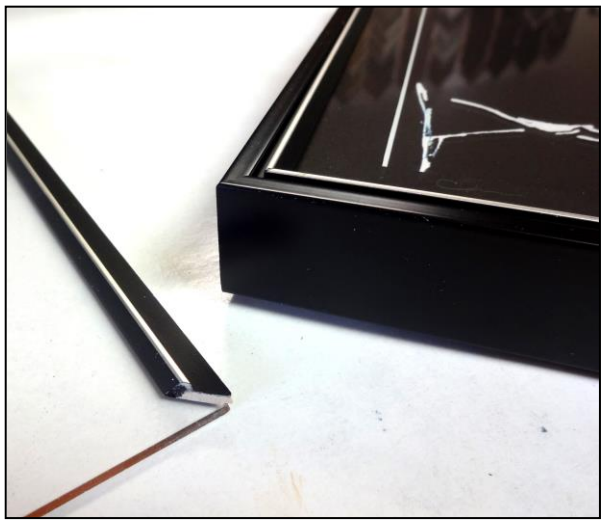


photo 4
The metal rabbet was too narrow to attach the fillet to the 1/8" underside so the alternative was to select an adhesive that would bond the wood fillet to glass.

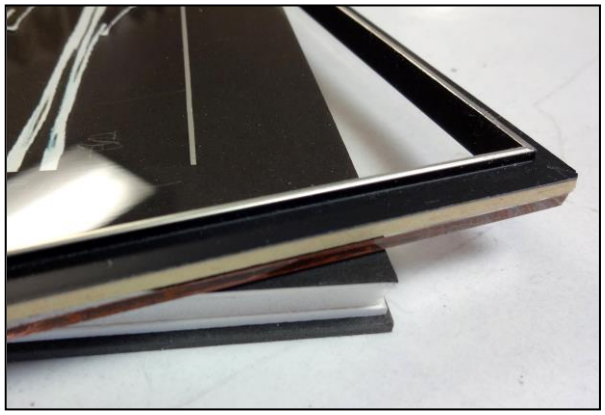


photo 5
Rather than applying the fillet under the frame lip it was placed on the glass.

The 415 was applied to the back of each sized fillet leg along the outer-most edge and cut the end at a diagonal with a sharp blade at each end. Each strip of adhesive was aggressively burnished to activate the adhesive with a bone. **(photo 6)** Kraft release liner was then removed and the fillet was aligned to the edge of the edge-sanded, clean glass. Repeat for all four sides and make certain the corners are properly aligned then press firmly to activate as much as possible.

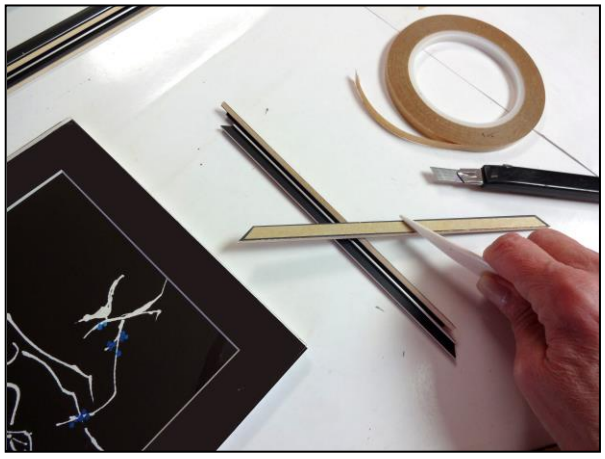


photo 6
Apply the 415 to the back of each sized fillet leg and cut the end at a diagonal with a blade then burnish to activate the adhesive with a bone.

Do not let the fillet to hang over the edge of the glass. The outer corners and edges must remain slightly smaller than the glazing so they don't force the fillet to shift out of alignment during placement into the frame or from exterior frame pressures. Outer edges of the fillet may be sanded with a course 100 grit square ended nail sanding board (file) such as the Beauty Secrets files shown in the photo. **(photo 7)** Sanding sticks like these are invaluable for gently rasping off rough wood edges and inner corners of newly chopped rabbets.

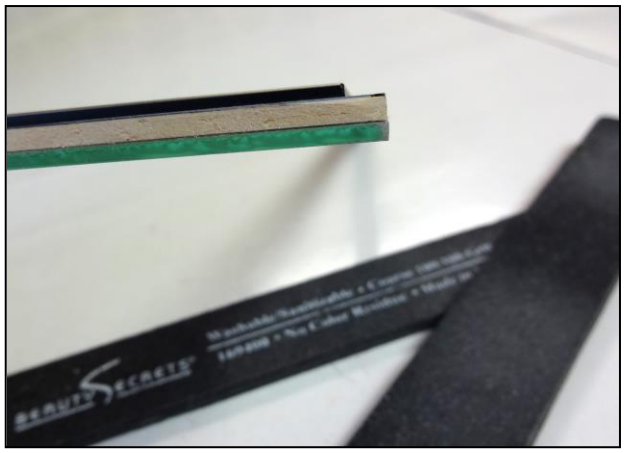


photo 7
The outer corners of the fillet must remain slightly smaller than the glazing. All edges may be sanded with a course 100 grit square ended nail file is perfect for this.

Once the fillet has been aligned and set, the package was slid into the three sided metal frame for final assembly. Since these are small frames they are easily assembled with three sides bolted together allowing for the package to be slipped in from the open end. **(photo 8)** Then additional 4-ply boards or foam may be slipped behind to snug the package as needed and the fourth leg is then bolted to close the frame.

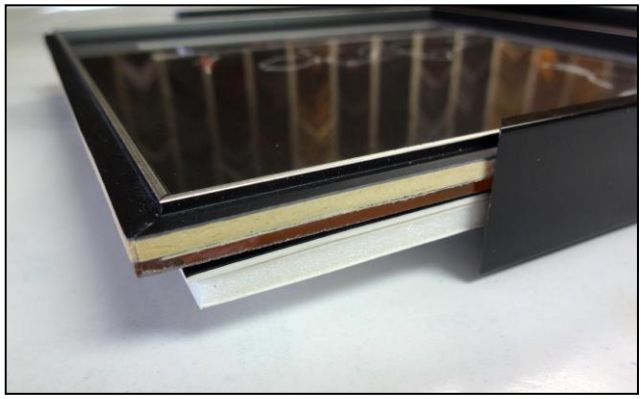


photo 8
Once the fillet was aligned and firmly set the package could be slid into the three sided metal frame for final assembly.

Working with all black elements--black print, black mat, black fillet and frame--dust can be a nightmare. Be aware of all the dust and be meticulous with the cleaning of the glass after fillet assembly, particularly with UV and museum glazing and try to control static whenever possible.

Bottom Line
The newly designed frame increased the retail price of these bargain prints to $120 from $30 by changing the frame and adding the fillet, plus she bought the set of four and added another as a gift for her sister. **(photo 9)** In this case the additional design elements increased each one x4 and then x5 that were sold. Not bad turning a $150 sale of five bargain prints into a $600 sale.

The lesson here is to always think outside the box. Not only was there a challenge to mount the fillet, but also--once it was to be mounted to the glass--knowing what adhesive to use. An epoxy might hold well but could also outgas while being messy to apply and having a curing time. ATG could creep and/or allow the fillets to shift if they got warm and the fitting was too loose.

Creative designing is a Goldilocks story of being just the right fit for the task at hand, and although pressure-sensitive tapes may be considered undependable or non-preservation…there are always exceptions to the rule.
END

Resources	**Items by Name and Sixe**
http://solutions.3m.com	3M 415 - 1/4, 1/2, 3/4, 1, 1.5, 2, 3, 4, 6, 18, 27" and metric
http://unitedmfrs.com	3M 415 Double Coated Tape 1/2"
https://lionpic.co.uk	3M 415 - 12mm
http://gaylord.com	3M 415 Polyester Double-Sided tape 1/4, 1/2, 3/4, 1"
http://universityproducts.com	3M 415 - 1/4, 1/2, 1" wide
http://conservationsupportsystems.com	3M 415 - 1/4, 3/8, 1/2, 3/4, 1"
http://conservation-resources.co.uk	3M 415 - 1/4, 1/2, 1"
http://talasonline.com	3M 415 – 1/4, 1/2, 3/4, 1"
http://hollingermetaledge.com	3M 415 – 1/4, 1/2, 1"
https://can-dotape.com	3M 415 Double-coated Tape 3/4, 1, 1.5, 4 and 18"
http://rshughes.com	3M 415 Clear Bonding Tape 1/4, 1/2, 3/4, 1, 1.5, 2, 3, 4, 6, 18, 27"
http://uline.com	3M 415 - 1/4, 1/2, 3/4, 1, 1.5, 2, 3, 6"