

# Mastering Mounting

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## Spray Mounting For The Health Conscious

**B**ack in 1970, spray mounting was the only form of mounting my father and I ever did in our shop. We had a folded cardboard mini spray booth that collapsed and slid beneath our work assembly table. It was still pretty much open air and we dealt with sticky overspray all the time. Since our Hobby Hut was full of projects and classes ranging from plaster painting to radio control, we constantly had smells of paint and lacquers mixed in with florals and cake decorating. So who even noticed the scent of a spray adhesive?

By 1982, when I relocated the framing into my own gallery business, I attempted to do most of my spraying outside. By then, I was offended by the smells in the gallery. But even in temperate California climates with predominantly sunny seasons, any breeze sent the mist everywhere but where it was intended. The same breeze almost always guaranteed an uneven coating, regardless of whether it was adhesive, clear acrylic, gloss varnish, or photo finish. Yes, even a framer has numerous sprays regularly used besides that of adhesive, and they all give off fumes.

### **Ventilation: Health and Safety Issues**

In this new high tech era, many framers still prefer spray mounting to other methods. Historically, it was inexpensive and required no special equipment, but today we are far more conscious of the cumulative nature of sprays within our lungs.

Therefore, a ventilation system is more than a mere suggestion. In fact, if sprays are the mounting technique of choice, then adequate ventilation or "the flow of enough air to dilute contaminants, either vapor or dust, to a safe level" is required by law. An open window or door might be fine for an occasional project, but regular use demands a spray booth and exhaust fan that meet all OSHA safety standards.

Regardless of the type of spray (adhesive, finish for moulding, or photo), an area for containing fumes will cut down on mess and improve facilities for health. A spray booth may be constructed as either permanent or portable. Construction of a stationary booth will often require local permits, and must meet specific electrical and environmental regulations. A portable unit has less stringent requirements and can still be a fully contained large unit. It can be an actual box on wheels, or simply a vented compartment semi-enclosed with a roof, two sides, a back, and a floor. But all constructions, regardless of permanent or portable, must have an exhaust fan and filter system.

Even minimal use of any sprays should at least have a masked large cardboard box or collapsible unit to limit oversprays from contaminating other work areas. Also, a disposable mask should always be used.

### **Laws Requiring Safety**

Since my early days of framing, the government has been striving to save us from ourselves. The issue of sprays is yet another

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# Mastering Mounting

er example. We always know better; we know not to breathe toxic fumes or to paint using a lead based paint without gloves...but we do it anyway. "It's only this one time, only a quick short exposure to the toxins." Yes, like being exposed to just a little bit of nuclear radiation. Framers beware: it all adds up, and once damage is done it cannot be repaired.

It is now required by law to post proper handling and use on all product labels. Sprays must conform to American Society for Testing and Materials (ASTM) standards, and all contents should have notations.\*

All manufacturers are also required to provide Material Safety Data Sheets (MSDS) for all products when requested, and framers should keep a set of these on file for all toxic products used in the shop.

## Understanding Sprays

Whenever the topic of mounting, or gluing down, an item is approached, all aspects of appropriateness, permanence, heat sensitivity, and health seem to be raised. I have talked about permanence before and the hierarchy of longevity vs. tear strength. Spray mounting remains lower on the permanency scale than dry mounting, though its tear strength may be equaled at the time of mounting completion. Spray permanence is directly related to numerous factors including adhesive, substrate, advised application, and TTPM (time, temperature, pressure, moisture) technique.

## Adhesive

Choosing the correct adhesive for the items being mounted is extremely important. Selecting one designed for porous paper when mounting a resin coated photograph will never do the job. A temporary, repositionable spray used in the graphic arts will never be a permanent

mounting for long-term framing. Read the cans, know and understand the products, ask questions, and don't buy based simply on price.

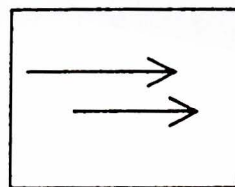
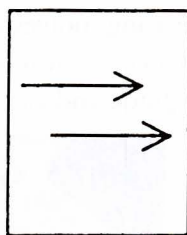
## Substrate

Selecting the correct mounting board for the adhesive and items to be mounted is every bit as important as the adhesive itself. Many sprays resist bonding to oil-impregnated surfaces or wax-coated materials. This could be either the artwork or the substrate. Substrates including hardboard, fiberboard, particleboard (MDF), and some low-grade newsboards have oils that can soften the adhesive, resulting in bond failure.

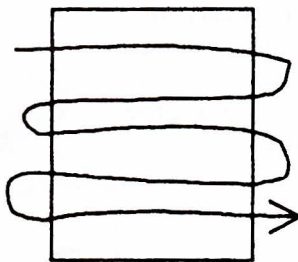
## Application

Not knowing proper application techniques can also be the source of bond failure such as bubbling. It can be any number of things, from insufficiently applied adhesive to

lack of weight during drying. Remember to apply the spray in two directions at a 90° angle to each other for maximum adhesive application. Begin the spray off the substrate to make certain there is an even flow first, then spray in a zigzag pattern off either side in a continual flow pattern to the bottom (See diagrams).



*Apply the spray in two directions in a 90° angle to each other. Spray one way and then turn surface and spray again.*



*Then spray in a zigzag pattern in a continual flow to the bottom of the surface.*

## TTPM and Technique

Any adhesive is considered "technique sensitive" to a certain degree, but none more than spray mounting. Often marketed as permanent, as noted by the manufacturers themselves, spray adhesives are permanent only with appropriate consideration for proper coverage at a 6" to 8" application distance from the work; open time to allow for evaporation; adhesive application at an accepted 70° to 80°F (21°-27°C) temperature; and placed long enough under weight to create its permanent bond. When the four basic elements of successful mounting—time, temperature, pressure, and moisture—

# Mastering Mounting

are taken into consideration, proper technique will nearly always prevail.

Good technique can't be stressed enough. Understand what you read. When 15 to 30 seconds is specified for open time, that does not mean the same thing as two to three minutes for drying time. Watch the temperature of the can during storage and use, as well as mounting temperatures if applying heat to the bond. If mounting totally by hand, place the item under a glass or metal weight overnight for the mandatory 12 to 24 hours required to create the bond. Evaporation of the solvents (open time), as well as the advantage of bonding in a vacuum frame, helps draw all moisture out of mounting materials. And always acclimate the art and substrate to the shop's basic humidity and temperature prior to mounting to help stabilize all materials.

## Selection of the Correct Spray

There are numerous sprays available today, and selecting one appropriate for your needs is extremely important. Check for a spray's ability to mount both porous and nonporous items; never simply assume it will work for both. When a nonporous RC photo is to be mounted, sometimes there is an increased drying time.

3M Supper 77 Spray Adhesive is an industrial strength spray heavily used in our industry. It boasts a long open time of 10 to 15 minutes, allowing for additional application and proper coverage before mounting. It is nonabsorbent, laying on the surface of porous items, rather than soaking in, which helps prevent wrinkling and saturation of thin materials. It may be applied to one or both surfaces to create a more temporary vs. permanent application. Though it is quick drying and recommended for foam, fabric, and paper, it is not recommended for plastics like RC photos.

There are sprays designed for use solely by manual methods, and those that are designed for use with a cold vacuum frame or even a heat press. 3M Vac-U-Mount Adhesive is designed for a use with a vacuum frame, and requires a two minute open time with a maximum of 10 minutes for placement. This allows the solvents that allowed the adhesive to flow through the nozzle to evaporate and the adhesive to become tacky.

Once aligned, it need only be vacuum mounted two minutes for bonding.

As noted above, many are also capable of being placed in a heat press to expedite drying time and moisture evaporation. Good Glue, the Canadian adhesive from Spraytex Industries, claims it works with both porous and nonporous, and may be used in either a cold frame for two to five minutes, or a heat press 175°F to 195°F (80°C to 90°C) degrees for one to two minutes.

The Print Mount Company also has a cold or hot spray. Sure Mount Spray claims to be an acid-free, water-based, and reversible starch spray adhesive. It mounts paper, fabrics, or photos to porous surfaces including matboard, foam board, and masonite. Drying time is affected by the porosity of the materials being selected for mounting and the cold vs. hot technique. Maximum bond is three to 12 hours by hand, two to five minutes cold vacuum, or one to four minutes at 195°F hot press. Nonporous photos could take 10 to 15 minutes in a heat system to achieve effective bonding.

## Troubleshooting Sprays: Squirting

Even when everything has been considered, checked, matched, and thought through, problems can still occur. These are often not the fault of the talented professional framer, but rather of fate. Occasionally a can will squirt out adhesive unevenly, depositing lumps of crud (otherwise known as adhesive) onto the substrate. This is usually the result of not having shaken the can aggressively enough, or by attempting to apply the adhesive when the can is too cold. Warm the can to room temperature and shake the can more vigorously for a longer time to mix the solvent and adhesive.

## Clogging

When an fine even spray is followed by a lack of spray it is often the result of clumped particles. Again it is an indication of inadequate shaking of the can. It could also be the can is not being held as upright as possible, though this often manifests in a clearing of the tube with no spray projected. Only slightly tip the can at a distance of 6" to 8" and attempt to light the work area strategically so the application can be easier viewed. Check the



# Mastering Mounting

nozzle for arrow alignment, continue to intermittently shake the can during the stages of application, and remember to clear nozzle after each full use.

## Solvents

When all else fails and a sprayed mounting must be removed or the surface cleaned up, then Bestine Thinner

(a heptane-based formula) will remove the adhesive. It is also safe enough for use with most inks without damage or fading. Many other commercial solvents will also work, so check with manufacturers for advice.

Images that are partially peeled up from dried out spray adhesive can often be warmed up with a heat press or shrink wrap gun to soften the spray and make removal

of any remaining adhered areas easier to peel free. Solvents may then be used to clean up the adhesive residue on the verso side prior to remounting to a clean substrate.

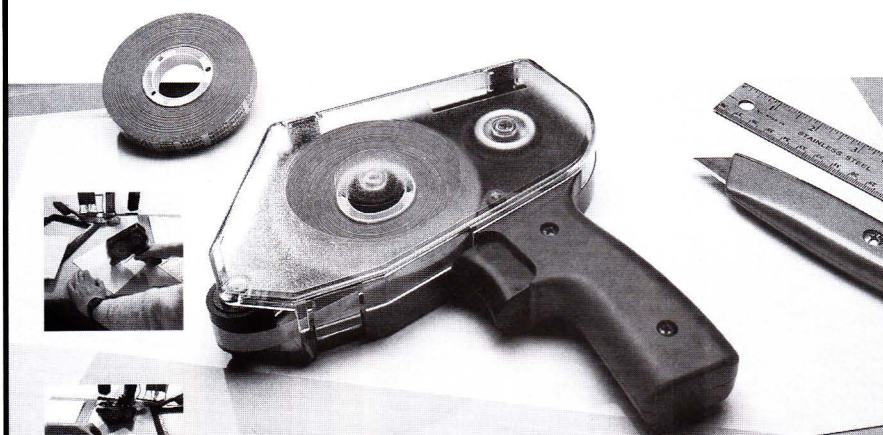
## Safety First, Last, and Always

Safety first means finger guards on choppers, goggles when cutting glazing, and of course, ventilation systems when using sprays. Whether the sprays are lacquer finishes, varnishes, acrylics, stains or adhesives, they can all be toxic. Aerosols are popular because of their convenience, economy, and effectiveness, but safety must be initiated. Flammability, toxicity, and lung damage are serious issues and must be addressed when using sprays.

I've often said my Father died a spray mounter, meaning he never looked past spray mounting to any other technique, because he was very happy with it. I never meant it killed him...but then again, the truth is, without proper use or adequate ventilation, it could have. ■

*\* ASTM D4236 requires that all product formulations be evaluated by a qualified toxicologist for potential adverse health effects, and that labels must provide warnings for safe and proper use. Contact your manufacturers to find out further information about unmarked materials.*

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