Mounting Substrates
A Practical Guide

James Miller, MCPF, GCF

A Supplement to Picture Framing Magazine • September 2010

Sponsored by The Fletcher-Terry Company

Mounting Substrates
A Practical Guide

James Miller, MCPF, GCF

The number of mounting substrates available for picture framers today has grown to include a wide variety of materials that fit every purpose. Here is an overview of the options and applications provided by today's substrates.

Paperboard substrates (top-to-bottom): preservation (alphacellulose) 4-ply matboard, non-preservation (acid-free) matboard, and Upson board.

A mounting substrate can be defined as an underlying support—an essential component in framing paper artworks, photographs, textiles, and three-dimensional objects. Canvas paintings are usually mounted on stretcher or strainer frames, but printed images on canvas can be mounted to board substrates. The ideal mounting substrate would be rigid enough to support the weight of a mounted item without warping or deflection, but a secondary substrate can be added as reinforcement. The reinforcement might be more of the

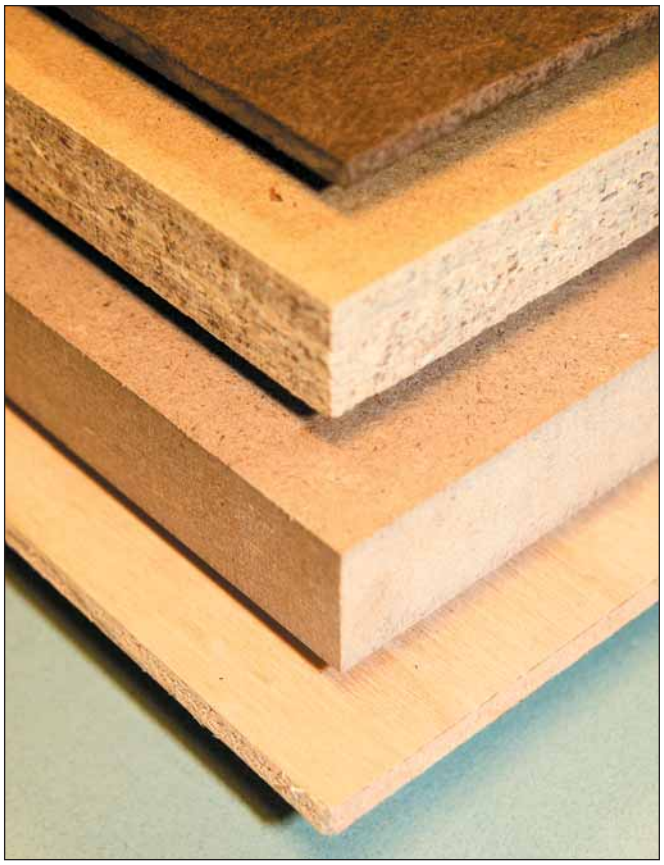
PAPERBOARD SUBSTRATES

Description	Matboard Preservation	Matboard Non-preservation	Specialty boards; Illustration/Canvas/ X-Board/Canvas Board
Typical Brands	Artique, Bainbridge ArtCare, Crescent Select, RagMat, Peterboro Conservation, Rising/Legion Museum, Strathmore Conservation	Artique, Bainbridge, Crescent, Peterboro, Strathmore	Arches, Bristol, Canson, Bainbridge, Crescent, Peterboro, Strathmore, Upsonite
Typical Description	Alpha cellulose fibers from wood or cotton, lignin-free, acid free, buffered or un-buffered, pigmented colors, various surface finishes	Wood pulp fibers containing lignin, buffered or un-buffered, dyed colors, various surface finishes	Wood pulp fibers containing lignin; may be buffered; may be textured
Popular Uses	Matting and mounting for framing		Mounting for framing
Attributes	Easy to cut and handle; accepts inks and numerous adhesives, will not discolor or deteriorate from within; chemically stable over time; available with low-temp dry mount adhesive pre-applied	Easy to cut and handle; accepts inks and numerous adhesives; available with low-temp dry mount adhesive pre-applied	Hard, smooth surface; easy to cut and handle; accepts inks and numerous adhesives; available with low-temp dry mount or pressure-sensitive adhesive pre-applied
Limitations	Hygroscopic; may warp, cockle, or swell if exposed to excess moisture	Hygroscopic; may warp, cockle, or swell if exposed to excess moisture; may discolor and deteriorate due to lignin content; chemically unstable over time	
Cutting Tools	Various types of knives; mat cutter blades, razor blades; mat cutters, wall-mounted cutting machines recommended		
Typical Sizes	4-ply, 8-ply thicknesses; 32"x40", 40"x60", 48"x96", 60"x104" sheet sizes		Up to 42-ply thickness; up to 40"x60" sheet size

same or a different type of substrate material.

Mounting substrates are equally essential in displays where framing is not involved. For example, a temporary sign, banner, or other image can be mounted to a sturdy substrate for display on a table or easel, or perhaps it might be hung on a wall. A banner or poster on flexible material can also be hung on the wall by the eyelets in its corners. In that case, the wall itself would be the mounting substrate, the underlying support. A life-sized poster might also stand on the floor and lean against a wall if it is mounted to a sufficiently rigid substrate.

Mounting substrates have evolved quite a lot in recent years. Just a few decades ago, the selection of mounting substrates popular for framing purposes included little more than acidic paperboard and wood



Wood product substrates (top-to-bottom): hardboard, particle board, medium density fiberboard (MDF), and plywood.

WOOD and WOOD-PRODUCT SUBSTRATES

Description	Hardboard	Particle Board	Medium Density Fiberboard (MDF)	Plywood
Typical Brands	Masonite	(Generic)	(Generic)	(Generic)
Typical Description	Made of compressed sawdust and wood pulp, bound together with plastic adhesive or resin under heat and pressure.	Made by mixing new and/or recycled wood shavings, chips and sawdust with a strong resin, then pressing the mixture into boards.	Similar to particle board, MDF is made of wood; small waste fibers are glued together with resin, heat, and pressure.	Layers of wood are laminated together, usually with grains crossed, to form a sturdy sheet
Popular Uses	Primary substrate for heavy objects screwed or otherwise permanently fastened; reinforcement for other substrates more suitable for direct-contact mounting, such as paper boards			
Attributes	Thin profile; smooth, hard surface is resistant to occasional moisture; sawing leaves a smooth edge	Surface is somewhat irregular in texture and hardness; sawing leaves a smooth edge; sturdy sheet for large, heavy mounting applications	Surface is smooth and hard; sawing leaves a smooth cut instead of a jagged edge; sturdy sheet for large, heavy mounting applications	Surface is somewhat irregular in texture and hardness; sturdy sheet for large, heavy mounting applications
Limitations	Core and back may be hygroscopic; may warp or swell with frequent or extreme moisture exposure; chemically unstable; cutting makes sawdust; particulate may be toxic	Hygroscopic; may warp or swell with frequent or extreme moisture exposure; chemically unstable; cutting makes sawdust; particulate may be toxic		Hygroscopic; may warp, cockle, or swell if exposed to excess moisture; surfaces too rough for direct mounting of smooth items; chemically unstable over time; cutting makes sawdust; particulate may be toxic
Cutting Tools	Various saws; up to 3/32" thick, wheel-type cutter in wall-mounted machine, such as Fletcher-Terry F3100	Various saws		
Typical Sizes	1/8" and ¼" thicknesses; 48"x96"typical sheet size	3/8" to 1" thicknesses; 48"x96" typical sheet size		¼" to 1" thicknesses; 48"x96" typical sheet size

products. Today picture framers, artists, photographers, and graphic imaging specialists can choose from a wide variety of mounting substrates made from different materials to fit every purpose.

Advances in material technology spur development of new substrates. For example, plastic substrates, such as acrylic, polyester, polypropylene, and polyvinyl chloride (PVC) sheeting, dominate the sign making and graphics industries. Aluminum and aluminum composite sheeting have also become popular in the graphics industry and are making advances in digital imaging. In turn, these materials are becoming more practical for framing applications.

As material technologies bring new substrates to the marketplace, advances in imaging technology encourage the adaptation of these new substrate materials to picture framing and other display applications. To make the most of these new materials, it is important for the framers of today to have a full understanding of all the rigid substrate applications in framing, art, graphics, and photography.

Types of Substrate Material

Paperboard, such as matboard, can be the most practical mounting substrate for framing applications because it is easily available and easy to handle and cut. Matboard is relatively economical, too, because it is a dual-purpose product that's also used for decorative window matting. Standard "acid-free" matboard can be a suitable substrate for decorative framing, but this type of board has a tendency to deteriorate over time, as its content of lignin and other impurities generates acid and chemical contaminants inside the closed environment of the frame. Lignin-free alpha cellulose or "museum" board is more suitable for preservation framing because it remains chemically stable over time. It also won't discolor or cause chemical reactions within the closed environment of a picture frame. A typical 4-ply matboard can provide adequate support for lightweight papers and photos, but larger items might require a sturdier substrate, such as 8-ply matboard. Additional layers of the same or another type of substrate, such as fluted polypropylene or foamboard, can also be used to reinforce matboard used in mounting.

Metal substrates (top-to-bottom): unfinished aluminum sheet and unfinished steel sheet. In certain mounting applications, rare-earth magnets may be used, such as the ones shown here.

METAL SUBSTRATES

Description	Aluminum	Steel
Typical Brands	Generic	Generic
Typical Description	Aluminum sheet	Steel sheet or plate
Popular Uses	Mounting photographs; reinforcement for other substrates	Mounting large, heavy objects; reinforcement for other substrates; magnetic mounting
Attributes	Lightweight for its thickness; smooth, hard surface	Very sturdy; smooth, hard surface
Limitations	May corrode if not coated; sawing makes sawdust; cut edges are sharp	May rust if not coated; sawing makes sawdust; cut edges are sharp
Cutting Tools	Saw with metal-cutting blade; metal snips; up to .080"thick, wheel-type-cutter in wall-mounted machine, such as Fletcher-Terry F3100, FSC, or Alta	Saw with metal-cutting blade; metal snips
Typical Sizes	Practical for mounting, from about .040" up to about 1/8" thick; usually cut-to-size by suppliers	

Paperboards made specifically for mounting and presentation including illustration board, needle-art mounting board, and other specialty boards, and they often cost less than matboard. These generally have smooth paper surfaces and are available in several thicknesses. Some are acid-free by virtue of an alkaline buffer, or they can be made entirely from recycled paper fibers. Some core papers are made of gray, newsprint-type fibers. When a lower-quality paperboard substrate is appropriate for decorative framing or non-protective display, this type of mounting board can work well and save money. For a picture framer, the inventory expense of stocking this type of board in addition to matboard, which could be used instead, could offset any savings.

Paperboards are often used as mounting substrates because they are convenient to cut and handle, have smooth surfaces, and are suitable for all methods of attachment and all types of adhesives. Heat-activated dry mounting adhesives, water-based pastes, pressure-sensitive sheets or tapes, and solvent-type spray adhesives can be used with paperboards, whether for overall mounting or for support in selected small areas.

Substrates made of wood and wood products are generally suitable for mounting large, heavy, three-dimensional objects. Full-grain wood panels, plywood, particleboard, MDF (medium density fiberboard), and

Plastic substrates (top-to-bottom): acrylic sheet (available clear or colored), polycarbonate, polyvinyl chloride (PVC), and fluted polypropylene.

PLASTIC SUBSTRATES

Description	Acrylic	Polycarbonate	Polyvinyl Chloride (PVC)	Fluted Polypropylene
Typical Brands	Acrylite, Plaskolite, Plexiglas	Lexan	Sintra	Coroplast, Matra Plast, IntePro
Typical Description	Extruded or cast thermoplastic acrylic polymer sheeting	Extruded or cast thermoplastic polycarbonate polymer sheeting	Polyvinyl chloride moderately expanded, closed cell sheeting	Polypropylene extruded with flutes between top and bottom sheets; aka Polyflute
Popular Uses	Framing glazing; acrylic boxes; 3-dimensional graphic design	Fabrication; 3-dimensional graphic design; sign-making; high-impact packaging	Reinforcement for other substrates; fabrication; 3-dimensional graphic design; sign-making	Reinforcement for other substrates; fabrication; 3-dimensional graphic design; sign-making
Attributes	Smooth, hard surface; non-hygroscopic; cutting leaves a smooth edge; resistant to light damage; chemically stable over time; high clarity; suitable for face-mounts; available with 98% UV-filter	Smooth surface, harder than acrylic; non-hygroscopic; cutting leaves a smooth edge; somewhat resistant to light damage; high clarity; suitable for face-mounts	Relatively soft, matte-finish surface has slight texture; cutting leaves a smooth edge; non-hygroscopic; available in colors	Relatively soft surface has venetian-blind texture; cuts easily; non-hygroscopic; available in colors or archival type; chemically stable over time; suitable for preservation framing
Limitations	Unsuitable for heat-activated mounting over 150°F degrees; face-mounts may scratch easily	Unsuitable for heat-activated mounting over 200°F degrees; face-mounts may scratch easily	Unsuitable for heat-activated mounting over 150°F degrees; chemically unstable; unsuitable for preservation framing	Unsuitable for direct mounting, due to textured surfaces
Cutting Tools	Various saws; hand-held scoring tool; scoring tool in wall-mounted machine, such as Fletcher-Terry F3000		Various saws; hand-held scoring tool; scoring tool in wall-mounted machine; knife blade	Knife blade, such as mat cutter, utility knife, or wall-mounted cutter
Typical Sizes	.060" to .944" thicknesses; Up to 72"x120" sheet size	1 to 12mm thicknesses; Up to 72"x96" sheet size	1 to 13mm thicknesses; Up to 72" x 120" sheet size	2 to 13mm thicknesses; Up to 80"x96" sheet size

hardboard (such as Masonite) are relatively heavy, moisture-sensitive, chemically invasive sheeting products, mostly designed for construction applications. Their surfaces are generally porous and have a rough or inconsistent texture unsuitable for mounting smooth-surfaced items, such as paper and photographs. A saw is usually required for cutting, but hardboard up to 2.4mm thick can also be cut by special attachments on some wall-mounted cutting machines, such as the Fletcher-Terry F3100. Hardboard, often 1/8" or 1/4" thick, is thinner than most wood sheeting products, but it is very dense with a smooth, hard surface suitable for mounting photographs and other paper items. While wood-product substrates are commonly used for non-protective display applications, they can be framed as well. However, the weight and chemical reactivity of these products often cause problems inside the closed environment of a picture frame. For example, adhesive bonds could weaken, or discoloration of inks and paints can result from exposure to the chemistry of a wood-product substrate. Most types of adhesives work well with wood products.

Substrates of metal, such as steel and aluminum sheeting, provide a very smooth, hard mounting surface beneficial for smooth-surfaced items, such as traditional

Composite substrates (top-to-bottom): aluminum composite material (ACM), white foamboard, black foamboard, and high-density foamboard.

COMPOSITE SUBSTRATES

Description	Foamboard	High-Density Foamboard	Aluminum Composite Material (ACM)
Typical Brands	Encore/Bienfang, International/Fomecote, Fom-Cor	Gatorfoam, MightyCore	AlucoBond, Dibond, ePanel
Typical Description	Expanded polystyrene core with paper covering on both sides	High-density, expanded polystyrene core with wood-fiber veneer on both sides	Aluminum sheets laminated with plastic core
Popular Uses	Mounting of paper art, photos, giclees; reinforcement for paperboard substrate	Heavy-duty mounting of paper art, photos, giclees, 3-dimensional objects; reinforcement for paperboard substrate	All types of mounting; structural reinforcement and chemical barrier for use with all substrate types
Attributes	Smooth paper surface is suitable for adhesive mounting for framing, whether in spots (hinges) or overall (dry mounting); preservation-grade board may be suitable for preservation mounting; easy to cut and handle; lightweight; moderate rigidity	Similar to foamboard but with heavier, denser core; good rigidity; hard, smooth surfaces suitable for mounting; more rigid than standard foamboard	Smooth, hard surface excellent for mounting photos & digital graphics; chemically stable; suitable for preservation mounting; excellent rigidity for its thickness and light weight; non-hygroscopic; chemical barrier
Limitations	Styrene core may be chemically unstable in high temperatures; soft surface may dent or crease easily	Styrene core and wood veneer surfaces may be chemically unstable, especially in high temperatures; not suitable for direct preservation mounting	May require edge finishing; sawing may leave rough edges
Cutting Tools	Knife/razor blades; utility knife; mat cutter; wall-mounted cutter up to ½" thickness, such as Fletcher-Terry F3100		Various saws, leave rough edges; wheel-type cutter in wall-mounted machine, such as Fletcher-Terry FSC, leaves smooth, rolled edges
Typical Sizes	.060" to .944 thicknesses; Up to 72"x120" sheet size		2 to 6mm thicknesses; Up to 62"x360" sheet size

photographs, digital images, and paper-borne artworks. Steel substrates are also useful where magnetic mounts are desired. Metal substrates also have the benefit of very stable chemistry, so they are non-reactive with items mounted to them. A steel or aluminum substrate could be thick, heavy, and very rigid, or it can be thinner than other alternative substrates, minimizing weight and making cutting easier. Metal substrates can be cut with suitable saws, but aluminum sheeting up to 1.5mm can be cut using an attachment on some wall-mounted machines, such as the Fletcher-Terry FSC. If a thin metal substrate lacks rigidity, it can be reinforced with another type of substrate. Metals are non-hygroscopic and will not warp, but water-based adhesives are generally unsuitable. Heat-activated, pressure-sensitive, and solvent-based adhesives generally are suitable.

Popular plastic substrates include acrylic, polycarbonate, styrene, polyvinyl chloride (PVC), and fluted polypropylene. For framing, acrylic sheeting—the same material used for glazing—might be the most practical of the plastic substrates. It has a very smooth, hard surface suitable for mounting smooth-surfaced items; it comes in several thicknesses; it is easily cut using a hand-held or machine-mounted scoring tool; and it is chemically stable, so it is non-reactive with inks and paints. All of the other plastic products share some of these favorable attributes but also have unfortunate characteristics for framing purposes. Polycarbonate and styrene have surfaces and cutting characteristics similar to acrylic. PVC sheeting is more flexible and has a softer, usually matte surface. These three plastic substrates are chemically unstable, so they could deteriorate when exposed to light or react with inks or paints in a closed frame. Fluted polypropylene, such as Coroplast® or Omni-Flute®, is chemically stable, lightweight, and easy to cut, but its somewhat ribbed surface texture makes it unsuitable for directly mounting most items. It is, however, a very good reinforcement for other types of substrates.

All of these plastic substrates work well with pressure-sensitive adhesives, but they are non-hygroscopic, so water-based adhesives might not stick. Acrylic and polycarbonate might be suitable for low-temperature dry mounting with short dwell time, but all these plastic substrates are heat-sensitive and generally unsuitable for exposure to temperatures over 160º F.

Composite substrates are made from dissimilar layers laminated together. The most common of these is foamboard, which has an expanded polystyrene core and paper on both sides. It can be plain, acid free, or alpha cellulose. This substrate's popularity in framing stems from the fact that it is cost-effective, convenient to handle, and easy to cut. Standard foamboards are lightweight, smooth-surfaced, and work well with all sorts of adhesives, but they can warp if exposed to moisture. Heavier foamboards, such as Gatorfoam® and Mighty-Core®, are more resistant to warping. They have a higher-density polystyrene core and more durable coverings. All of these foamboards are available in multiple thicknesses and can be cut using standard utility blades, mat cutters, and wall-mounted cutting machines.

Aluminum composite material (ACM) generally consists of two thin layers of coated aluminum surrounding a solid PVC layer (DiBond® and ePanel®). Or it could consist of aluminum layers over a core of fluted or corrugated plastic (Alumalite®). ACM can be cut using a saw, but edge finishing would be required. A rolling-type cutter is available for some wall-mounted machines, such as the Fletcher-Terry FSC, that produces smoothly finished, rounded edges on ACM up to 4mm thick.

Surface Characteristics and Coatings

A mounting substrate can be selected for specific surface characteristics. For example, the hardness of the surface is an important consideration and so is smoothness. Foamboard or paperboard is often selected for cost and convenience in permanently mounting paper items and matte-finished photographs. However, when mounting a glossy photograph by any process involving pressure, the slight orange-peel texture of a paper-surfaced substrate can show through and affect the photograph's surface texture. In that case, a harder-surfaced substrate, such as hardboard, metal, or ACM sheeting, would probably yield better results. While smoothness of the surface can be important for dry mounting a glossy photograph, a slight texture can provide a stronger bond with some pressure-sensitive adhesives.

Dry mounting films and tissues are commonly used with various mounting substrates, but boards with preapplied adhesive are becoming more popular because of their consistent quality results, convenience, and labor savings. Foamboard, paperboard, metal sheeting, aluminum composites, and acrylic sheeting are now avail-

able with low-temperature heat-activated adhesives already pre-applied. For full-surface mounting applications, these substrates might eventually replace using heat-activated adhesives in separate layers.

The appearance of the substrate surface can be important if some area will remain exposed after mounting. For example, an image or document can be float-mounted in the center of a substrate that includes a decorative border, so the color and surface texture of the mounting substrate would show. Matboard is popular for these applications because it can match or complement a decorative window mat. Unfinished surfaces of metal substrates might be suitable for adhesive mounting, but any surface area that remains exposed could rust or corrode. Painted surfaces on these substrates are generally more durable, as well as attractive, but they add to the cost. ACMs are available in a variety of colors that add a nice decorative touch.

Cutting Tools and Procedures

All mounting substrates must be trimmed to specific sizes, either before or after the mounting process, and various substrates require certain cutting tools. It is essential to acquire and maintain a variety of cutting tools appropriate for the substrates your work requires. It is also essential to properly select and use the tools, not only to achieve the best results with minimum work but to also avoid injury.

Saws are popular for cutting hard-surface substrate materials, especially in production shops equipped with the special tools and dust collection systems and where noise is not an issue. After setting up a machine for a particular task, the actual cutting process can go faster than using other cutting methods. In retail storefronts, where quantities per task are generally small, using a saw can be less convenient than using a knife or scoring-type cutter. When shapes are required—when cutting involves something other than straight lines—a powered jigsaw, saber saw, or even a hand-held coping saw could be appropriate, Shapes can be cut in soft substrate materials, such as matboard, foamboard, fluted polypropylene, and thin PVC sheets, using a hand-held blade, such as a utility or X-Acto knife.

Typical straight-line cutting of paperboard, foamboard, and other semi-rigid substrates can be done

Fluted polypropylene may be cut using a machine-mounted blade, such as this mat cutter or a wall-mounted cutter. A hand-held knife and straight edge can also do the job.

Aluminum composite material up to 4mm thick may be most neatly cut using a roller-type cutter, such as this attachment to the Fletcher FSC machine, to provide a smooth, rolled edge. A saw can also cut this material, but the edges would require finishing.

An acrylic sheet can be cut using a hand-held tool and straight edge, as shown here, but an acrylic cutting attachment in a wall-mounted machine is more convenient for the purpose.

with a straight edge and some kind of hand-held knife. A bench-mounted or wall-mounted cutting machine with a sturdy cutting surface, an effective clamping mechanism, and a guided cutting head provide cuts of greater accuracy, convenience, and safety. For example, a straight-line mat cutter would be suitable for cutting semi-rigid substrates up to about 1/4" (6.35 mm). Some wall-mounted machines can cut these semi-rigid boards up to about 1/2" (13 mm) thickness, which covers the needs of most frame shops. A sturdy blade, especially if mounted in a cutting machine, can also be used to cut some plastic substrates, such as fluted polypropylene up to about 1/2" and PVC sheeting up to about 1/8". Wall-mounted machines can also cut softer plastic sheets, such as PVC and fluted polypropylene up to 1/2" (13mm).

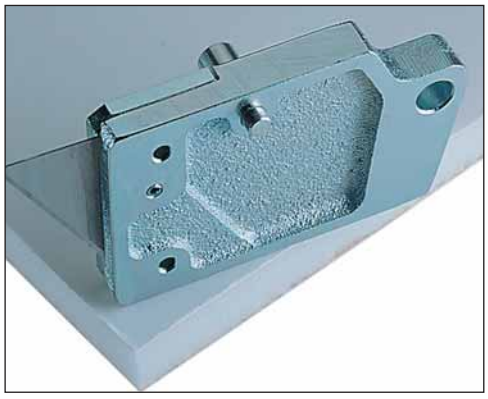
Hard-surface plastic substrates, such as acrylic, polycarbonate, and styrene, can be trimmed using various types of saws with appropriate blades, either manual or powered, which also work for PVC sheeting of any thickness. This method might be preferred for production, because cutting speed can be faster than with other tools, but setting up a saw's guides and clamps generally takes some time. In most frame shops that use plastic substrates for custom work in small quantities, a scoring tool can be more convenient. Some wall-mounted cutting machines include attachments to score acrylic and polycarbonate sheets up to 1/4" (6.35mm). Hand-held scoring tools are available for use with a straight edge. In any case, the usual procedure is to score about halfway through the thickness and then break the sheet at the score-line. Some wall-mounted machines, such as the Fletcher-Terry F-3000, include a trigger-activated roller-type device to break the sheet at the score line while it is still in the machine. Or you can also manually break the score-line over the edge of a table.

Wall-mounted machines, such as the Fletcher-Terry FSC, will cut most aluminum composite material (ACM) up to 1/4" (4mm) thickness and soft-core composites up to 5mm. These same machines can cut aluminum sheeting up to .063" (1.5mm) thickness. Saws are effective for cutting these metal substrates, but the disc-type cutters of the wall-mounted machines produce smoother, neater rolled edges.

Hardboard of any thickness can be cut using a saw, and up to 3/32" (2.4mm) using special cutting wheel sets available for some wall-mounted cutters, such as the Fletcher-Terry F3100.

A specialty cutting machine, such as the Fletcher-Terry Gemini or Titan, uses a sturdy blade to cut paper, foamboard, fluted polypropylene, and PVC substrates.

Top-to-bottom: A standard utility knife and straight edge can cut paper, foamboard, fluted polypropylene, and PVC substrates up to 1/2" thick; a hand-held acrylic cutter and straight edge can cut acrylic or polycarbonate sheets; and a draw-type tool such as this can be used to finish the edges of acrylic and polycarbonate sheets.



This blade attachment is typical for wall-mounted cutters and can cut paper, foamboard, fluted polypropylene, and PVC substrates up to 1/2" thick.

Edge Finishing

Cutting tools are available to produce smooth, clean edges on most substrates, but if you lack the best tool for a particular cutting task or if the application calls for specially prepared edges, extra finishing might be required. For example, alpha cellulose paperboard is often used for preservation mounting of fragile, perhaps deteriorated textiles and papers in direct contact the sub-

strate's edges. A sanding stick is effective in smoothing the sharp edges that result from blade-cutting the paperboard. Sanding sticks also work on other substrate materials, too, such as wood and some plastics. For plastic substrates, especially in production situations, a router or shaper could be appropriate to finish the edges. For example, an acrylic box would require very smooth, precisely finished edges. For manual finishing of edges on acrylic, polycarbonate, and PVC, a drawknife can produce clean, smooth edges. Essentially, the drawknife is a thin steel bar, perhaps a foot long, with handles at both ends. Notches cut into its edges can be used to make flat, rounded, or beveled edges on the plastic sheet.

Printability

Traditional printing methods, such as lithography, serigraphy, silk screening, and hot stamping, will work on porous substrates, such as paper and paper-covered boards, and on some non-porous materials. In recent years, suppliers in the digital imaging industry have developed printers and ink sets capable of reproducing digital images on nearly any type of substrate. Increasing numbers of photographers, digital imaging specialists, and picture framers are acquiring the capability to print on a wide variety of mounting substrates. For the purpose of framing, the advantage of printing directly onto a sturdy substrate is that further mounting might not be required.

Attachment Options

Unless an image is printed directly onto the mounting substrate, some sort of adhesive is required to attach the art to it. Mounting adhesives for framing generally fit into four categories: wet, heat activated, pressure sensitive, and solvent based.

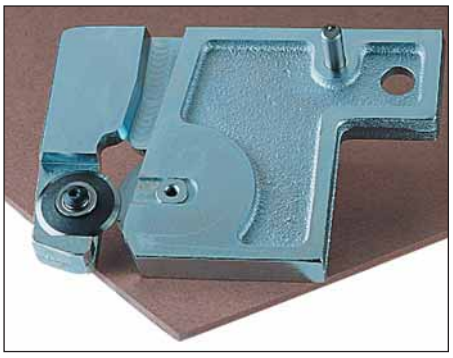
Wet pastes, which can have the simplest chemistry and greatest longevity, are most suitable for preservation mounting by spot adhesion, such as hinging onto alpha cellulose paper board, or they can be used for full surface mounting onto paper board, foamboard, and other porous substrates. Other, more chemically sophisticated water-borne adhesives, such as fabric glues and acrylic mediums, can be suitable and convenient to use on non-porous substrates.

Heat-activated adhesives, such as dry-mounting tissues and films, are generally suitable for substrates that

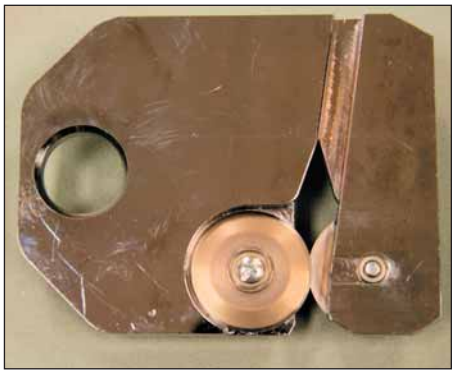
Aluminum sheets can be cut using roller-type cutters, such as this one for a wall-mounted cutter.

A convenient turret holds all three cutting tools used with a wall-mounted cutter—a glass cutter, an acrylic cutter, and a knife for paperboard.

This roller-type cutting attachment is used to cut hardboard.



Robust roller-type attachments like this are used to cut aluminum composite material up to 4mm thick.



can tolerate the heat necessary to activate them but may not adhere adequately to some smooth-surfaced, non-porous substrates. Some water-borne adhesives, such as acrylic mediums, can be applied, allowed to dry, and then heat activated. A variety of mounting substrates are now available with low-temperature, heat-activated adhesives pre-applied, and they are fast becoming the most popular dry-mounting substrates.

Pressure-sensitive adhesives are among the most popular for permanently mounting large items. For example, large digital photos and other graphics can be securely mounted using a pressure sensitive adhesive and rigid substrate in a roller press. Face mounting is a specialty mounting application in which a printed image is permanently mounted to the back of a clear acrylic substrate using a see-through pressure sensitive adhesive and a roller press.

Solvent spray adhesives are convenient to use on all substrates, but their bond is relatively short-lived, and their chemistry can be reactive with some items framed. Aerosol spray adhesives emit toxic fumes and particulate overspray, so they must be used only with adequate ventilation. Pressure-sensitive adhesives can be most suitable for production mounting applications, where the adhesive can be applied by spraying in a specially prepared paint booth incorporating the necessary ventilation equipment.

Mounting substrates of all types are available in various quality grades from suppliers in the art, photography, printing, sign making, and framing industries. Regardless of the industry, the product, or the nature of the mounting, the substrate could be a permanent part of the assembly. Even if the mounting technique is completely reversible, such as for preservation framing, the substrate would probably remain intact unless some sort of damage requires re-mounting it. Because mounting is the only framing process that directly involves a customer's property, all of the care and caution afforded every mounting process extends to the selection, handling, and use of the substrate.

A better quality substrate is essential when the work involves an item of value. Longevity, chemical stability, reversibility, and consistently high-quality results are important for preservation of the item and retention of its collectible value. To assure that you are purchasing a good quality substrate, buy from an established and reputable supplier within the industry.

Lower quality substrates cost less and can be perfectly suitable for work that is purely decorative. In such cases, longevity, collectible value, and preservation attributes are secondary considerations. When in doubt, buy better. Knowledgeable artists, framers, photographers, and other artisans recognize the need to select the proper substrate for every project. Whenever possible, buying from local suppliers can minimize transportation and other acquisition costs. ■

James Miller, MCPF, GCF, founded his framing business, ArtFrame, Inc., in suburban Columbus, OH, in 1988, where he specializes in the preservation framing of art, heirlooms, and three-dimensional objects. Miller, who holds a Bachelor's degree in Business Administration, has served as chairman of the PPFA Certification Board, where he helped develop the MCPF exam, and has been chairman of the FACTS Education Committee. He is also the author of *The Complete Guide to Shadowboxes and Framing Objects*, published by PFM Seminars Books.