



Raphael Stone Collection

TOP EXPERT OF STONE SURFACES

QUARTZ

INSTALLATION MANUAL & FABRICATION INSTRUCTIONS



MANUAL
HANDBOOK

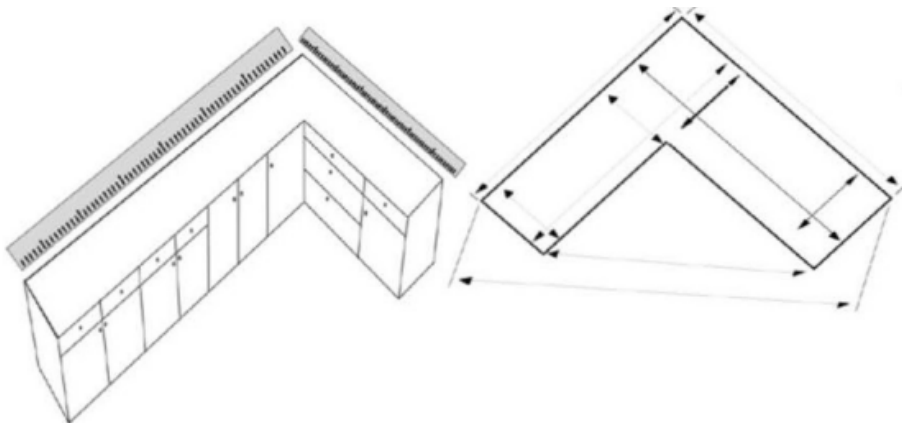


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- Measure all sides.
- Measure all diagonal lengths.
- Measure the midpoints of the cutouts and setbacks.
- Measure the inside dimensions of the base cabinets where the cutouts will settle.
- Note any curvature of the walls or misalignment.
- Measure the clearance from the doors and drawers to the top of the face frames to ensure that laminations won't interfere with their operation.
- Make sure to check with the Fabrication Shop for other important information they might require.
- All corners must have a minimum radius of 3/8".
- Measure for overhangs at standing appliances for clearance and fit.

Note: Remember to have detailed drawings showing the layout, where to place the seams, sinks, appliances, and other information.



SEAM PLACEMENT

When fabricating and installing Raphael Stone products, there are a variety of factors that may make it necessary to seam two pieces of material together

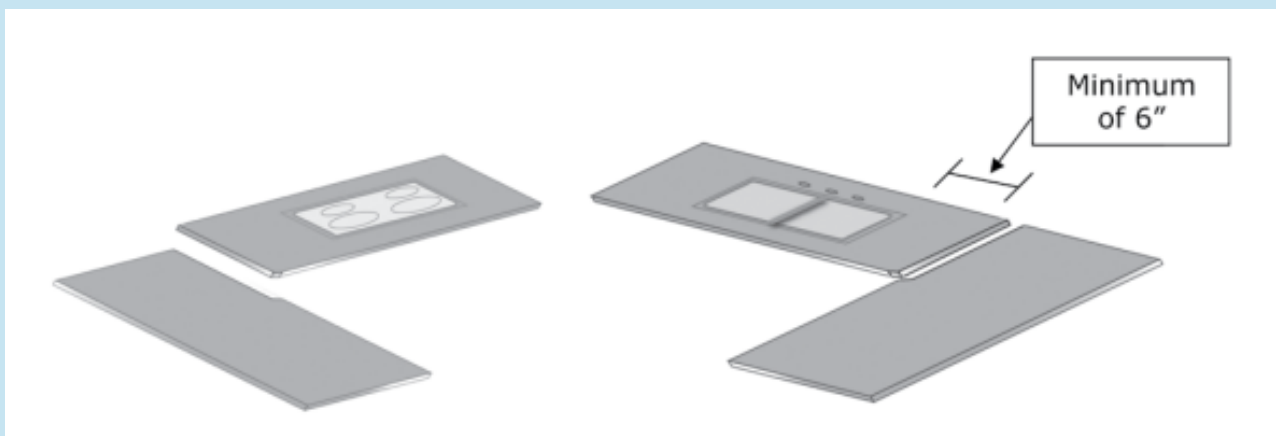
- The length of the top is longer than the slab
- Optimum material yield
- Weight of a finished top size
- Configuration of the finished top

OVERVIEW

- Place seams to get maximum yield of the material.
- Try to minimize the number of seams on the countertop.
- Avoid placing seams over dishwashers or trash compactors.
- Do not place seams within 6" of cutouts (sinks, cooktops, etc.)
- Avoid placing seams within 18" of a finished end.
- All corners must have a minimum radius of 3/8".

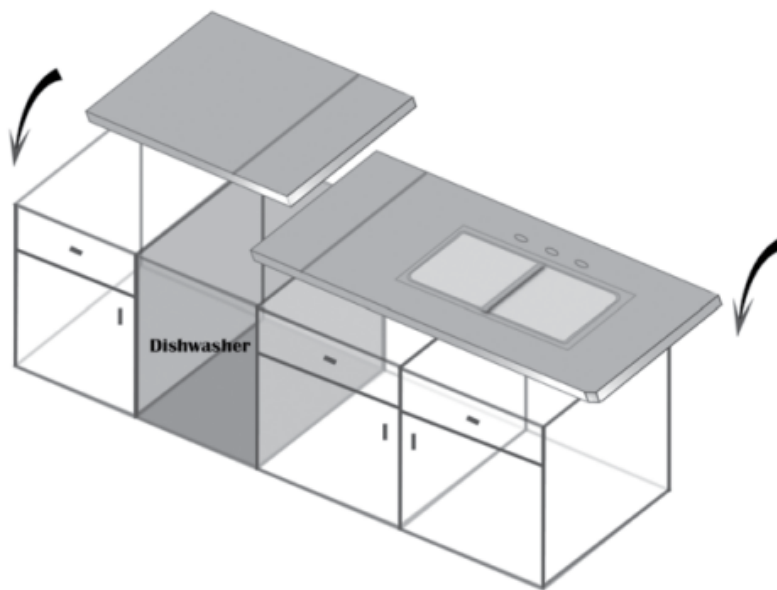
Note: In order to minimize the possibility of cracking, there are several guidelines which need to be followed when positioning seams. Remember, even though the Template Technician will create seam placement when constructing the templates, the Fabricator may ultimately determine the final placement.

All seams should be at least 6" from all cutouts, such as sinks, cooktops, and other appliances. In addition, from an appearance point of view, try to position the seams so that they don't look out of place.



FABRICATION

Seams should be avoided over the dishwasher or compactor. We do not recommend or honor the warranty if a seam is placed over a dishwasher or a trash compactor. It is important to make a note on the templates if a seam has been placed over a dishwasher. The Fabricator may review the layout and try to rearrange the design according to your notes.



"L" SHAPED CABINETS

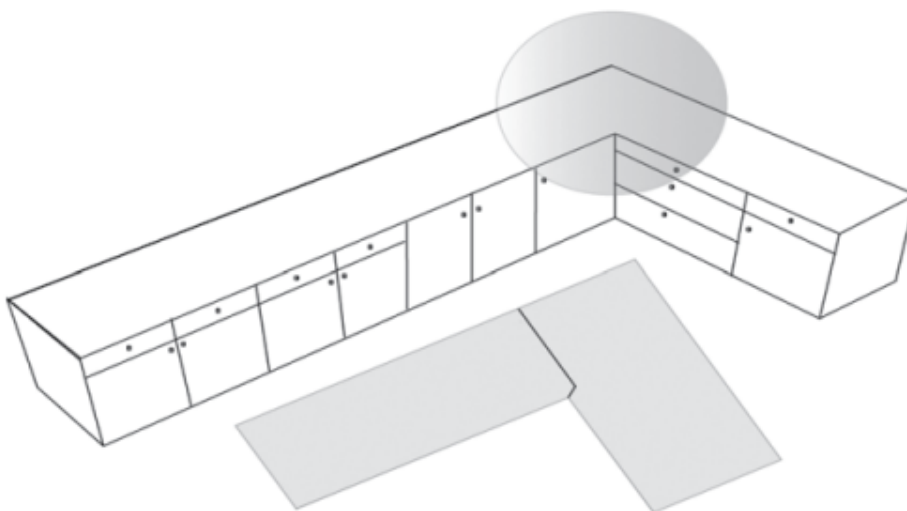
"L" shaped cabinets joined together at an angle are common configurations used to negotiate a corner. When building tops for these areas, it is advisable to place a seam at the corner rather than building on top.

The advantages of seaming the top are as follows:

- Reduced chance of breakage during fabrication
- Reduced chance of breakage during transportation
- Reduced chance of breakage after installation due to stress at the corner
- Improved ease of transporting and handling

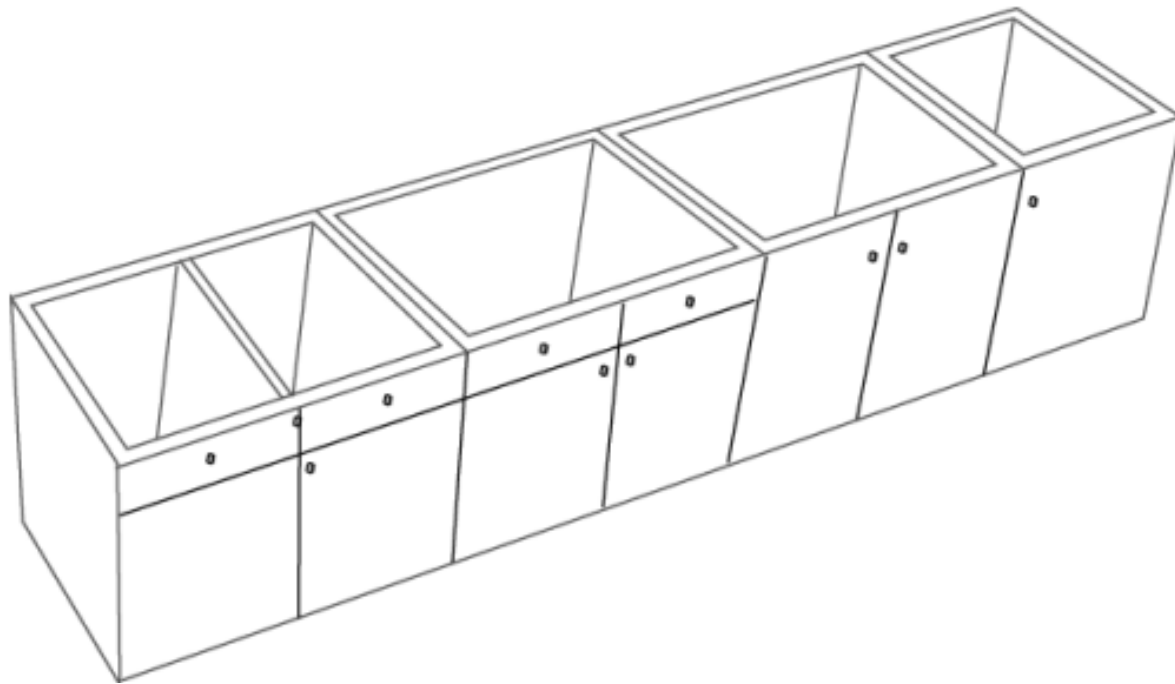
There are three basic seam configurations used in corners as follows:

- Key cut – this is the most efficient seam configuration from the standpoint of material yield and labor costs. (Shown Below)
- 2" return with 1 ½" radius cut on the inside corner – many shops prefer this seam configuration for aesthetic reasons, and to match other inside corners cut like this without seams on the same job.
- Mitered seam – this configuration is not commonly used because of poor material yield and it creates a longer seam that's more difficult to deal with.



SUPPORTS

PERIMETER SUPPORT



PERITIMETER SUPPORT

Similar to natural stone, Raphael Stone is extremely heavy and needs to be supported properly. With 3cm material, the tops can be set directly on top of the properly installed and leveled cabinets, as this provides the perimeter and cross support required. This support is not adequate for 2cm tops, and 2cm profiled edges are generally laminated. For these reasons, we require built-up perimeter support or a full sub-top on our 2cm material.

NOTES

- Recommended material – $\frac{5}{8}$ " or $\frac{3}{4}$ " x 2"
- Moisture resistant MDF
- Moisture resistant plywood
- Particleboard is not acceptable for this application
- Wood strips should be installed continuously along the front and back of the cabinets, and crosswise, (front to back) at the ends, and at a maximum of 3' o. c. (over cabinet partitions) intervals.
- Front-to-back support is also recommended under and along both sides of all seams.

FULL SUB TOP SUPPORT

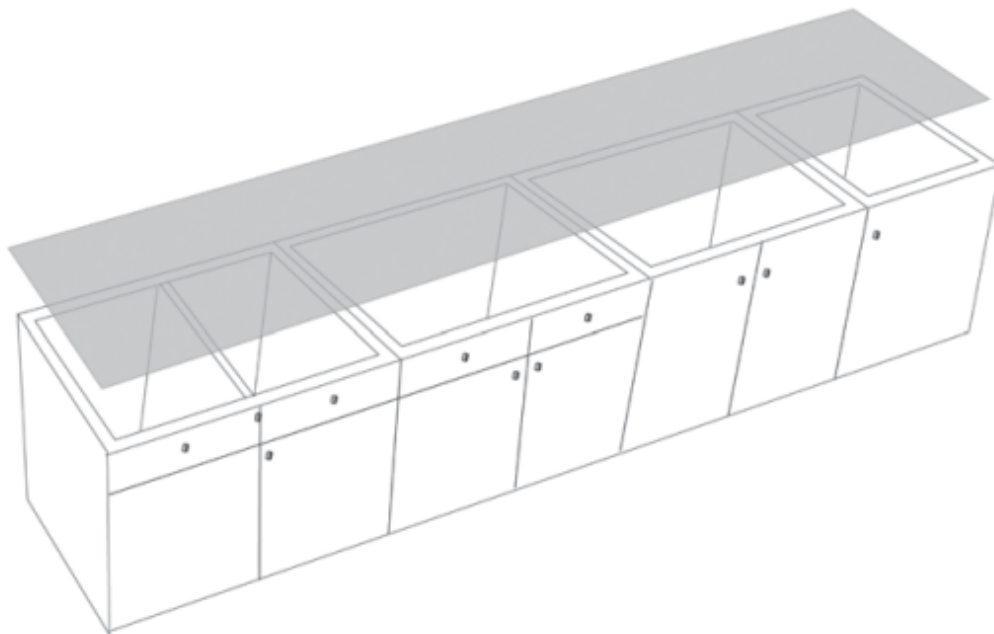
Many installers prefer to use a full sub-top rather than support strips. A full sub-top has some advantages and is required in areas of overhang and cantilever.

Recommended materials for full sub tops

- $\frac{3}{4}$ " moisture resistant MDF
- $\frac{3}{4}$ " moisture-resistant plywood
- Particleboard is not acceptable for use as support.

When installing a full sub-top, do not seam the sub-top material in the same location as the countertop material. Avoid seams in cabinetry whenever possible.

When using either full sub top support or full perimeter support, the material must be attached tightly to the cabinets and be flat and leveled.



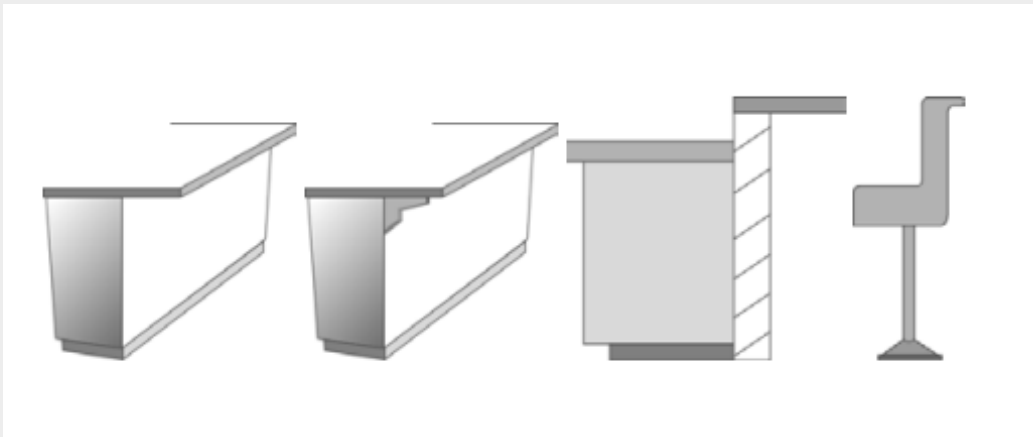
OVERHANG SUPPORT

Depending on the application, you might be required to provide overhang support for the countertop.
Following are some guidelines to follow when working with overhangs.

REQUIREMENTS	2CM QUARTZ	3CM QUARTZ
Support not required	Overhangs under 12". Use full sub tops greater than 6".	Overhangs under 16"
Full sub top with corbels	12" – 18" use full sub top along with corbels evenly spaced at 3' on center or less.	16" – 24" use full sub top along with corbels evenly spaced at 3" on center or less.

REQUIREMENTS	2CM QUARTZ	3CM QUARTZ
Full sub top with legs or columns	Overhangs over 18" use full sub top along with legs or columns connected at the top with rails of adequate size to provide perimeter support.	Over over 24" use full sub tio along with legs or columns connected at the top by rails of adequate size to provide perimeter support.

REQUIREMENTS	Full sub top and bracket or corbel support at 3' on center or less is always required.
Raised bar mounted on top of pony wall	



BASIC MACHINERY

Raphael Stone recommended fabrication shops should be fitted with machinery designed to work with natural quartz surfaces while providing the highest quality possible. Consideration of heavy equipment should be carefully researched and implemented before working with Raphael Stone.

The following chart briefly describes some of the basic heavy machinery used in a fabrication shop. The type of machinery in each shop will differ according to individual needs, and state/federal requirements for safety.

Saw (Bridge Saw)	This is the most important piece of equipment. Bridge saws will cut full slabs of material with greater accuracy, precision, and speed than conventional hand tools. Bridge saws can have many different options ranging from manual to fully automated.
CNC Machine	Computer Numerically Controlled (CNC) Technology. The CNC mill (router) uses digital templates or measurements to automatically cut out, profile, and polish the perimeter of a piece and internal cutouts such as sink holes, etc.
Line Polisher (Single Head)	Machine designed to profile and polish edges in a straight line only.
Line Polisher (Multi Head)	Similar function as the single head polisher but it is capable of much higher production rates.
Handling Equipment	Overhead gantries and jib booms facilitate the movement of material around the shop and the ability to load pieces on the machines without the necessity of forklifts in space prohibitive areas.
Water Treatment	A system of pumps, filters, and settlement tanks is used for the recirculation of shop water.
Air Compressor	Used to supply machines and pneumatic hand tools with sufficient air pressure and volume to operate efficiently.

A fabrication shop, large or small, will require most of the tools listed in this section.

While the following is a brief overview of some of the basic tools and equipment required in a shop in order to fabricate Raphael Quartz, it is not intended to be comprehensive or complete and should not be solely relied upon for information. This overview does not address any personnel safety equipment or requirements. Contact OSHA and your local Employment Development Department for that information.

Handling and Storage Equipment	Fork lift, vacuum lifter or slab clamp, lifting boom, A-frames, slab storage racks, A-frame carts, slab dolly, vacuum cups, work bench/fabrication tables, and racks for finished pieces.
Hand Tools	Rail saw/polishers (air or electric) that are usually 4" and must be variable speed with center water feed. Angle grinders for hand cutting and shaping (min. 5"), router and appropriate profile cutters (4") and clamps for laminating if needed.
Adhesives	The following two component adhesives are commonly used in a fabrication: flow and/or knife grade epoxy, polyester, methacrylate, ester, and penetrating acrylic. Also required are appropriate pigments.
Cutting and Grinding Supplies	Diamond granite blade, properly sized to fit rail saw, turbo diamond blades properly sized to fit angle grinders (4" min. diamond cup wheels), 5" contour blade for cutting radius, zero-tolerance grinding drums 50 & 80 grit, and core bits for faucet or grommet holes (usually 1 3/8" to 2 1/2").
Polishing Supplies	3" and 4" flexible and ridged backer discs (velcro), 3" and 4" polishing pads (50, 100, 200, 400, 800, 1500, 3000 grit), final polish pad, granite polishing powder, and felt pad. Note: grit combinations vary with different manufacturers.
Safety Equipment	Respiratory dust masks, ear plugs, safety glasses, steel toe rubber boots, waterproof aprons, gloves, back supports, and ground fault interrupters for all electrical applications.
Accessories	Tape measures, carpenters square, combination square, bevel square, angle finder, compass, C-clamps, bar clamps, extension cords, air hoses and accessories, 4' level, 8' straight edge, whiteout pens/china markers, rags, acetone or denatured alcohol (preferred), single edge razor blades, propane torch & tips, steel wool, masking tape, and shims.

TEMPLATE TOOLS

- Adequate number of Luan Strips (Usually 1/8" thick, 2" wide, and about 8' long).
- Please check with the fabrication plant for preference.
- Utility knife
- Heavy-duty scissor or shears
- Hot glue gun with extension cord
- Glue sticks
- Cardboard
- Magic markers or Sharpie pens
- Tape measure
- Pen and paper
- Straight edges
- Level 2, 4, or 6
- Square framing or construction protractor
- Sample decorative edges
- Sample corner profiles
- Plastic corner templates (to trace different corners on the template)
- Checklist
- Customer sign-off sheet

Note: Digital templating is available through different manufacturers. Please ask your tool supplier which system will benefit you most efficiently.

INSTALLATION TOOLS

As an installation technician of Raphael Stone, you will require the following tools. Having the right tools for the job will save time and yield professional results.

- Handling Equipment
 - A-frame cart or slab dolly to carry the top from the truck to the installation site
- Safety Equipment
 - Protective gloves
 - Proper safety shoes
 - Safety glasses and dust mask (when cutting materials)
 - Ear plugs
 - Back support
- Straight Edges
 - Various sizes (4' to 8' recommended)
- Level
 - Various sizes (At least 4' recommended)
- Angle Grinder
 - 4 ½" or 5" with diamond blades and cup wheels
- Polisher and Polishing Pads
 - Various pads for any touch-up work and/or other alterations made in the field
- Silicone
 - Variety of colors to match different colored tops
 - Utility grade for setting tops
- Jig Saw or Circular Saw
 - Used to cut out holes in the sub-top if applicable (i.e. sinks, cooktops) or other woodworking applications such as filling in missing cleats, cutting prop sticks, etc.
- Basic Tools
 - Hammer
 - Tape measure
 - Combination square
 - Framers' square
 - Hand tools such as screwdrivers, chisel, and flat pry bar, etc.
- Seaming Kits
 - 2-part knife grade polyester
 - Variety of color pigments to match the top
 - Spatula or putty knife for mixing and applying glue
 - Seaming Clamps

- Drill
 - Core bits for any necessary drilling (various sizes)
- Shimming materials (only to align the top for seaming)
- Vacuum
- Masking tape
- Single-edged razor blades
- Steel wool (#0)
- Acetone or denatured alcohol to clean excess adhesive and tools
- Clean rags
- Masking tape
- Roll of utility paper to protect finished floors in path of install
- Saw horses for cutting on tops outside
- Checklist and customer sign-off sheets

ADHESIVE APPLICATION

Basically there are two types of silicone used in a typical Raphael Stone installation:

- 100% pure silicone is used to fix the tops to the substrate and glue the splash or other vertical pieces to the wall as well as sealing any seams between pieces.
- Paintable silicone is used to caulk between stone and wall connections

NOTE

Many Distributors carry colored silicones which can be used to caulk splash to countertop connections with very good results, but colors are usually do not exactly match the stone colors.

Many installers prefer to use a semi-transparent or translucent silicone which tends to take on the color of the stone and create a more acceptable caulk joint.

NOTE

Polyester is a two-component glue consisting of adhesive with about 3-4% hardener added to it to cause the mixture to cure. Once the proper amount of hardener is added, the mix will be workable for about 10 minutes, depending on the temperature of the air and the surface. Clamps can be removed and work on the pieces can begin in about 30 to 45 minutes.

In the natural quartz surface industry, many companies use polyester to seam materials together. Whether seaming two countertops or laminating a built-up edge for profiling, polyester is the most versatile adhesive due to its fast cure time, ability to color match, and great bonding qualities to engineered stone.

Polyester is colored using different tints designed specifically for polyester. These colors are combined to match the stone being used and are added to the adhesive before the hardener is added.

TIP

When mixing and matching colors, place two scrap pieces of the stone to be matched together side by side, creating a simulated seam. Knife the colored glue in the seam. It will be obvious whether you need to lighten or darken the color in the finished mix.

TIP

Please consult your Distributor regarding adhesive recommendation for Raphael Stone.

Methacrylate ester is a two component adhesive that is also commonly used in quartz surface fabrication and installation. Although not as versatile as polyester because the color is pre-mixed and cannot be adjusted, this adhesive is much more convenient because it is dispensed and automatically mixed with a caulking gun with mixing tips, making the application much quicker and with far less clean up. Methacrylate adhesives can be used in all applications where polyester would traditionally be used.

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