



## Solid Acrylic Technical Manual

Element Designs is the leading manufacturer of custom aluminum frame doors in North America. All of our doors are built to our customers' specifications within 1/16". Our aluminum frame door program offers numerous profile options in several finishes and a vast selection of inserts to accent virtually any interior application.

Element Designs can provide complete door systems with sliding hardware and guides/ rails cut to size, making the door installation process simple.

Our customer service, quick lead times and quality are the foundation of our company. Our nationwide network of sales representatives and distributor locations provide a superior level of support to our customers and are always available to assist you with your order.

|  |    |
|--|----|
| Color Options .....  | 3  |
| 18mm dECOLuxe Solid Acrylic Edge Radius Options & Integrated Pulls ..... | 4  |
| 4mm High Gloss Solid Acrylic Door Inserts & Panels .....                 | 5  |
| Edge Banding .....   | 6  |
| Hinge & Handle Options .....   | 7  |
| Hinge Quantity Recommendation .....                                      | 8  |
| Cleaning & Care Instructions .....                                       | 9  |
| Bonding Guidelines .....   | 11 |
| Working with dECOLuxe Solid Acrylic .....                                | 13 |
| Sustainability & Environmental Statement .....                           | 15 |
| Warranty .....   | 16 |

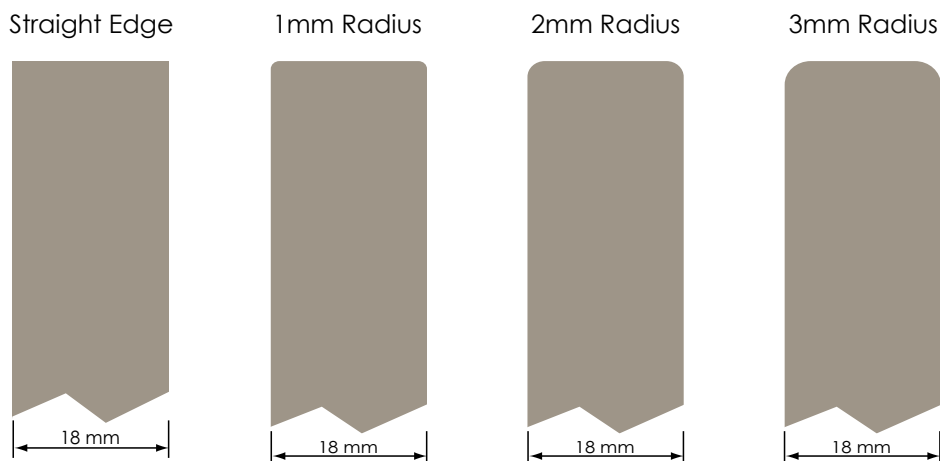
### Color Options - 18mm



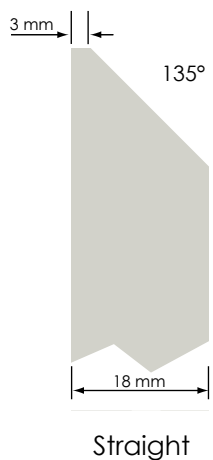
Images may not be exact representations of solid surface color options. Contact Element Designs to obtain samples.

18 mm dECOLuxe Solid Acrylic is available as cut to size, finished & polished doors, panels, or drawer fronts

### Edge Radius Options



### Integrated Pull Options



- All edges, front and back have high gloss finish
- Functional and decorative hardware borings can be pre-drilled upon request. (See dECOLuxe Solid Acrylic Quote/Order Form)
- Any fabrication beyond basic hardware boring after delivery voids warranty.
- Straight edge option is slightly broken (approx. 0.5mm radius)
- Maximum panel/door size is 1m x 3m (~39" x ~118")
- 18mm dECOLuxe Solid Acrylic weighs 4.42 lbs/SF
- Not recommended for use on horizontal surfaces

### 4mm dECOLuxe Solid Acrylic Insert Options



4mm dECOLuxe Solid Acrylic is available as inserts to aluminum frame cabinet doors, full sheets 1m x 3m (39" x 120") or cut to size for decorative panel and appliance applications

- High gloss solid surface material
- dECOLuxe Solid Acrylic inserts **not** available with AF006 or AF010 profiles
- Inserts are 5/32" (4mm) thick
- UV and fade resistant
- Easy to clean and water resistant

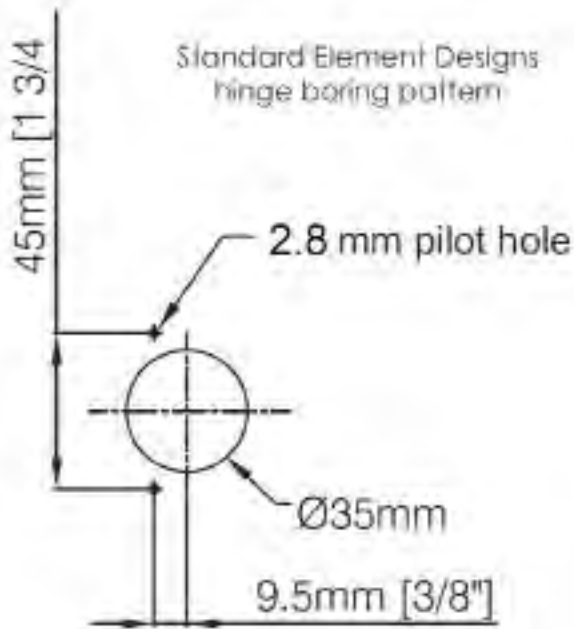
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Matching edge banding and 4mm dECOLuxe Solid Acrylic cut to size panels offer a complete cabinet finishing solution.

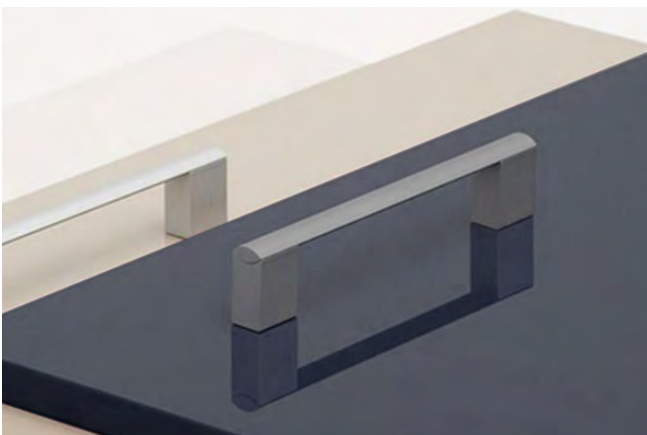
- Minimum order quantity is 1 roll.
- 328 ft/ roll
- 1" (25.4mm) wide
- 0.023" thick
- Not recommended for use on horizontal surfaces
- Contact Element Designs for inventory status of matching dECOLuxe Solid Acrylic edge banding color. Not all colors available.





### Hinge Options

- Supports concealed (European) hinges for frame and frameless cabinets.
- Maximum hinge cup depth is 12.7 mm (1/2")
- If using a hinge that is outside of Element Designs' standard pattern, customer must specify hinge manufacturer and provide boring pattern at time of order.
- For 35mm cup hinge: 3" min. from top and bottom of door to center of cup (X2 dimension on order forms)
- Failure to use hinge screws provided by Element Designs for both aluminum frame doors and 18mm dECOLuxe Solid Acrylic doors will void all warranties
- Must use screw-on type hinge
- Door height & weight will determine number of hinges needed
- Download 18mm dECOLuxe Solid Acrylic door weight calculator at [www.element-designs.com](http://www.element-designs.com)

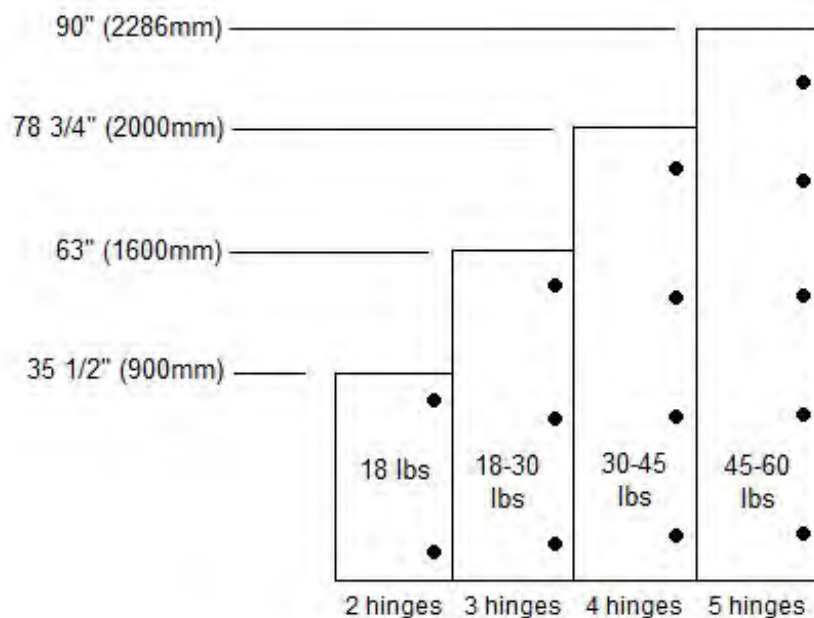


### Handle Options

- Standard handle hole dia. = 4.37mm (11/64")
- Handle location must be specified at time of order, if Element Designs is expected to fabricate

## Door Hinge Quantity Recommendation Chart

The number of hinges required is dependent on the size and weight of the door. Use the diagram below to determine the required number of hinges.



(All doors are 24"W on chart for calculation purposes)

- Hinge quantity and location requirements may vary by hinge manufacturer.
- This chart reflects doors without accessory hardware.

## Door Weight Calculation - 18mm dECOLuxe Solid Acrylic Doors

4.42 lbs / Sq. Ft.

### Example: 36"H x 24"W 18mm dECOLuxe Solid Acrylic Doors

$$36 \times 24 = 864$$

$$864 / 144 = 6 \text{ sf} \times 4.42 \text{ lbs/sf} = 26.52 \text{ lbs}$$



## Simple Cleaning and Care for 4mm & 18mm Doors

dECOLuxe Solid Acrylic has a smooth and non-porous surface. This means that dirt does not easily adhere to the material. When cleaning, use only lukewarm water with a few drops of mild dish detergent. It is recommended that a soft, lint-free cloth be used for cleaning dECOLuxe Solid Acrylic. This cloth should be thoroughly rinsed before use.

Element Designs recommends ACRIFIX AC 1010 cleaner. (Available in 4oz and 16oz spray bottles.)

Never wipe away dust with a dry cloth! This can scratch the material.

Do not use scouring powders or other abrasives. Do not use care products that contain oil.

Components made from dECOLuxe Solid Acrylic must not come into contact with organic solvents such as thinners, alcohols, fuels, acetone (nail polish remover), benzene, or carbon tetrachloride.

### Removal of marks:

Polishing removes marks, such as scratches, and seals the surface. Polishing should only be done after dECOLuxe Solid Acrylic is thoroughly cleaned and dried. Never use paper towels to clean or dry dECOLuxe Solid Acrylic as they can cause fine scratching on the surface.

Polishing is best accomplished by using a lint-free cloth with a polish. Using an electric polisher with the proper amount of polish can produce a smooth surface finish.

Deep scratches on the surface have to be removed by a progressive step wet sanding, finishing with an 800-grit abrasive, prior to polishing.

The final step is to carefully remove all polish residues. This should be done with the ACRIFIX AC 1010 cleaner, supplied by Element Designs.

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## Polisher

Perfect-it from 3M, product number 09639 or an equivalent product is recommended for polishing.

## Finish

ACRIFIX AC1010 plastics cleaner made especially for dECOLuxe Solid Acrylic is available from Element Designs and offers the following advantages:

- Prevents electrostatic charges to reduce attraction of dust.
- Makes dECOLuxe Solid Acrylic easy to care for and clean
- Available in two sizes from Element Designs: 4oz. and 16oz.

Moisten a soft cloth with ACRIFIX cleaner. Apply by wiping the surface. Let the film formed on the surface dry. Do not try to rub.

Since a felt belt, buffing wheel or glove fabric are very soft materials, the surface that is to be polished must be finely finished ahead of time. If this is not the case, the surface will be shiny and scratches will remain visible.

When getting started on sheet edges, it is a common practice to begin by using a scraper to remove gouges and coarse scratches prior to wet sanding and polishing.

Make sure you do not overheat the surface of the material during the polishing operation as this can cause thermal damage and localize stress in the surface.

### Preparing the Surface:

Since many substrates may have various surface characteristics, it is very important to prepare surfaces properly. This should be done on the same day that you apply the adhesive. The following are guidelines for preparing various substrates.

#### Wood, Plywood, Particleboard, MDF, Gypsum Wallboard or Plaster

Remove all loose dirt, dust, paint, old adhesive or other debris.

#### Concrete, Masonry or Stone

Use a wire brush to remove all old adhesive, dirt, dust or loose debris. All contaminants and impurities must be cleaned off, such as concrete form and release agents, water repellents and other surface treatments and protective coatings. If you are negligent in the cleaning process, it can change the entire end result. Cleaners designed for this purpose, such as TSP are recommended to assure a long-lasting adhesive bond between surfaces and dECOLuxe Solid Acrylic.

#### Aluminum

Surfaces to be bonded should be cleaned with a solvent, such as denatured alcohol, to remove oil or other contaminants that could prevent good adhesion. When using solvent, always wipe the surface dry with a clean, uncolored, cotton cloth. Never allow solvent to air dry or evaporate without wiping.

**Caution:** Only use these solvents in a well-ventilated area and follow all safety precautions and instructions listed on the Material Safety Data Sheets. When solvents are used, proper safety precautions must be observed.

### Adhesive Selection:

When selecting an adhesive for dECOLuxe Solid Acrylic, a few questions regarding the adhesive must be answered before using it.

- Is the adhesive compatible with dECOLuxe Solid Acrylic?
- Will the adhesive adhere to both surfaces?
- Will the cured adhesive allow for thermal expansion and contraction on dECOLuxe Solid Acrylic?

Element Designs recommends the following low VOC adhesives when bonding High Gloss Solid Acrylic to the substrates listed:

| Substrate                           | Adhesive                           |
|-------------------------------------|------------------------------------|
| Wood, Particleboard, MDF or Plywood | Axion High-Tack                    |
|                                     | DAP Phenoseal Vinyl Adhesive Caulk |
| Gypsum Wallboard or Plaster         | Axion High-Tack                    |
|                                     | DAP Phenoseal Vinyl Adhesive Caulk |
| Concrete, Masonry or Stone          | Axion High-Tack                    |
|                                     | DAP Phenoseal Vinyl Adhesive Caulk |
| Aluminum                            | Axion High-Tack                    |
|                                     | DAP Phenoseal Vinyl Adhesive Caulk |
| PARAPAN®                            | Evonik Acrific 2R0190              |

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## Recommended Adhesive Sources

AXION LTD.  
 171 Creekside Drive  
 Amherst, NY 14228  
 P) 716-691-4990

DAP Products, Inc.  
 Phenoseal Products  
 2400 Boston Street, Suite 200  
 Baltimore, MD 21224  
 P) 410-779-3265

## Adhesive Dispensing Equipment Sources

Proper dispensing equipment can make the project easier. Below are some dispensing equipment options for consideration:

Cox North America: 61004 HP (pneumatic) or 41001 XT (manual)

Caulkmaster: PG110 (pneumatic)

Newborn Brothers: 250 (manual)

## Installation Requirements

Proper conditioning of dECOLuxe Solid Acrylic along with other materials being used in the assembly, will minimize shrinking or expansion of the final installation. Ideally, all components should be conditioned at 70° F to 75° F and relative humidity at or below 45% for 48 hours prior to installation.

## Adhesive Application

Remove the white protective masking from the dECOLuxe Solid Acrylic. Follow the adhesive manufacturer's recommendations. Dispense the adhesive onto one of the surfaces to be bonded. Starting at approximately 1 1/2" to 2" from one edge, place rows of quarter sized "dots" about 6" apart over the entire surface.

Place the panel against the surface to be bonded. Make any adjustments necessary and compress the adhesive using a J-roller or comparable tool.

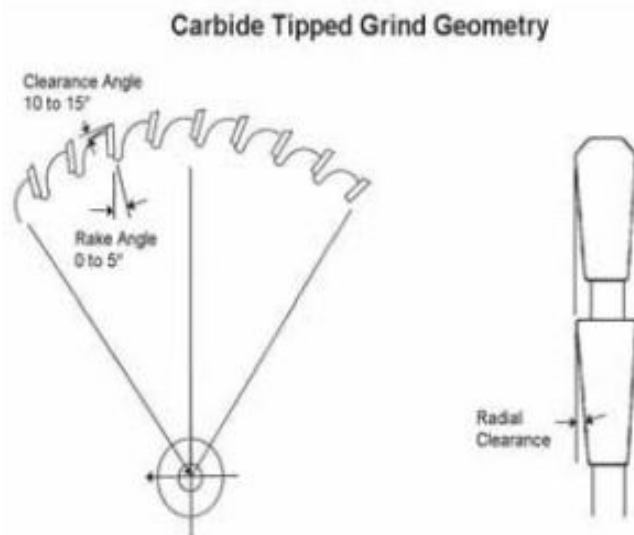
## 1) Cutting High Gloss Solid Acrylic on Circular Saws

Carbide tipped “Triple Chip Grind” (TCG) saw blades provide the best results and long service life.

When selecting a blade, the number of teeth selected should provide 2 to 4 teeth engaged in the cut, although 3 teeth engaged in the cut is considered optimum.

The following recommendations apply to Carbide Tip saw blades:

- Clearance angle - 10° to 15°
- Rake angle - 0° to 5°
- Cutting speed - 3000m/min (9,000 to 10,000 ft./min)
- Tooth spacing - 5 to 8mm (3/16" to 5/16")



A moderate setting should be chosen for the feed rate. This means that the feed rate should create even pressure allowing the blade to cut smoothly. This cutting action will help avoid splintering or chipping at the sheet edges. A feed rate that is too low will create friction and heat the cutting edge, resulting in thermal stress and melting in the area of the cut.

## 2) Drilling 4mm and 18mm High Gloss Solid Acrylic

In order to be able to use a spiral bit with dECOLuxe Solid Acrylic, the tip angle, which is normally 120°, must be reduced to between 60° and 90°. The rake angle must be ground down to a value between 0° and 4° degrees. This bit modification intentionally creates a scraping action instead of aggressive cutting. This also helps prevent the drill from damaging the sheet when it passes through the back of the sheet. The clearance angle should be 3°.

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Clearance angle - 3° to 8°

Rake Angle - 0° to 4°

Twist Angle - 12° to 16°

Tool surface speed - 10 to 60 m/min (30 to 200ft./min.)

Feed rate - 0.1 to 0.5mm/rotation (.003" to .020" per revolution)

In order to get a smooth wall surface following drilling, it is necessary to have an optimum combination of cutting speed and feed rate. If drilling is done correctly, uniform continuous chips will form when drilling. If the speed is too low, and/or the feed rate is too high, then irregular chips form and the drill hole will not be clean. If the speed is high and the feed rate is too low, overheating will occur along with poor chip evacuation resulting in chip melt and fusion.

When drilling, cooling is particularly important. For material thickness greater than 5mm, drilling emulsion or drilling oil compatible with acrylic material should be used for cooling or lubricating respectively. Cooling can also be accomplished by applying compressed air while drilling.

For thick-walled material, deep drill holes and blind holes, the drill should repeatedly be removed from the drill hole, in peck drilling process. This will help to avoid overheating of the material. This can be accomplished manually or programmed for automated machining.

dECOLuxe Solid Acrylic is a modified acrylic base material with a new standard in high gloss surfaces and acrylic is one of the most easily recycled plastics. It can readily be recycled many times without losing its properties. All dECOLuxe Solid Acrylic can be “reverse-polymerized” to yield the original base chemical, PMMA, which can then be used again.

- dECOLuxe Solid Acrylic does not contain components such as formaldehyde that can result in the release of harmful vapors or gases
- dECOLuxe Solid Acrylic is free of plasticizers
- dECOLuxe Solid Acrylic does not contain lacquers, paints or adhesives
- dECOLuxe Solid Acrylic is fully recyclable. It can be reduced to raw material and polymerized again
- dECOLuxe Solid Acrylic is bisphenol A FREE
- dECOLuxe Solid Acrylic is produced in a manufacturing facility that meets the requirements of ISO14001
- dECOLuxe uses PMMA (Polymethyl Methacrylate) which is the only plastic that can be recycled back to its original raw material: Monomer.
- During manufacturing, dECOLuxe uses less water and generates less CO<sub>2</sub> than standard cast acrylic sheets.
- VOC (Volatile Organic Compound) and HFC (Hydrofluorocarbon) free.

Product definition: dECOLuxe Solid Acrylic is made from acrylic (polymethyl methacrylate, PMMA) and includes both 4mm and 18mm thicknesses.

Element Designs' dECOLuxe Solid Acrylic products are covered by a warranty from defects in material and workmanship for 10 years. The warranty includes any defects in the fabricated size, surface finish or flaws outside of quality standards.

Element Designs also warrants that dECOLuxe Solid Acrylic will not undergo a change in color (delta E<5, CIE76) for five (5) years from the purchase date as tested in accordance with the procedure specified in ASTM D1003 (Hunter Lab, D65 illuminant/ 10° observer angle). This warranty does not cover dECOLuxe Solid Acrylic exposed to artificial light sources emitting intense amounts of UVB or high energy radiation. This color change warranty applies only to the following colors: 5196, 5907, 5910, 5290, 5772, 5773, 5510, 5525, 5295, 5570, 5771 and 5299. Since new colors will be added periodically, check with Element Designs for the most current listing.

Not covered under this warranty are changes in color due to acts of the customer or any third party, violation of any part of this warranty, or due to the presence of dirt, scratches, breakage, exposure to chemicals, incompatible materials or excess heat or other damage to dECOLuxe. This warranty does not apply if, in the sole judgment of Element Designs, the product's failure was due to damage from shipment, handling, storage, accident, abuse or misuse, or if it has been used or maintained in a manner not conforming to the product's care instructions, has been modified in any way, or has been defaced.

The maximum liability of Element Designs is the purchase price of the product supplied (or to have been supplied) hereunder in respect of which damages are claimed.

- The Element Designs warranty on this product shall apply only if the product is stored, transported and installed according to the manufacturer's recommendations and applicable building codes.
- This warranty shall not cover product that is improperly installed, fastened, cleaned or exposed to incompatible materials, components or chemicals.
- Repair by anyone other than an Element Designs approved agent voids this warranty.
- This warranty applies only in North America.

THE FOREGOING IS THE SOLE WARRANTY APPLICABLE TO dECOLuxe SOLID ACRYLIC SHEET/ PANELS. ALL OTHER REPRESENTATIONS, GUARANTEES OR WARRANTIES, WHETHER EXPRESSED OR IMPLIED, AS TO THE PRODUCT'S MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE (EVEN IF SELLER IS AWARE OF SUCH PURPOSE), ARE HEREBY EXPRESSLY EXCLUDED.

The sole liability of Element Designs in respect of any product claim shall be the replacement of any panels found by Element Designs not to meet the standards of this warranty or, at the sole option of Element Designs, the refund of the purchase price for the non-conforming products. Element Designs shall have no liability under any circumstances for the cost of removal of defective product or the installation of replacement parts, or for damage to property, or for indirect, special, incidental, consequential, or other damages, and regardless of whether the claim is based on warranty, contract, tort, strict liability, negligence or otherwise.

In order to make a claim under the foregoing warranty, write to Element Designs, PO Box 7747, Charlotte, NC 28241 or write or call your nearest authorized dECOLuxe Solid Acrylic supplier. If you write, be sure to include your address and a phone number where you may be reached. An Element Designs representative will contact you to examine the parts. At such examination you will be required to present to the representative a sales slip or other evidence satisfactory to Element Designs that you purchased the dECOLuxe within ten (10) years from the date of your claim.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.





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