Technical Information

ACRYLITE® Hi-Gloss

Machining and Installation of ACRYLITE® Hi-Gloss

Brilliant Solutions for Stylish Applications

Clear, high-gloss ACRYLITE® is coextruded over a color-effect layer in just one operation, adding a glossy touch to all your applications. The outstanding optical and mechanical properties of ACRYLITE® make it an excellent choice for designing stylish interiors.

Using the Right Tools for Success

1. Waterproof marker
2. Medium to fine machine file
3. Scraper
4. Spray bottle
5. Hole saw max Ø 60 mm (for machining plastics and acrylic)
6. Step drill
7. Conical drill
8. Countersink
9. Metal drill with correct grinding for acrylic (point angle 60° to 90°)
10. Flush cutter with stop ring
11. Contour cutter with stop ring
12. Jigsaw blade with straight teeth and tooth pitch of 2.5 mm
13. Circular saw blade ATB or TEG for cutting acrylic

Ideally, tools should only be used for machining ACRYLITE®

Cleaning and Care of ACRYLITE®

Dirt finds it hard to adhere to the perfectly smooth surface of ACRYLITE®. Using a damp soft, lint-free cloth and dishwashing liquid, dusty surfaces can be cleaned. Do not rub dry.

Microfiber cloths dampened with water have a good and practically smear-free cleaning effect.

In the event of heavier soiling, particularly with grease, VM&P Naphtha can be used to clean ACRYLITE®.

Suitable cleaning agents are:

- lukewarm water with a little dishwashing liquid
- vinegar diluted with water
- isopropyl alcohol (2-propanol)
- VM&P Naphtha
- soft, damp sponge
- soft, damp non-lint cloth
- sponge cloth
- chamois
- shower squeegee with soft rubber lip
- damp microfiber cloth for the final touch

TIP: Abrasive cleaning agents should never be used to clean acrylic.

Machining ACRYLITE®

Drilling

Commercially available twist drills (for metal) always have to be ground correctly before using them on acrylic.

Always predrill recesses and apertures in the corners of cut edges and cut them out with a jigsaw or overhead template router.

Please bear in mind the following when drilling:

- Position the drill slowly and carefully when you start drilling.
- Slow the feed just before the bit exits the bottom surface. The aim is to ease the drill through gently (possibly place a sheet of wood underneath).
- Use tap water for cooling. Commercially available step drills and conical drills have proved especially suitable when working on site with a manual drill.

Step drill

This one-edged drill does not leave any chatter marks and guarantees clean cylindrical bores. With each subsequent drilling step, the hole is simultaneously chamfered.

Conical drill

The drill holes are slightly conical, but there is no chipping on the exit side of the hole. Pay attention to a triple-edge design.

Routing

When working with overhead template routers, bear in mind the following:

- Only use immaculate, sharp cutters.
- The cutter shaft must be inserted in the collet chuck deep enough to fill this completely.
- The work pieces must always be firmly clamped. If possible, start by cutting a larger work piece and then sawing it into smaller sections.
- Always guide the work piece against the cutting direction (opposed routing).
- Perform a trial cut on a piece of ACRYLITE® and check the setting of the overhead template router.
- Always work with a stop and/or a template.

Sawing

The standard machines used for wood and metalworking are suitable for machining ACRYLITE®. Non-vibrating high-speed machines provide clean cut edges.

A guide rail or parallel stop is used to safely guide the circular handsaw.

Circular handsaws and circular table saws

When cutting ACRYLITE® to size, the blades of circular handsaws or of circular table saws should protrude only slightly beyond the sheet.

- Always use carbide-tipped saw blades.
- Teeth: TCG or ATB
- Tooth pitch: ~ 13 mm
- Always work with a stop.
- Carefully saw into the sheet with the saw running.
- Make sure that cutting is exact.
- Do not tilt the material.
- Hold the sheets to avoid chatter
- Saw at an average feed rate.

Jigsaws

- Only use saw blades with straight teeth and a tooth pitch of 2.5 mm.

- Only tackle the work piece with the saw running. Place the shoe firmly on the masking film of the sheet.
- Set an average cutting speed and adjust stroke action to zero.
- Select average feed rate.
- Cool with tap water.
- Keep water from splashing into the machine.

ACRYLITE® GP and FF

Clearance angel	3“ to 8“
Rake angle	0” to 4"
Point angle	60” to 90”
Angle of twist	12” to 16”, usually 30”
Cutting speed	10 to 60m / min
Feed	0.1 to 0.3 mm/rev

TIP: Cool thoroughly with water, especially when working with spiral drills, conical drills, hole saws and jigsaws.

Edge Treatment

By sanding and polishing, parts of ACRYLITE® whose cut edges have become rough and dull during machining can be restored to their original high gloss and transparency.

Routers with ball bearing bits require no other guides and can be used both for straight and curved edges.

- Always perform wet sanding (prevents thermal stress in acrylic and clogging of the abrasive surfaces).
- Sanding is performed in three steps:
- coarse, 80–240 grit
- medium, 400 grit
- fine, 600–1000 grit
- For polishing, use waxes, pastes or commercially available car polish.
- Use very soft materials for polishing, such as glove-lining fabric or a buffing wheel.
- Remove traces of polish after treatment and clean the edges with water or petroleum ether.

Deburring the edges

- Sawn or routed edges can be smoothed and deburred using a scraper or machine file.

Profiling the outer edges

- The edges can be given the desired form using a profile router with ball bearing bit.

TIP: It is quite sufficient to smooth or debur the edges with a scraper if they are concealed once they are installed (e.g., by a light switch).

Preparing the Sheet for Installation ACRYLITE® Sheet

The ideal sheet size

When installing the sheets, allowance must be made for expansion of the sheets on all sides due to heat and moisture. For use indoors, at least 1/8” must be allowed per meter of length and width. This should be considered when ordering the sheets.

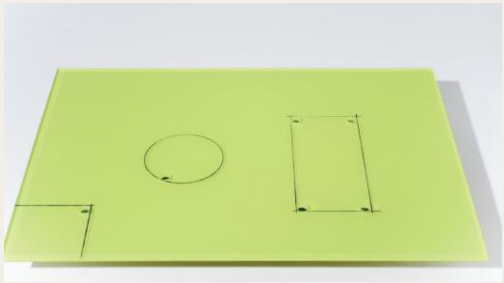
Masking film

ACRYLITE® sheet is protected with polyethylene film. The masking film must be left on the clear-transparent side of the sheet until it is put to its final use, and should normally be left on the sheet underside until machining is completed. If the masking film is no longer in place, the area to be machined should be covered with masking tape.

Marking out

Please bear in mind the following when marking out:

- Leave the masking film on the ACRYLITE® sheet during machining.
- Only mark drill holes, cut edges and contours on the masking film.
- Do not use scribers or prick punches.



Always mark recesses and apertures on the masking film and predrill holes in the corners of cut edges.

Drill holes and recesses

Please bear in mind the following when drilling and cutting recesses:

- Place the ACRYLITE® sheet on a flat and stable surface.
- Turn the clear side up
- Transfer the dimensions of any recesses to be made (e.g., for switches) to the masking film.
- Drill holes in the corners of the recesses.
- Debur drill hole edges.
- Cut recesses or openings using a jigsaw or overhead template router.

TIP: Always predrill holes in the corners of edges to be cut when routing or sawing recesses or openings. This prevents notch effects and possible sheet breakage. The holes should have a diameter of at least 3/8". All machined edges should be deburred.

Preparing the Substrate

There is a suitable method for fastening ACRYLITE® Hi-Gloss to almost any substrate.

Substrate and installation surface

The right substrate

The following substrates and carrier materials are particularly suitable for installing ACRYLITE®:

- waterproof gypsum wallboard
- coated* moisture-resistant chipboard
- coated* MDF panels
- firmly installed mirror tiles
- lath and plaster partition treated with adhesion promoter
- stone (brick, sand-lime brick) or concrete wall painted with latex paint

*coated at the points where the adhesive tape is applied. The coated surfaces must be completely dry and cured.

Preparing the substrate

Please bear the following in mind when applying the bonding method:

- If tiled surfaces are to be covered, remove any loose tiles.
- Fill any spaces with tile fragments and tile adhesive.
- There must be no parts on the wall that protrude.
- Countersunk head screws (e.g., used to install wall sheets) must be flush with the wall.
- Substrates must be clean, dry, flat, dust- and grease-free, solid and load-bearing.
- Chemical interaction with the substrate must be excluded.

TIP: Always pay attention to adhesive tape manufacturers' statements on the subject of "ideal carrier materials."

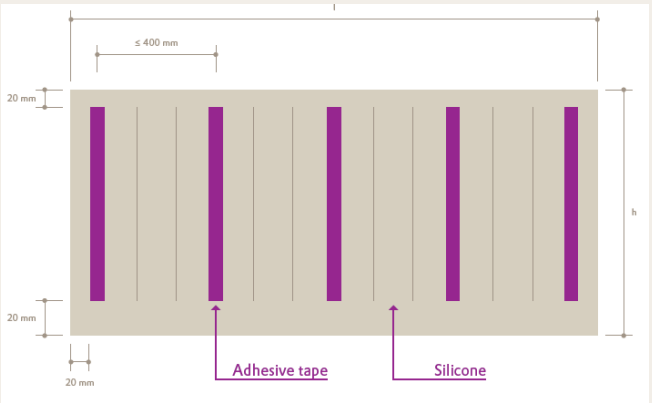
Wall Installation: Permanent Connection

ACRYLITE® Hi-Gloss instead of tiles in the kitchen

Since direct bonding cannot be corrected, it is advisable to perform two or three "dry runs" before removing the masking film.

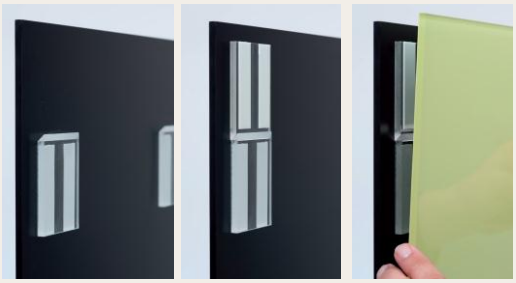
Test the load-bearing capacity of the substrate using parcel tape.

- Remove the masking film from the colored reverse side and clean with petroleum ether or a mix of 30% denatured alcohol and water.
- Fix 1" wide double-sided mirror tape using a pressure roll according to instructions.
- Apply neutrally crosslinking silicone in strips between the strips of adhesive tape.
- The silicone beads should be approximately 1/8" high.
- Attention to the processing guidelines of the silicone manufacturer.
- Remove paper from the adhesive strips.
- Hold the sheets at a 45° angle to the flat substrate so as to avoid contact with the wall as yet.
- Straighten the sheet and press it against the wall using a spirit level. Press the sheet firmly against the wall to ensure that the adhesive tape is in contact with the substrate.
- Leave the neutrally crosslinking silicone to cure for 24 hours.
- Remove the masking film and seal the joints with silicone.



TIP: Pressing the sheet against the substrate using a level ensures that the silicone is evenly distributed and spreads to the thickness of the mirror tape. Care should be taken to prevent silicone from getting onto the adhesive tape.

Wall Installation: Removable Connection



Fasten lock (A) by bonding or screwing it to the wall.

Insert key (B) in the lock. Remove masking film from the doublefaced adhesive tape.

Hold ACRYLITE® Hi-Gloss at an angle in front of the wall and press it against the wall.

Installation variant 2: Temporary connection

The advantage of the key and lock principle is that the sheets can be quickly and easily removed, which is important if extensions are built or pipe and supply systems need to be adapted.

But these are not the only cases where temporary connection is advantageous. It also makes it easier, quicker and less expensive to renovate, or change color schemes. Fastening material for the key and lock principle: moisture-resistant wood, plastic or metal.

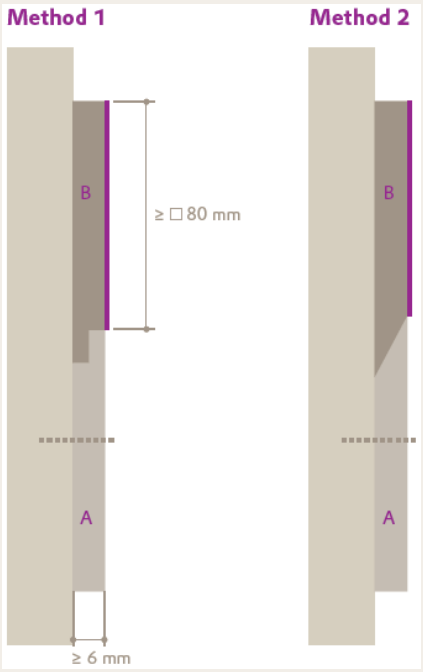
Regardless of whether variant I or II is used, the A piece is always bonded or screwed to the wall.

TIP: If using wood, coat the bonding area with clear varnish or paint beforehand.

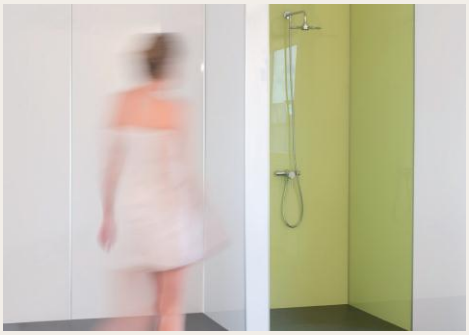
Always bear in mind the regulations of the adhesive tape manufacturer.

Prepare the wood accordingly.

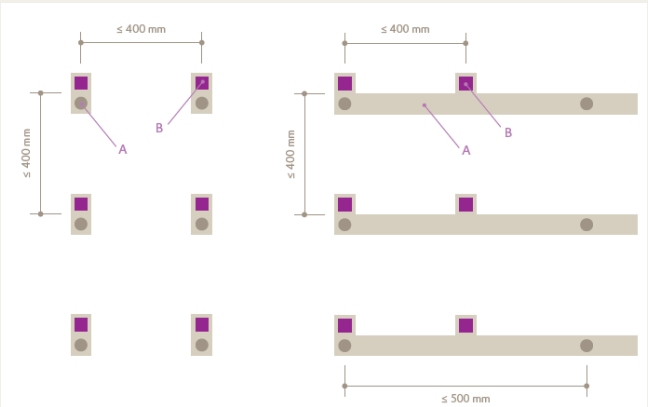
The coated bonding area per piece is at least 3" x 3". The material is at least ¼" thick.



Wall Installation



ACRYLITE® Hi-Gloss as a seamless surface in the shower



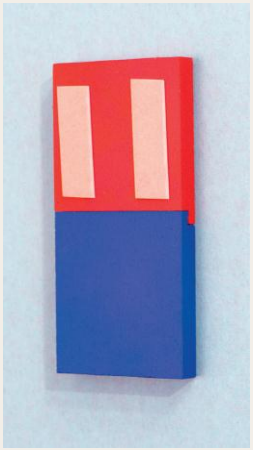
- The following installation procedure is recommended:
- Fix retention points (A) or retention rails to the wall according to the given

spacing. Screw-fasten or bond them depending on the substrate. Apply additional supporting strips at the points where switches and sockets are to be installed.

- Apply the additional strips about 15 mm from the edge of the switch surround.
- If several switch surrounds are to be installed next to or below each other, fix the support strips according to their length.

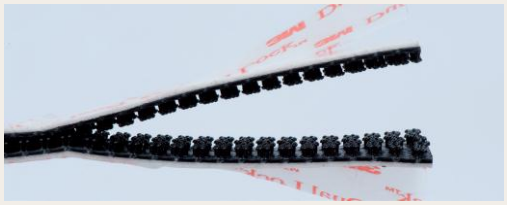
- Apply (roll on) the double-sided mirror tape with an adhesive surface of at least 80 x 80 mm to retention device (B).
- Loosely insert retention device (B) in holder (A) and remove the masking film.
- Remove masking film from the colored reverse surface, stand the ACRYLITE® sheet up and press it against the wall.
- Roll on firmly using the pressure roll.

Temporary Fastenings at a Glance



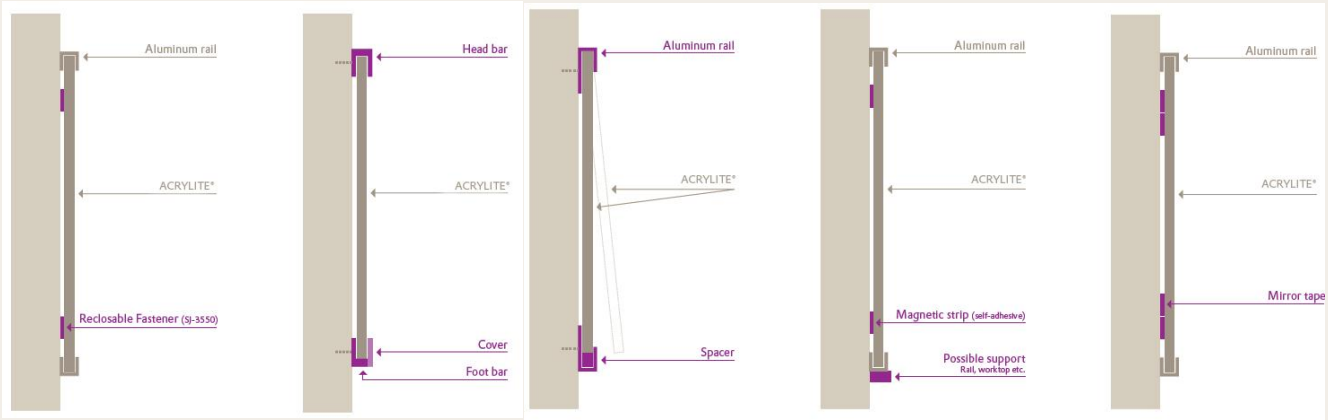
Key and lock Principle

Double-sided mirror tape. Both sides have the same adhesive strength.



Preparing the temporary key and lock fastening system

Magnetic strip (types A and B)



Principle: self-adhesive, flexible press-on fastener system.

A strong but temporary connection is obtained simply by pressing together the mushroom heads.

Principle: Foot and head bar.

U-shaped head bar, L-shaped foot bar, fasten cover to foot bar, fasten bars by bonding, screw-fastening or a combination of the two.

Principle: Aluminum U-rail with long leg Fasten rails by bonding or with screws.

Place the spacer in the lower profile. Insert ACRYLITE® Hi-Gloss.

Principle: self-adhesive magnetic strip (types A and B).

When using either type of magnetic strip, the precise fit of the two strips is specified. Support is advisable.

Principle: Key and lock insertion. Lock is fastened to wall by bonding or with screws.

Always fasten key to the ACRYLITE® sheet using double-faced adhesive tape.

Tips and Tricks for Working with ACRYLITE®

Bear in mind the specified minimum distance from the individual heating element.

What you should know before working with ACRYLITE®:

- Carefully read the statements of the adhesive tape manufacturers.
- Prior to installation, examine whether the dimensions of the cut-to-size sheets are correct.
- Do not use aggressive scouring agents or solvents, and never use brushes or abrasive sponges for cleaning.
- Only bring parts sealed with neutrally crosslinking silicone into contact with water 24 hours after sealing.
- Acrylic must not come into direct contact with incompatible materials like uPVC or PU sealing compounds and MS polymer insulation materials. Recommended materials are: ethylene-propyleneterpolymer rubber (EPDM/APTK), polychloroprene, polyethylene (PE), polypropylene (PP), thermoplastic elastomers (TPE), polytetrafluoroethylene (PTFE), polyamide (PA) and silicone rubber.
- The distance between the outer edge of an electrical heating element and the wall must be at least 3". The distance for gas stove burned must be at least 8". The manufacturers' statements must be strictly observed.
- Only use double-sided mirror tape with an all-acrylic adhesive. It takes two people to install the sheets.
- ACRYLITE® sheet is masked with environmentally friendly polyethylene film to protect them during transport and storage. The surface protection must remain on the sheet until the finished part has been finally installed.
- If the sheet is exposed to weathering, the film must be removed within four weeks. If not, there is a risk that the polyethylene film will become brittle or adhere more strongly to the sheet.

Physical Characteristics of ACRYLITE®

Property[a]		ASTM Method	Typical Value (0.250" Thickness) [b]
Mechanical	Specific Gravity	D 792	1.19
	Tensile Strength Elongation, Rupture Modulus of Elasticity	D 638	10,000 psi (69 MPa) 4.5% 400,000 psi (2800 MPa)
	Flexural Strength Modulus of Elasticity	D 790	17,000 psi (117 MPa) 480,000 psi (3300 MPa)
	Compressive Strength (Yield)	D 695	17,000 psi (117 MPa)
	Impact Strength Izod Milled Notch	D 256	0.4 ft. lbs/in. of notch (21.6 J/m of notch)
	Rockwell Hardness	D 785	M-93
	Barcol Hardness	D 2583	48
Optical	Refractive Index	D 542	1.49
	Light Transmission, Total	D 1003	92%
Thermal	Forming Temperature	–	Approx. 300°F (149°C)
	Deflection Temperature under load, 264 psi	D 648	195°F (91°C)
	Vicat Softening Point	D 1525	220°F (105°C)
	Maximum recommended Continuous Service Temperature	–	160°F[c] (71°C)
	Coefficient of Linear Thermal Expansion	D 696	0.000040 in/in - °F (0.000072 m/m - °C)
	Coefficient of Thermal Conductivity	Cenco-Fitch	1.3 BTU/ (Hr) (Sq. Ft.) (°F / in.) (0.19 w/m·K)
	Flammability, Burning Rate (0.125"thickness)	D 635	1.0 in/min. (25 mm/min.)
	Self Ignition Temperature	D 1929	850°F(455°C)
	Specific Heat @ 77°F		0.35 BTU/(lb.) (°F)(1470J/Kg·K)
	Smoke Density Rating	D 2843	4.8%
Electrical	Dielectric Strength Short Time (0.125")	D 149	430 volts/mil (17 KV/mm)
	Dielectric Constant 60 Hertz 1,000 Hertz 1,000,000 Hertz	D 150	 3.6 3.3 2.8
	Dissipation Factor 60 Hertz 1,000 Hertz 1,000,000 Hertz	D 150	 0.06 0.04 0.02
	Volume Resistivity	D 257	10^{16}ohm-cm
	Surface Resistivity	D 257	10^{16}ohms
Water Absorption 24 hrs @ 73°F		D 570	0.2%
Odor		–	–
Taste		–	–

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