



CANADIAN SCIENTIFIC Lab Systems

EPOXY COUNTERTOPS – INSTALLATION GUIDE

Product Delivery:

Recommended Tools:

- Camera
- Olfa knife
- Metal Snipes
- Roller skate
- Drywall dolly
- 2X4s

Epoxy counter tops will arrive by transport truck, on flat skids wrapped with stretch wrap and metal banding. Cardboard and heavy craft paper is used to separate the individual layers of counter tops.

- Examine all skids for any damage especially to the corners of the cardboard and broken banding (skids that have been impacted with other skids during transport unloading and reloading between the factory and delivery) and the ends of the skids (where fork truck forks might have missed the skid and hit the ends of the counter tops). Take photographs and report any findings of damage on the bill of lading and to CSI.

- To quickly unload the tops, the truck will have to back up to a trailer level loading dock and be unloaded by fork truck or pallet pump truck. Note that a pump truck's front wheels will sometimes catch on the stretch wrap under the skid. Remember that fork trucks will require fork extensions since most skids are 65" - 100" long.

- If unloading with a fork truck in a parking lot or other ground level situation with a fork truck, skid pullers or heavy duty straps might be required to drag the skids to the back doors of the transport trailer for unloading.

- If unloading by hand, you will require 4 fit people (2 in the trailer and 2 on the ground). Extreme care should be taken to avoid over lifting. CSI installers use a roller-skate (found in granite supply stores) and a drywall dolly to reduce lifting and carrying functions. Tops can be unloaded off the skids by sliding or twisting on the craft paper, however do not lift a corner of a top since the opposing corner will place too much weight and mar the finish on the below counter top. Place some cardboard on the back edge of the trailer to avoid damaging the edges during unloading out of the trailer.

- When placing the counter tops on a drywall dolly, place a piece of cardboard on the dolly floor to protect the finished edge and a full piece of craft paper between each top. If placing the tops on the floor (against a solid surface like a block wall), place a couple of 2X4 pieces on the floor to protect the edges and facilitate easier lifting.

- If storing the tops for several weeks before installation, please lay flat on a flat surface to avoid warping.

Casework Preparation:

Ensure that all casework accepting counter tops is level, true and firmly placed in the correct position. Make sure all wall cleats are installed especially in corners and where a counter top ends against a wall without a supporting cabinet or gable.

Check casework interiors to ensure all sinks will fit within the cabinet without later alterations.

Counter tops should be scheduled for installation after the ceiling T-bar has been installed, overhead lighting operational, walls painted and any other overhead work (HVAC, sprinkler systems, etc) done to avoid the tops being used by other trades as workbenches or scaffolding.

Recommended Installation Tools:

- All safety clothing required by the site's safety regulations
- Tape measure and pencil
- 2 gallon pail (and a source of clean warm water)
- Several clean shop rags (cotton shop towels, cotton terry cloth towels, light cotton T-shirt rags)
- 2 putty knives (2" non-stick flexible version)
- Wood shims (1" wide used to dig epoxy cement out of cans and for counter top shimming)
- Mixing boards (12"X12" VCT tiles, hardboard, heavy cardboard, etc)
- Pry bar
- Clear silicone sealant (lab grade)
- Silicone (caulk) gun
- 2-part A & B Smooth-On epoxy
- 4 or more bar clamps (minimum jaw opening of 6")
- Acetone
- Latex or Nitrile gloves
- Several 2X4 lengths cut 6" longer than the counter top joints
- Several small pieces of wood blocking

Installing Epoxy Countertops:

Note: every counter top installer has their own way of installing tops.

Below is the CSi method perfected over 25 years of epoxy counter top installations.

Each counter top piece will have a piece number label to match up with the supplied drawings.

Use your shop drawings (and those if supplied with your shipment) to place all counter tops into location to ensure correct dimensioning and available gaps for bonding joints. Ensure all sink and fixture holes are clear of cabinet structure below for later installation. Scrape the labels off any joints. Use proper lifting procedures to slide the tops into position. Never place your hands between two tops or between tops and cabinet structures to avoid pinching injuries. Always ensure that no metal tools, electrical wire tails, construction debris or any other hard objects come into contact with the tops to avoid mars and scratches. We recommend that all overhead ceiling work is complete (as much as possible) and that all trades avoid touching or bumping into the tops during bonding, at least until all joint curing has taken place.

Mixing Epoxy Adhesive (Cement)

Ensure that you have a gap of at least 1/2" between counter top joint surfaces to be bonded.

The recommended Smooth-On adhesive is a 2 equal part mix made up of 1 epoxy color (yellow or epoxy color labeled) can and 1 blue (curative portion) can. Open the cans and use narrow shims to dig out an equal amount of adhesive onto a mixing board in 2 separate blobs making sure each shim is returned to the cans without touching each other and contaminating the unused portion. Use a putty knife to blend the equal parts together. Blend for about a minute until you are sure that the adhesive is fully blended. You should have approximately 10 - 15 minutes of working time before the adhesive begins to harden and can no longer be used for bonding.

Note: Smooth-On cement (once mixed and still soft) cleans up with water. If you get the color only portion on a surface, mix some of the curative (blue can) with it and wipe up with a damp cloth.

Note: CSi installers prefer to limit their exposure to acetone, lacquer thinners and other solvents to clean up epoxy cement, except when absolutely necessary (eg. cleaning oily residue off sink bonding surfaces).

Note: the use of latex or Nitrile gloves is recommended when touching epoxy cement or during the water cleaning procedures since it tends to dry out your skin.

Note: RTV silicone has good chemical resistance and is an excellent sealant, however CSi does not recommend using silicone to join tops since, it does not have sufficient strength to hold uneven counter top joints. It is recommended if the tops are only being used in a temporary installation.

Bonding the Counter Tops

We recommend coating the entire joint surface with epoxy cement to ensure a strong leak free bond. Spread the adhesive on the one counter top edge. Press the next counter top edge tight against the joint to spread the adhesive. Vibrating the tops with help bring the joint together. The finished gap should be tight to 1/16". Use a putty knife to remove excess adhesive from the top of the joint and underneath the overhang. Use a warm damp rag to remove the balance of adhesive until all remaining adhesive is cleaned up. The joint will remain soft for approximately 30 minutes. During this time the adhesive in the joint might ooze out requiring more scrapping and cleaning. If working in a team, one installer should be responsible for constantly monitoring joints and wiping down the tops to ensure that no oozing or smudges of adhesive remain anywhere on the finished tops until the cement has solidified.

It is usually better to bond the tops together in pairs allowing newly bonded joints time to solidify before attempting the following joint. Where tops require shifting after a joint has been bonded and cured, use a sheet of craft paper or plastic under the joint to ensure that the underside of the joint is not sticking to the casework.

Aligning Epoxy Joints

Note: Unlike natural and man-made stone tops, Durcon epoxy tops cannot be ground or polished to make joints perfectly level. Tops are made from an oven curing process, subsequently they might not be perfectly flat. If the joint is not, you will need to use a variety of methods to get these joints as close to perfect as possible. Epoxy counter tops are not fragile like glass and subsequently can be slightly bent using shims, weight or pressure.

Using shims under the counter top to lift one edge or one side of the counter is usually enough. If the top has a bend from front to back, try using something heavy like a 5 gallon pail of water or protected concrete blocks placed on the domed counter top joint to find level. Another method is to use clamps, 2X4s and shims to lever the tops flat. Using a variety of clamps, levers, weight and other forms of pressure, the joints can be brought to within an acceptable level tolerance.

Attaching Epoxy Tops to Casework

Generally, tops bonded into L shaped elevations or where backsplashes (curbs) are used are too heavy or awkward to be moved by users or seismic activity, however island tops (student or teacher's desks, etc) should be fasted to the casework in the corners with silicone. We recommend silicone vs. construction glues for easier removal should the need arise. There is limited success using metal screws fastened into the underside of epoxy.

Installing Splashes (Curbs)

Counter tops should be installed, bonded and fully hardened before installing back and side splashes. Place protection pieces of cardboard on the counter top to prevent back splashes from scratching the tops.

Place the splashes on the counter top in front of the desired installation location with the face of the back splash toward the wall and the bonding edge up.

Spread adhesive cement on the bonding edge of the splash.

Locate several blobs of silicone on the wall to adhere the splash to the wall.

With an assistant, flip the splash upright and place tightly against the wall and the back of the counter top. Moving the splash side to side with downward pressure will ensure a close fit and push out any excess cement.

Use 2 putty knives in a V pattern and scrape the excess cement from the joint.

Use a warm damp rag to remove the balance of adhesive until all remaining adhesive is cleaned up.

Note: if the walls are uneven, place shims behind the splash to ensure straight splashes.

Note: if the splash has a bow in it, use a prop and clamp to hold the splash against the wall.

It is generally better to allow the counter tops to cure overnight before installing the back and side splashes (also referred to as curbs), to avoid disturbing the uncured joints.

Final Procedures

Counter tops should be inspected and wiped down on a regular basis to ensure that construction dust is cleaned up or small blobs of epoxy cement have not been overlooked, and that all joints are fully bonded without any pin holes or sunken epoxy in joints.

Shiny sticky residue found along cured joints can be cleaned up with acetone.

If required, cover all work surfaces with craft paper, cardboard or some other protective sheeting to prevent other trades from walking on (foot prints and scratches from trades working on or above the ceiling) or tool scratches from plumbers and electricians.

Installing an Epoxy Drop-In Sink

Clean the machined (rabbet) edge in the epoxy top with acetone, lacquer thinner or similar solvent.

Clean the outer edge of the epoxy sink with acetone, lacquer thinner or similar solvent.

Test fit the drop-in sink to ensure that the sink rim fits into the sink hole.

Note: occasionally, the sink rim will require reworking with a grinder to fit correctly.

Apply epoxy cement to the machined (rabbet) edge in the epoxy top.

Set the epoxy sink into the hole aligning one edge first, then setting down the rest of the sink.

Move the sink left and right, back and forth to set the sink into the cement.

Remove the excess cement.

Ensure that the sink is centered in the hole.

Clean the remaining cement with a warm damp cloth.

Installing an Epoxy Under-Mount Sink

Recommended Tools & Supplies:

5/32" concrete hammer drill bit

1" metal angle brackets (2 per sink)

#10 X 1/2" pan head sheet metal screws (4 per sink)

After ensuring that the counter top piece is correct for its location, flip the top over on a flat surface making sure to protect the top (good) surface. Clean the factory dust from the area around the sink cutout with a dry cloth. Use a cloth and acetone to clean the sink mold release from the rim and outer rim edge of the sink. Place the sink rim over the cutout (in the correct orientation regarding the sink's drain location versus the counter top front edge) and center allowing the same overlap on each side of the cutout. Use a pencil and mark the outside edges of the sink rim on the counter top. Flip the sink rim side up.

1/ If the sink can be bonded to the underside of the counter top and allowed to cure undisturbed until the next day, we suggest the following;

Apply silicone to the sink rim, then flip the sink onto the counter top realigning with the pencil marks.

Apply a bead of silicone around the base of the rim and cove it to the counter top with your finger.

Let sit undisturbed until the following day in order to give the silicone ample time to fully cure.

2/ If the sink needs to be bonded to the underside of the counter top and re-located back onto the casework shortly after, we suggest the following;

Place the sink on its side on the floor, locate a 1" metal angle bracket at the beefy part of the sink corner and drill a hole with the 5/32" drill bit (do not use the hammer drill setting) so that the bracket will be level with the rim of the sink. Make sure you use tape on the drill bit to ensure that you only drill a 1/2" deep hole. Secure the bracket with a #10 X 1/2" pan head screw using a hand screwdriver. Do the same to the opposite corner of the sink.

Apply silicone to the sink rim, then flip the sink onto the counter top realigning with the pencil marks.

Drill holes into the countertop (1/2" deep) and attach the brackets to the counter top.

Apply a bead of silicone around the base of the rim and cove it to the counter top with your finger.

Flip the counter top over and re-locate into place.

In both cases, we recommend that the casework have sink supports placed under the sinks once the counter tops have been located in place, bonded and cured overnight.

Installing a Polypropylene S03-R Sink Outlet (Using plumbers putty / mastic)

Clean the recessed hole in the epoxy sink with acetone, lacquer thinner or similar solvent
Apply a 1/4" bead of plumbers putty under the outlet flange
Center outlet into recessed hole in the epoxy sink and press down firmly to spread putty
From under the sink, thread the retaining nut all the way up and carefully hand tighten until the outlet is firm and flush with the sink basin
Install the strainer into the outlet
Use epoxy cement to fill in the gap left between the outlet OD and the sink's recessed hole ID

(Using RTV silicone - recommended only when the outlet is connected to the drain system before the silicone cures)

Scuff the contact surface under the outlet flange with sand paper to increase adhesion
Clean both the outlet and the recessed hole in the epoxy sink with acetone, lacquer thinner or similar solvent
Apply a 1/4" bead of RTV silicone under the outlet flange
Center outlet into recessed hole in the epoxy sink and press down firmly to spread silicone
From under the sink, thread the retaining nut all the way up and carefully hand tighten until the outlet is firm and flush with the sink basin
Install the strainer into the outlet
Complete the drain piping before the silicone cures to ensure a secure bond
Use epoxy cement to fill in the gap left between the outlet OD and the sink's recessed hole ID.

Installing a Polypropylene Cup Sink

Clean the machined (rabbet) edge in the epoxy top with acetone, lacquer thinner or similar solvent.
Apply epoxy cement to the machined (rabbet) edge in the epoxy top.
Set the cut sink into the hole and push firmly down.
Remove the excess cement.
Clean the remaining cement with a warm damp cloth.

Note: if you require the sink to be level to the surface of the counter top, do the following;
Apply only a small amount of cement into the rabbet (only enough to bond the sink to the top).
Fashion a clamp mechanism using a flat block of wood (at the cup sink top side and a smaller block of wood at the drain end connected with a loop of hard (not stranded) wire.
Twist the smaller block to achieve enough tension to hold the 2 blocks tight.
Set the cup sink into the epoxy cutout.
After an hour, remove the clamping mechanism.
Apply cement to the top remaining gaps to complete the installation.
Remove the excess cement.
Clean the remaining cement with a warm damp cloth.

Counter Top Maintenance

The performance of epoxy counter tops is not compromised by normal marring, scratches or stains, but maintaining the appearance depends upon good housekeeping procedures.

Promptly remove all spills to ensure a safe working environment.

Do not use wax on epoxy resin countertops or epoxy sinks.

Note: all epoxy resin products are subject to thermal shock and are not warranted against damage from liquid nitrogen or dry ice. Abuse caused by the improper use of these materials could cause cracking and sink failure.

Regular Epoxy Resin Care Procedures

We recommend instituting a regimen of monthly or quarterly inspections of all epoxy resin surfaces, sinks and joints, plus daily or weekly cleanings to maintain your epoxy resin's original finish and to help ensure a safe, uncontaminated working environment.

The following list (available at all large hardware / home improvement stores) contains items you may wish to have on-hand for regular cleaning and to handle most problems that may occur.

- Clean rags or sponges
- White Scotch Brite® pads (always use moist or wet)
- Chamois cloth
- Mild soap or non-abrasive household cleaner
- Lemon, orange or citrus oil
- Finishing oil (mineral oil)
- Crystal Simple Green®
- Murphy's Oil®
- Acetone or lacquer thinner
- Two-part Smooth-On epoxy grout

Note: Never use wax or polish containing wax on epoxy resin work surfaces or sinks. Also, never use abrasive pads, powders or liquids (such as Soft Scrub®) as dulling of the surface will result.

Epoxy Resin Sink Care

Laboratory sink areas usually present the greatest cleaning and maintenance challenges. Sinks are a collection point for dirty and wet lab ware which leaves liquids, residue and chemicals on the surface for extended periods of time. Sink areas will require a more thorough cleaning regimen than dry bench tops as well as more frequent inspections. Sink inspections should include all sink surfaces and joints in sink the area. This includes the outlet joint and the sink rim joint above and below the work surface. Cracked or pitted joints should be filled immediately with two-part Smooth-On epoxy grout to prevent leaking and damage to the supporting casework.

Field Repairs and Alterations

There are hundreds of unique situations and challenges that our installers have encountered and resolved over the years that cannot be quickly explained on these pages. If you have found a particularly difficult situation, give us a call and we will try to get you back on track.

Recommended Tools for Repairs and Alterations:

- Safety glasses
- Dust mask
- Grinder with a 4" diamond cutting wheel and a metal grinding disk (counter top edge repairs)
- Circular saw with a 7" diamond cutting blade (for cutting counter tops to length or making notches)
- Electric 1/2" drill
- Diamond hole saw kit (Lenox Tools®) for drilling additional fixture holes
- 1/2" - 3/4" plywood (for making diamond hole saw guide holes)
- Wood hole saws for above
- Shop vacuum
- Extension cord
- Saw horses or workbench

Field cutting a sink hole for drop-in stainless steel sinks

Use a knife and cut out corners of the stainless steel sink template.

Place counter top in correct position relative to casework and other counter tops.

Align template in correct position.

Mark out corners with a pencil.

Use a straight edge to connect square outside corners.

Drill out the 4 corners staying inside the squared corner lines.

Flip the counter top over a pair of workhorses.

Use a diamond blade circular saw to connect the outside edges of the corner holes.

Use a grinder with a diamond blade to remove any jagged edges left over.

Return the counter top to its correct location on the casework.

Field cutting a fixture hole.

Use a piece of plywood or other suitable material as a template.

Use a wood hole saw and cut a pilot hole equal to the size of the diamond hole saw.

Mark out the location of the fixture hole on the counter top.

Place the template pilot hole centered over the location.

Hold the template into position to prevent it from shifting during drilling.

Use a vacuum to remove dust from the hole during cutting.

Use a 1/2" drill or similar and diamond hole saw to drill out the hole.