



# 2014

## How to Construct a Concrete Countertop



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# How to Construct a Concrete Countertop



Direct Colors Inc. has everything for the amateur or professional to construct beautiful and functional concrete countertops. As with all of our products, we have designed the Direct Colors Concrete Countertop line with our customers in mind. We take pride in creating and distributing products that are easy to use without sacrificing quality or durability. Thank you for Choosing Direct Colors!

Direct Colors Inc. offers the following concrete countertop products:

- [Concrete Countertop Mix – White and Gray](#)
- [DCI Concrete Overlay – White and Gray](#)
- [Concrete Countertop Admix for Custom Mixes](#)
- [Concrete Pigments](#)
- [Recycled Glass and Stone Aggregates](#)
- [Fiberglass Net and Chopped Fibers](#)
- [Concrete Acid Stain](#)
- [Deco Gel Gelled Acid Stain](#)
- [Countertop Polishing Kit](#)
- [Countertop Polishing Pads](#)
- [Concrete Countertop Form Release Kit](#)
- [Concrete Countertop Sealers](#) and [Applicators](#)
- [DCI Natural Countertop Wax](#)

## PRO'S AND CON'S OF POURED-IN-PLACE COUNTERTOPS

*Advantages of poured-in-place concrete countertops:*

- Concrete countertops are very heavy; pouring in place eliminates the need to move the countertop from one place to another.
- Air bubbles are only a problem around the edges of poured-in-place countertops minimizing the need for vibrating.
- Decorative aggregates such as glass or natural stone can be broadcast on the surface and troweled in.
- Easier to install the fiberglass net required for reinforcement.
- Great for outdoor countertops

*Disadvantages of poured-in-place concrete countertops:*

- Construction is often messy and equipment can damage flooring or other areas in the home.
- Construction and curing time can take up to 30 days creating a challenging and lengthy home disruption.
- Trowel finished poured-in-place countertops are not as smooth as pre-cast without polishing.

## WHAT YOU NEED TO BEGIN

To construct a Glass Fiber Reinforced Concrete Countertop, you will need the following products:

- DCI Countertop Mix is an “add water only” product which includes all the necessary fibers, polymers, and reducers to provide maximum tensile strength per square inch, protecting your countertop from cracks due to shrinkage or expansion. Available in both white and gray based mixes. When combined with concrete pigment or acid stained, the color possibilities are endless.

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Direct Colors uses only top quality materials and adds **no fly ash** to our countertop mix. Fly ash affects reactivity and color development when acid staining and causes color variability in integrally colored countertops.

- High Zirconia Alkali-Resistant Fiberglass Net, especially recommended for countertops with 3" or more of over-hang.
- Decorative Colorant (ie. Concrete Pigment, Acid Stain or Deco Gel gelled acid stain)
- Recycled Glass or Natural Stone Aggregate
- Concrete Countertop Sealer
- Natural Concrete Countertop Wax (indoor countertops sealed with an acrylic sealer only)

## GETTING STARTED

After deciding between a pre-cast or poured-in-place countertop, it's time to determine how much countertop mix will be needed for the job. When poured at a standard depth of 1.5 inches, each 50lb box of DCI Concrete Countertop Mix will cover 2.5 square feet. Your total square footage divided by 2.5 will equal the number of DCI Concrete Countertop Mix boxes you will need. We recommend figuring an extra 10% for waste or slurry to touch-up pinholes or other surface imperfections.

## CONSTRUCTING YOUR PRE-CAST CONCRETE COUNTERTOP

- Begin by reinforcing your cabinetry to bear the added countertop weight. The average concrete countertop can weigh up to 900lbs.
- Construct the forms. Depending on the desired finish, you can use a Plexiglas or melamine sheet to create an extra smooth surface that may require less polishing.
- Place on a vibrating table.
- *If using concrete pigment*, calculate the correct amount for the batch size using the [project calculator](#) available under resources at [www.directcolors.com](http://www.directcolors.com).
  - Add the pigment to the dry countertop mix. Combine thoroughly until the mix color looks consistent throughout in order to eliminate streaking.
  - Calculate for a 10% reserve for a slurry if needed.
- DCI Countertop Mix can be mixed in a 5 gallon pail with a hand mixer and a birdcage paddle.
- Add one gallon of water per 50 lb. box to the pail, pour in  $\frac{1}{4}$  of the mix, and blend with the hand mixer. Continue until all the mix and water are thoroughly combined. The material can also be mixed using several boxes at a time in a drum or mortar mixer. Add the appropriate amount of water to the mixer or pail first and add the mix slowly. Blend for a minimum of 10 minutes.
- *If spraying countertop mix*, add water to create a thin pancake batter consistency or  $1\frac{1}{2}$  gallon of water for 50 lbs. of countertop mix. Thoroughly coat forms with DCI Countertop Form Release before spraying  $\frac{1}{4}$  in. of mix from a texture gun with 6mm tip.



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## [Skip to pg. 3 if Using Decorative Aggregates](#)

- Thoroughly coat forms with DCI Countertop Form Release and pour 3/8 in. of countertop mix into the forms.
- Press the first layer of High Zirconia Alkali-Resistant Fiberglass Netting into place and vibrate the table.
  - To avoid a “shadowing effect” caused by the fiberglass netting, the screen should be at least ¼ in. from the countertop surface.
- Pour the remaining mix into the form and float the surface.
- Lay a second cut-to-fit sheet of High Zirconia Alkali-Resistant Fiberglass Net onto the surface and vibrate again.
  - While vibrating, press the fiberglass netting sheet into the surface of the countertop until completely covered by concrete.
  - Keep in mind this side will be the bottom of the countertop.



## **ADDING AGGREGATE TO A PRE-CAST COUNTERTOP**

- Add either natural stone or glass aggregate to pre-cast countertops and polish to reveal.
- Set up forms, spray with form release and trowel in a thin layer, 1/8 to 1/4 of an inch, of countertop mix on the surface of the form.
- Broadcast the desired amount of aggregate onto the thin layer of mix and press into place with a trowel or float.
- Carefully spread out the aggregates to prevent touching or stacking. Aggregate left stacked or touching can create air-pockets or come loose during polishing.
- Add an additional ~ ¼ inch of countertop mix and vibrate.
- Add an additional ¼ inch of mix
- Lay in a cut-to-fit sheet of High Zirconia Alkali-Resistant Fiberglass Net and lightly press into place. To avoid a “shadowing effect” caused by the fiberglass netting, the screen should be at least ¼ in. from the countertop surface.
- Pour the remaining mix into the form and float the surface.
- Lay a second cut-to-fit sheet of netting onto the surface and vibrate again. While vibrating, press the fiberglass netting sheet into the surface of the countertop until completely covered by concrete. Keep in mind this side will be the bottom of the countertop.
- After a minimum of 15 days curing period, begin carefully polishing with a 100-grit pad to expose the aggregate on the surface.
- If polishing the countertop to 3000 grit level, apply a penetrating sealer and continue polishing. If applying a polyurethane or polyurea sealer, do not polish beyond a 800-grit level before application.



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## CONSTRUCTING A POUR-IN-PLACE CONCRETE COUNTERTOP

Begin by reinforcing your cabinetry to bear the added countertop weight. The average concrete countertop weighs up to 900 lbs. or more. Most countertops have a plywood base attached to the cabinetry.

- Firmly affix concrete backer-board of no less than ¼ inch thick to a solid plywood base that contains zero flex.
- Spray the edging forms (commercial or custom-made) with DCI Concrete Countertop Form Release to ensure easy form removal.
- Lay one cut-to-fit sheet of High Zirconia Alkali-Resistant Fiberglass Net on the surface of the backer board.
- *If using concrete pigment*, calculate the correct amount for the batch size using the [project calculator](#) available under resources at [www.directcolors.com](http://www.directcolors.com).
  - Add the pigment to the dry countertop mix. Combine thoroughly until the mix color looks consistent throughout in order to eliminate streaking.
  - Calculate for a 10% reserve for a slurry if needed.
- DCI Countertop Mix can be mixed in a 5 gallon pail with a hand mixer and a birdcage paddle.
- Add one gallon of water to the pail, pour in ¼ of the mix, and blend with the hand mixer. Continue until all the mix and water are thoroughly combined. The material can also be mixed using several boxes at a time in a drum or mortar mixer. Add the appropriate amount of water to the mixer or pail first and add the mix slowly. Blend for a minimum of 10 minutes.
- For a 1 ½ inch countertop, pour 1 ¼ inch of countertop mix into forms
- Lay a second cut-to-fit sheet of High Zirconia Alkali-Resistant Fiberglass Net onto the surface and press evenly into place. To avoid a “shadowing effect” caused by the fiberglass netting, the screen should be at least ¼ in. from the countertop surface.
- Pour the remaining mix into the form and vibrate the form edges to remove voids and air bubbles.
- Float the surface, add any aggregate if desired, and trowel in smooth with a pool trowel.
- Cover the countertop with a plastic drop cloth to ensure more even curing and to avoid possible surface cracking.
- Allow 12-15 days curing time before removing the forms and wait 30 days from the pour before polishing.

## OVERLAYING AN EXISTING COUNTERTOP

### Overlaying a Plywood Countertop Surface:

- Select ¾” plywood with sturdy base that exhibits no flex.
- Attach hardy backer board (or similar cement board) to the plywood using non-corrosive screws.
- Fill all seams with a two part epoxy sealer and allow to cure for a minimum of 16 hours
- Once epoxy has cured, sand the areas down flush using a 180-grit non-loading sandpaper
- Thoroughly clean all dust and debris from the surface in preparation for the overlay



### Overlaying a Formica Countertop:

- Ensure the existing countertop is well reinforced and exhibits no flex

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- Scuff the surface of your existing countertop with a 120-grit non-loading sandpaper
- Wipe the area down with a damp cloth to remove any dust and debris, allow to dry.
- Fill all seams with a two part epoxy sealer and allow to cure for a minimum of 16 hours
- Once epoxy has cured, sand the areas down flush using a 180-grit non-loading sandpaper
- Thoroughly clean all dust and debris from the surface in preparation for the overlay

## Applying the Overlay to Edges / Vertical Surfaces:

**Trowel-On Vertical Surfaces:** The overlay consistency needs to be stiff enough to roll into a ball and stick it to the surface. Wear vinyl gloves when handling the overlay. Spray trowel with DCI Countertop Form Release and trowel the material down using a pool trowel. Consider practicing on a vertical surface before using this method. Hardy backer board works well for practice.

**Spray-On Vertical Surfaces:** Apply using a drywall texture gun. Mix the overlay to apply to the edges first (about a quart of wet mix per 100 square inches) to the consistency of a thin pancake batter. Depending on texture gun used, either rotate the nozzle or tip to the ¼” or 6 millimeter setting or if your texture gun has interchangeable tips, use the ¼” or 6 millimeter attachment. Set air pressure to 25 psi and spray material onto the surface. Spray trowel with DCI Countertop Form Release before “knocking down” or troweling the overlay. Apply more than one coat to get a good finish and to avoid shadowing at seams. Once the first coat of overlay achieves a uniform light gray color (approximately 3 to 6 hours), apply the second coat. Scrape any overspray together on countertop surface and vacuum.

**Applying Countertop Mix to Top Surface:** Once the vertical application has been completed, mix the remaining overlay to thin pancake batter and pour it on the surface. Spray the trowel with DCI Countertop Form Release and trowel the mixture down smooth using a magic trowel tool. If planning to acid stain, let the countertop dry for a minimum of 24 hours before proceeding.

## ACID STAINING POURED CONCRETE COUNTERTOPS

If you are planning to acid stain an unpolished countertop:

- If acid staining, allow the countertop to cure for 7 to 10 days before applying the acid stain to ensure proper coloration.
- Remove from forms, sand rough areas and clean the surface thoroughly. Determine if water readily absorbs or beads on the surface. If beading occurs, use a 200-grit pad to open the pores for staining.
- Apply either Acid Stain or Deco Gel Gelled Acid Stain to the surface and allow for the appropriate activation time, neutralize, clean and leave dry.
- If polishing, apply stain at 200-grit and continue to polish. Reapply acid stain to surface if required. Repeat polishing process up to an 800 grit pad until desired finish is achieved.
- If polishing above 800-grit, apply DCI Penetrating Lithium Sealer/Hardener at 200-grit and allow 24 hours dry time before further polishing.
- Apply all topical countertop sealers at or below 800-grit for good sealer adherence



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## POLISHING CONCRETE COUNTERTOPS

Follow these steps to bring a beautiful finish that reveals depth and detail.

- Begin polishing with a 50-grit pad to smooth the surface and edges.
- Graduate to a 100-grit pad to remove any scratches left from the 50 grit pad and follow with a 200-grit pad
- The countertop is ready to acid stain at this point if desired.
- If polishing the countertop, apply a Penetrating Lithium Hardener Sealer according to the instructions, allow to dry for 24 hours and begin polishing from 400-grit to 3000-grit
- All other countertops should be sealed with either a Polyurethane, Polyurea or Epoxy/Polyurethane combination

## CONCRETE COUNTERTOP SEALERS

Selecting the correct sealer for your countertop project should depend on the following:

- Desired Finish
- Gloss Level
- Intended Use

Countertops polished in excess of 800-grit must be sealed using a [Penetrating Lithium Hardener Sealer](#). Epoxy, Polyurethane or Polyurea can be applied up to an 800-grit finish with no further polishing needed.

[Epoxy](#), [Polyurethane](#) and [Polyurea](#) offer glossy and high gloss finishes for countertops. Epoxy creates a deep, wet look and should always be top coated using a polyurethane or polyurea finish. Countertops with excessive pinholes should be sanded and if problem persists, apply a primer coat of [DCI Water Based Sealer](#) to fill the holes prior to applying the finish coat. Polyurethane and Polyurea are the most durable, long-lasting coatings and can be used alone for both indoor and outdoor countertops.

Polyurethane and Polyurea can be used on any countertop project. Epoxy should not be applied to outdoor countertops. Do not place hot pans on the sealed countertop surface, drop items from height or use the surface as a cutting board. [Natural Countertop Wax](#) should be applied to any surface sealed with an acrylic sealer or for added protection on indoor countertops. Apply wax in circular motions as needed to a clean, dry surface using a soft cloth.



**For more information on creating  
your custom concrete countertop or  
to speak with a design technician,  
visit our website at  
[www.DirectColors.com](http://www.DirectColors.com)  
or call us at 877-255-2656**