



The Concrete Network's Shop Smart Series: Guide to Concrete Countertop Supplies



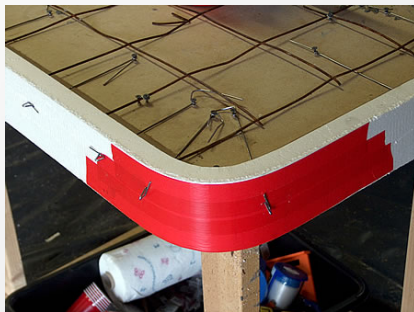
Countertops, a hot trend in the field of decorative concrete, are opening up new markets for contractors. There are many techniques, materials, and equipment used to create these surfaces. They are meticulously crafted and customized to enhance the kitchen, bathroom, or spa and are precast in a shop rather than cast in place in the field. [*Continue >*](#)

Photo Courtesy of [Cheng Design Products, Inc.](#)





If you currently install decorative concrete floors and are considering expanding your repertoire to include concrete countertops, you're likely to need a bunch of supplies not already in your inventory. To help you get started, here's a list of more than a dozen essentials, along with buying tips from three concrete countertop veterans: Jeff Girard of [The Concrete Countertop Institute](#), Raleigh, N.C., Buddy Rhodes of [Buddy Rhodes Studio](#), San Francisco, and Evan Lloyd of [Solid Solutions](#), Fresno, Calif.



[Colors on Concrete](#)

Because the main allure of concrete countertops is their distinctive handcrafted appearance, many of the fabricators who produce them develop their own mixes and methods to differentiate their products, and thus may require additional materials and supplies not mentioned here. So use this list only as a springboard to developing your own signature look!

1. Countertop molds

Although concrete countertops can be poured onsite, most contractors prefer precasting them in a shop to maintain greater control over temperature and curing conditions—and to keep messy wet concrete out of the homes and businesses of their clients. Precasting also can produce a smooth, flat surface not easily obtainable with hand troweling, says Girard.

Obviously, the final appearance of a countertop will largely depend on the quality and precision of the mold it's cast in. You can use a variety of materials to make your mold, as long as they are waterproof or sealed against moisture. Mold-making materials recommended by experienced countertop fabricators include wood, polyurethane foam, metal, and rubber. Rhodes often uses Formica because it's smooth and durable.





Buying tips: Factors to consider when choosing mold materials include:

- Strength and rigidity. The mold must be able to withstand the pressure of fresh concrete without bowing or distorting.
- Surface texture. Concrete will mirror the surface it's cast against, so if a smooth surface requiring minimal hand finishing is desired, use a smooth forming material such as Formica. If you plan to hand trowel the countertop surface (by casting the countertop right side up) or mechanically grind the surface after it hardens, then the texture of the mold won't be as important.
- Workability. Fabricating a mold—especially for complex countertop layouts with curves or odd shapes—often requires a lot of cutting and manipulation to get it just right. A material that's not prone to splintering or chipping when cut will be easier to work with and reduce waste.



[Buddy Rhodes Studio](#)

2. Casting table

A strong, level casting table is essential to properly support the mold and the heavy wet concrete until it cures. Some fabricators save money by building their own casting tables. But if you plan to buy a table, make sure it's rigid enough not to sag under the weight of the concrete and large enough to accommodate the average countertop slab. For a standard 25-inch-wide countertop, a 5x10-foot or 5x12-foot casting table works well, says Girard.

3. Concrete countertop mix

Some contractors concoct their own proprietary mix designs for countertops, often born from much trial and error. But if you'd rather not play mad scientist, you can buy bagged mixes formulated exclusively for concrete countertops. Some incorporate high performance admixtures, cement replacements, and special additives, such as fiber reinforcement, to improve strength and workability and minimize cracking. You can also buy mixes that are already pigmented.





Buying tips: Ask about the yield of the mix per package so you buy the right amount for your project. And be sure to get a copy of the technical datasheet to get information on mixing procedures, setting and curing times, compressive strength, and other pertinent details. A good mix for concrete countertops should have a low water-cement ratio to prevent shrinkage cracks, provide sufficient compressive strength, be easy to work with, and result in an aesthetically pleasing surface, says Girard.

When choosing a mix, also think about any special effects you want to achieve. For example, Rhodes uses a mix that is thick enough to press into molds, so he can achieve his signature “veined” look. The mix is also white, so it takes colors easily, with white aggregates that polish to a high shine.

4. Liquid or powdered pigments

As with integrally colored concrete flatwork, you can blend powdered or liquid pigments into the concrete mix to achieve a nearly unlimited palette of colors. This will give you more flexibility than going with a pre-pigmented countertop mix and permit custom color matching. Some pigments are blended specifically for use with concrete countertop mixes to ensure rich color saturation.

Buying tips: The type of pigment to use (liquid or dry) is often personal preference. For example, Lloyd prefers to use liquid pigments because they are easier to measure out in small quantities. He also finds that liquid pigments are a convenient way to color match the grout used to fill the seams between adjacent countertop sections. However, if you do use liquid pigments, you must account for the amount of water in the pigment when measuring out the mix water for the concrete, cautions Girard. You can find suppliers of [integral coloring products](#), both liquid and powdered, on [ConcreteProductsWeb.com](#).



Various powdered pigments and one liquid pigment (bright red on left).

[Concrete Countertop Institute](#)





Decorative add-ins: These photos show metal shavings salvaged from the floor of a machine shop and then embedded in the concrete.

[Concrete Countertop Institute](#)

5. Decorative add-ins

In addition to integral color, a popular way to customize concrete countertops is to add decorative aggregates, semi-precious stones, fragments of colored glass, metal shavings, and other embellishments to the fresh concrete. These bits of bling are revealed upon grinding and polishing of the countertop surface, much like the technique used for exposing the aggregate in terrazzo floors. Girard says you can embed just about anything in concrete, except porous or absorptive materials such as wood. He puts the material in the bottom of the form and pours the concrete over it. Once the concrete has cured, he strips away the form and flips over the slab to grind and expose the embedded material.

Buying tip: Some suppliers of concrete countertop materials sell specially selected decorative aggregates in small quantities (typically 1-pound bags) for convenient addition to countertop mixes. All are suitable for exposure by grinding. If you plan to use larger embedments, Girard offers this tip: The larger the embedment, the thinner it should be to prevent weakening of the concrete and the potential for stress cracking.

6. Mortar mixer

Although you can mix the small batches of concrete required for countertops in buckets or a wheelbarrow, a portable mortar mixer is more convenient and will blend ingredients more thoroughly.

Buying tip: Be aware that the typical mortar mixer doesn't hold the same volume of concrete as the rated barrel capacity. For example, a 9-cubic-foot mixer may only be able to hold about 6 cubic feet of concrete. Also, the stiffer the mix the less material the mixer can effectively blend, notes Girard. Consider buying (or renting) a capacity larger than you think you'll need.



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A classic illustration of what can be done with proper reinforcing.

[Concrete Countertop Institute](#)



Adding synthetic fibers to the mix.

[Concrete Countertop Institute](#)

7. Reinforcing materials

Countertops are not slabs on grade, like floors. They are beams, says Girard. To ensure sufficient tensile strength, enhance ductility, and limit structural cracking, they must be reinforced. There are number of reinforcing materials you can use, either alone or in combination, to get the job done. To be effective, these materials should be placed in the bottom half of the countertop slab.

Many countertop fabricators rely on good old steel rebar (no larger than 3/16 inch in diameter), while others have success using galvanized wire mesh. For additional insurance against cracking—particularly smaller nonstructural cracks—some fabricators add tiny synthetic or glass fibers to the countertop mix. Generally these fibers won't affect the appearance of the finished countertop, if they are added at the proper dosage and thoroughly mixed into the concrete.

Buying tips: Rhodes likes to use a galvanized masonry reinforcement wire from [Dur-O-Wal](#) that's about 3/16 inch thick and welded together like a ladder. A corrosion-resistant, lighter-weight alternative to steel or wire mesh is a carbon based reinforcing grid, such as C-GRID from [TechFab](#). For other suppliers of [mesh and fiber reinforcement](#), visit [ConcreteProductsWeb.com](#).

8. Knockouts for sinks and faucets

On most countertop projects, you'll need to form knockouts in the countertops for installation of sinks and faucet stems. Since these holes are literally cast in concrete, they must be precise and properly positioned.





Although you can fabricate your own knockout forms for faucets from such materials as PVC pipe, rubber, or foam, you can save time by purchasing ready-made polyurethane or rubber knockouts in a depth to match the countertop thickness. You can also find precision-cut polyurethane templates for sink knockouts. They come in various shapes and sizes to match the dimensions of popular sink brands, such as Elkay, Kohler, and American Standard. Sources for these products include Granite City Tool's [concrete countertop division](#) and [Cheng Concrete Exchange](#). Girard notes, however, that premade sink-hole templates are normally not available for high-end or custom sinks. In that case, you'll need to make your own.

Buying tips: If you're going to be casting a concrete countertop, why not cast a concrete sink as well for a more unified appearance? Rhodes has designed four [fiberglass sink molds](#) for precasting integral vanity, kitchen, and utility sinks. He says that each mold can be reused many times and comes with a rubber knockout for the drain hole.

9. Concrete vibrators

After pouring the fresh concrete into the countertop mold, you may need to use a vibrator to help consolidate and level the concrete and remove air bubbles that could leave unattractive holes or pits in the surface. Not all countertop mixes require vibration. It all depends on the stiffness of the mix you're using and the effects you want to achieve.

Buying tips: Makita makes a [12-volt cordless insertion-type vibrator](#) that works well for small projects, says Rhodes. However, since this tool must be plunged into the wet concrete, it tends to disturb reinforcing materials and decorative insets. You can avoid this problem by using table-mounted external vibrators, choosing a size and power level appropriate for the size and weight of your casting table. Even the vibration from a simple jitterbug sander may be adequate, says Rhodes.





10. Curing covers

If you plan to cast the countertop in place rather than precast the countertop in a shop, proper curing is essential because it's more difficult to control environmental conditions. Curing covers or blankets will help to keep the concrete moist so it cures slowly and evenly.

Buying tip: Look for a material that won't stain the concrete and is reusable to save costs. Girard recommends HydraCure M5 blankets from [PNA Construction Technologies](#). The reusable nonwoven fabric is inorganic so it won't mildew or stick to the concrete surface, and it can be used in indoor environments.



Cast in place job with curing blankets taped in place.

[Concrete Countertop Institute](#)

11. Provisions for transport

While precasting a countertop may ensure better quality control, it also means you'll need to haul your finished masterpiece to its final resting place intact. Special A-frames and racks are available for safely storing the finished countertop slabs in the shop and for holding them securely during transport in a truck.

Rhodes recommends approaching each countertop project with installation in mind. "Don't make the slabs so big that they won't fit through the door openings or wind through the hallways," he advises. "We make templates of the job using 1/8-inch thick plywood so we can figure out how and where to seam the countertops."

Buying tip: Steel A-frames and racks are often available from companies that sell equipment and accessories for granite countertops. (One source is [Granite City Tool](#).) Or you can save money by making your own A-frames out of wood.





12. Shims and other leveling devices

When assembling the countertop sections on the base cabinetry, you may discover that one piece sits slightly higher than the other, resulting in an unlevel surface. To ensure that adjacent slabs are flush and level, you'll need to use wood or plastic shims to adjust for these minor height differences. Shims also hold the slabs in place until the adhesive used to mount the countertops to the cabinets sets. When installing an undermount sink, you'll also need some tools to ensure a snug fit with the concrete countertop.



[Solid Solution Studios](#)

Buying tips: Lloyd recommends using special lifting clamps that you can stick in the sink's drain hole to pull the sink up tightly (available at [Granite City Tool](#)). Proper shimming of the sink is also important. Lloyd uses a mounting system called Sink Undermounter, manufactured by [Vance Industries](#). It consists of metal rails with 2 inch adjusting bolts that can be turned as necessary to raise and level the sink flush with the underside of the countertop. Be sure to seal between the countertop and sink with a clear acrylic kitchen and bath caulk, adds Girard.

13. Grinding and polishing equipment

Grinding and polishing the countertop surface will enhance both the visual and tactile experience by exposing some of the aggregate and decorative add-ins (if used) and smoothing away minor blemishes, burrs, and rough spots. Here's the basic equipment you'll need to achieve a highly polished finish:

- A handheld electric grinder/polisher.
- A set of diamond grinding pads, with grit levels ranging from coarse to fine. Both Rhodes and Girard use diamond pads with grit numbers ranging from 50 to 3,000. The more aggressive, coarser grits work best at exposing aggregates and removing blemishes. You'll use the finer grits for final polishing, progressing to higher grit levels until you achieve the desired surface sheen and smoothness.
- Hand finishing pads or sanding blocks of various grit levels to work in tight spots and for minor touchups.





Buying tips: A grinder/polisher with an attached water feed for wet grinding will help to reduce dust and extend the working life of the pads. Girard uses a grinder with an operating speed of 4,000 rpm. Since you'll be switching pads frequently, also ask if the mounting system on the grinder permits fast changeovers.

And don't neglect the obvious: Be sure to buy diamond pads suitable for use with your grinder and specifically designed for grinding concrete, not granite. Concrete has rough, hard aggregate in a relatively soft matrix. Granite is uniformly hard. If you use pads designed for granite, they will not last as long or work as effectively, says Girard. Sources for concrete grinding and polishing tools and accessories include [Cheng Concrete Exchange](#), [Granite City Tool](#), [Leitch & Co.](#), and [Buddy Rhodes Concrete Mix](#).



A from-scratch slurry mixed up in a mud pan being applied with a plastic putty knife.

[Concrete Countertop Institute](#)

14. Patching materials

Because countertop surfaces are situated only a few feet below eye level, even minor flaws or tiny bugholes will be noticeable. Be ready to fill these voids with a patching slurry color-matched to the countertop. You can mix up the slurry yourself using a combination of cement, fine sand, water, and pigment. But for greater convenience, consider buying a ready-to-use prepackaged slurry, which is often sold by the suppliers of countertop mixes. Be sure to get a product compatible with the mix you're using. Some are available in various pigments.

15. Sealer and finishing wax

All concrete countertops need to be sealed to protect the concrete from food stains and scratches. The right sealer will not only protect the surface, but also enhance the color and sheen. For additional protection and luster, some countertop installers will also apply a finishing wax. This "sacrificial protectant" will help to preserve the sealer but requires regular re-application to maintain its effectiveness.





Buying tips: There are a multitude of concrete sealers on the market, but it's important to choose a product that meets the unique performance requirements for countertops as opposed to floors or exterior flatwork, notes Girard. He recommends using a heavy-duty sealer that is food-safe, colorless, non-yellowing, and heat and scratch resistant. For more information, read [The Concrete Network's Shop Smart Guide to Buying Concrete Sealers](#).

You can find finishing waxes specially formulated for use on concrete countertops. Most are made from beeswax or carnauba wax and can be applied with a soft cloth.



[Solid Solution Studios](#)



[Buddy Rhodes Studio](#)



Sherpa info

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SUMMIT DATE

This document reached the summit (was created) on January 3, 2005 and is based on the best information available to the Sherpa at that time. To check for updates please click here <http://www.ConcreteSherpa.com/countersup>.

NAVIGATION & USER TIPS

You can move around this guide by using your mouse or keyboard arrows. Left mouse button goes to the next page, right mouse button goes to previous page. Click on the right arrow (→) for the next page and the left arrow (←) to go the previous page.

KEYBOARD SHORT CUTS

	PC	MAC
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Zoom out	[Ctrl] [-]	[⌘] [-]
Full screen/normal screen view	[Ctrl] [L]	[⌘] [L]

ABOUT THE CONCRETE SHERPA

The Concrete Sherpa is a team of people that represent the experience, teaching and learning of our team members and other industry leaders *on a mission to make life better for the concrete contractor*. We are an idea center striving to deliver thought provoking ideas based on “Concrete Advice for Business and Life” to stimulate you to reach new heights. As a user, you should remember to consider all information you receive, here at the Concrete Sherpa or elsewhere, not as a *cast in concrete* recommendation, but rather as an idea for you to consider and ponder.





Sherpa info

THE JOURNEY LEADING TO THE CONCRETE SHERPA PROJECT

The Concrete Sherpa Project (A [Sherpa](#) is a “guide”) was born at The Concrete Network in mid 2004. Here is how it happened:

The biggest surprise, or gift, since starting The Concrete Network in 1999 has been the concrete contractor friends from around the country we’ve made and witnessing the passion they have for what they do. These people include Dave Pettigrew, up in the San Francisco Bay Area, or the Verlennich brothers in Minnesota, or Bob Harris in Georgia, the list goes on and on. It’s quite inspiring.

We were once asked, “How are you so excited every day about concrete?” Well the answer is simple, it is impossible to not be excited about concrete when you have the job we do—interacting with hundreds of concrete contractors from every state in the country.

The thing we’ve learned about concrete contractors is that most are passionate *craftsmen*—they are often less passionate and experienced in the “office stuff”. Human nature channels us to do what we are most comfortable with; learning how to use a new saw-cutting tool is comfortable; learning and implementing a new estimating strategy, or job management tool, is not so comfortable.





Sherpa info

THE JOURNEY CONTINUES...

So Sherpa was born to provide FREE and easy to use information on topics many contractors are not too comfortable with.

- Concrete Sherpa is here to provide help to contractors who are often 'Lone Rangers' and don't have anyone to get solid business advice from.
- Concrete Sherpa is here to provide help for contractors who have to work too hard and too many hours in their business, and one day realize they need to work *on their business, not in their business*.
- Have fun with Concrete Sherpa and go faster towards reaching success than you might have on your own.
- To skeptics who think something free can't be valuable, or there must be a trick- visit Concrete Sherpa and decide for yourself.

We hope you make great use of the Concrete Sherpa and it helps you to become an awesome success for yourself, your family, your church, and your community.

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