

# How to make wine

## (Syrah and Chardonnay)



**WINEMAKING SEEMS MYSTERIOUS**—until you do it yourself. Then you realize that it's like following a very large, very slow recipe, with strange and fascinating moments along the way. (To further dip into our experiences, visit our blog: Go to <http://oneblockdiet.sunset.com> and click "Team Wine.") At the end of the process, you'll have a fair amount of wine you can proudly call your own, and if you luck out (as we seem to have, so far), it'll be pretty decent stuff. Try to pick your own grapes if you can. We considered quitting our day jobs after our fall '07 experience of harvesting dusty, juicy Syrah grapes (with much leisurely snacking on the sweet, seedy grapes and sun-dried raisins) in one of Thomas Fogarty Winery's remote and gorgeous Santa Cruz Mountains vineyards.

Even if you're starting with picked grapes or juice, the home winemaking journey offers many moments of great satisfaction, and it will get under your skin and give you a huge appreciation for what goes into all those bottles you see in wine shops. Just remember to keep a record of everything and to sanitize everything, then rejoice in finally having a chance to use that high school chemistry.

### WHAT WE MADE

#### **Syrah (for Chardonnay, scroll down)**

An inky, deep purple wine. When we last sampled our Syrah in early July '08, we tasted blueberries and blackberries mingling with leather and smoke, with bacon lingering in the background. We're letting it rest and mature until January '09, and then we'll report back, both here and in our blog (go to <http://oneblockdiet.sunset.com> and click "Team Wine"), with final tasting notes and our bottling experience—we hear that bottling is a full day of messy work, but we can't imagine anything we'd rather do.

### WHAT WE USED

#### **Materials, Prices, and Sources**

**Clipboard, pencil, and log sheet** to track your wine's progress and your additions (yeast and any preventative or preservative measures you take). We downloaded a free "log chart" from *WineMaker* magazine ([www.winemakermag.com](http://www.winemakermag.com)) and picked up a clipboard (about \$5) at an office-supply store.

**Wine grapes** To make four cases of wine (48 bottles), you need about 125 pounds of

grapes. Few homeowners have the acreage to grow grapes in this quantity, so your first step will be to make sure you can get your hands on wine grapes before you buy or rent any equipment. By midsummer, look into harvesting grapes in early fall at a U-pick vineyard—El Dorado County, in California's Sierra foothills, has a few U-pick vineyards (go to [www.edc-farmtrails.org](http://www.edc-farmtrails.org) and search for "wine grapes"), and PickYourOwn.org ([www.pickyourown.org](http://www.pickyourown.org)) lets you search for U-pick farms near you, with grape growers posting when vines are ready to harvest.

You could put dibs on grapes in summer for fall delivery by mail or special truck shipment (both methods are fairly expensive because grapes are perishable—they need to be kept at a stable temperature and can't sit around long after being harvested). But if you live near a grower with excess grapes, you can load up for less by cruising by with your own van or truck (this is primarily an option in California, Oregon, and Washington). At More-Grapes ([www.moregrapes.com](http://www.moregrapes.com)), growers on the West Coast and beyond list available grapes, including Syrah from about \$1/pound. And many winemaking association websites dedicate a page to "grapes

available" (check out California's El Dorado Wine Grape Growers Association's comprehensive site: [www.eldoradograpes.com](http://www.eldoradograpes.com)).

A good first stop is to ask about grape options at your local home winemaking shop (to find one, go to [www.winemakermag.com](http://www.winemakermag.com) and click "Resource Guide" and then "Supplier Directory"); many homebrew beer shops have wine contacts too. They'll likely refer you to small local growers or largely Web-based enterprises like F. Colavita & Son ([www.cawinegrapes.com](http://www.cawinegrapes.com)) that cater to home winemakers. Or they might suggest that you try a wine "starter" kit on your first adventure. We think this is cheating a bit—and you won't be able to follow most of our advice because kits come with premeasured ingredients—but kits look fairly easy to do solo, and many online winemaking shops sell them; E.C. Kraus ([www.eckraus.com](http://www.eckraus.com)), one of the most approachable and reputable winemaking shops out there, does a good job of breaking down the options, including fruit wines.

Finally, if you can't wait till the fall harvest and you want a bit more adventure than a kit wine affords, frozen California grapes and juice (like kits) are available

nearly year-round from Brehm Vineyards ([www.brehmvineyards.com](http://www.brehmvineyards.com)).

**Potassium metabisulfite** You'll use this industry-standard chemical for equipment sterilization and to protect finished wine from spoiling. Buy it in powdered form, not Campden tablets (which you have to take the extra step of crushing for equipment sterilization). We used ½ tsp. per 5-gallon carboy (a large glass jug used for fermenting; see below) of Syrah. We sprinkled some into each piece of equipment we needed to sterilize and rinsed liberally; we also mixed some with water to create our airlock solution (see our October 29 entry, below) and to sterilize bottles before filling and corking them. *About \$5 per ½ pound online or at a home winemaking store; ½ pound should be enough.*

**Large plastic garbage can (sanitized)** for stomping grapes, *I Love Lucy*-style. (It's a lot harder than it looks, like huffing up a stair climber set in quicksand.) Then you'll have to pick through the must (the newly crushed grapes) to remove the stems. *About \$10 at hardware stores and home improvement centers.* **Or use a crusher/destemmer** (like a large trough with a rotating screw in the middle), which you'll hand-crank, giving your arms a workout but making for relatively stem-free must. *Rent this from a home winemaking store; buying one will cost at least \$450.*

**Small food-grade plastic buckets** for schlepping grapes, must, and wine and for sanitizing tubing. *\$8–\$10 at cooking-supply and home winemaking/homebrew stores.*

**Food-grade plastic drum with lid**, 32-gallon size, where the juice will go through its first (primary) fermentation. *About \$70, including lid; available at home winemaking stores.* **Or a large plastic garbage can** (if you bought one for crushing/destemming, just pick through your must to remove the stems, then carry on fermenting in the same garbage can). *About \$10 at hardware stores and home improvement centers.*

**Cheesecloth** to keep bugs out of your plastic-drum or garbage-can fermenter. *About \$5 at most hardware and cooking-supply stores.*

**Garden hose and sprayer**, which you'll

attach to a water spigot to clean your equipment at the end of a messy day. *About \$30 at hardware stores and home improvement centers.*

**Wine yeast** to start your fermentation and convert your grape-juice must to wine. We used ICV-D80. *About \$1.50 for an 8-gram packet online or at a home winemaking store; for most wines, you'll use 1 gram of yeast per 1 gallon of must.*

**Wooden or stainless steel "must plunger"** for punching down the "cap" of skins that gives wine its beautiful color and contributes certain flavor characteristics. With some basic lumber and tools, you can make a wooden "plonker" (visit [www.winemakermag.com/component/resource/article/107-build-3-winemaking-projects](http://www.winemakermag.com/component/resource/article/107-build-3-winemaking-projects) for project directions). *Expect to pay at least \$80 for a stainless steel one online or at a home winemaking store.*

**Hydrometer** to measure the sugar level of your fermenting must. *\$.6–\$.25 online or at a home winemaking store.*

**Plastic cylinder**, aka "hydrometer jar" because it holds your wine and allows your hydrometer to float in it. *About \$5 online or at a home winemaking store.*

**Floating thermometer** to take the temperature of your fermenting must. *About \$10 online, at a home winemaking store, or at a feed store—floating "dairy" thermometers, as these are often called, are used with milk too.*

**Malolactic bacteria** to prompt a secondary fermentation. *\$15–\$20 for 2.5 grams, enough for 66 gallons of wine; buy online or at a home winemaking store.*

**Bladder press** (*rent this at a home winemaking store; buying one will cost at least \$1,500*) **or basket press** (*rent this at a home winemaking store; buying one will cost at least \$275*) to press your young wine off its "pumace" (the cap of skins and other solids, like seeds and stray stems).

**Glass carboys, 5-gallon size** These act as secondary fermenters—and surrogate barrels. Buy one for every 5 gallons of wine you're making, plus one extra for racking into. *About \$20 each at home winemaking/homebrew stores.*

**Fermentation airlocks** aka "ferm locks." These keep oxygen and bugs out of your wine but allow carbon dioxide to bubble

out as the wine ferments; buy one for each carboy. *About \$1.50 each online or at a home winemaking store.*

**Stoppers with a holes in their center**, aka "bungs." These hold the ferm lock in place while sealing your carboy. *About \$1.50 each online or at a home winemaking store.*

**Two 3- to 5-quart nonreactive mixing bowls** (we chose stainless steel; do not pick aluminum or copper, which will react with acids) for sterilizing stoppers, tubing, and other supplies. *Borrow them from your kitchen, or buy them for as low as \$10 each online or at a cooking-supply store.*

**Wine thief** A glass tube used to "steal" wine from a carboy for tasting and testing. *From \$25 online or at a home winemaking store.* **Or a turkey baster** We used one as a low-tech wine thief. *From \$5 online or at a cooking-supply store.*

**Glass marbles** for filling headspace, the vacant space left after removing wine from the fermenter for tasting and testing (oxygen is the enemy of wine!). Try to buy one solid color (instead of a mix) and avoid milky "frosted" or white ones; they're harder to spot in the yeast. *\$5 to \$9 per pound of ¾-inch "shooter" marbles; available at toy stores and some aquarium/pet-supply stores and online (check out the bulk selection of shooters at [www.moonmarble.com](http://www.moonmarble.com)).*

Napa winemaker Jon Priest of Etude suggested marbles to us after we started topping off our Syrah with **other West Coast Syrahs** (we grabbed what we already had in the office, making some of us a bit worried that our wine was losing its "local" AVA status and becoming more of a Western "meritage"). *Price per bottle will vary, of course, but if you go this route, don't skimp on your wine purchases—they'll be blending into your precious creation.*

**Acid test kit** to determine your grape quality and add acid as needed. Optional; we relied on a professional winemaker for assistance with this test, but many home winemakers skip this bit of chemistry and instead rely on books to guide them toward what their palate is sensing and what steps to take. Chat with your local winemaking store to get a feel for what you're comfortable doing. *From \$10 online or at a home winemaking store.*

**Funnel** Preferably with one high side to avoid splashback. Make sure it fits securely in your carboy. *From \$3.50 online or at a home winemaking or cooking-supply store.*

**2 lengths of food-grade vinyl tubing:** clear vinyl, 3/8-inch interior diameter, each 6 to 8 feet long. Used to siphon wine, both off its lees (the spent yeast and other sediment that settles to the bottom as fermentation ends) and into a clean carboy when racking, and from a carboy into a wine bottle before corking. We liked having two tubes: one siphoning, the other soaking in sanitizer and waiting its turn to siphon. *About 30 cents/foot online or at a home winemaking or plumbing-supply store.*

**Sturdy work table** to elevate full carboys when racking. *From \$75 at home improvement centers.*

**Oak chips or cubes** We used small cubes, adding 26 grams per 5-gallon carboy of Syrah. *\$10–\$30/pound, depending on oak origin and “toast” level; buy online or at a home winemaking store.*

**Digital kitchen scale** for weighing out oak chips. *From \$30 at cooking-supply stores.*

**Wine bottles** Reuse empty wine bottles (you’ll need to scrub off the original labels and sanitize the bottles) or buy new ones (sanitize these too). Consider a Rhône-style bottle if you want your Syrah to look authentic. *From \$15/dozen at a home winemaking store; you’ll need 26 750-ml. bottles for each 5-gallon carboy of wine you’re making.*

**2 bottle rinsers and a “bottle tree” drying rack** When half-filled with a sanitizing solution of “bottle wash” (see bottling section, below), your bottle rinser will be ready for you to slip a clean (washed and rinsed in plain water) wine bottle over the sprayer nozzle. By manually pumping a bottle up and down on this a few times, you’ll sanitize the environment in which your wine will live and mature (if you can resist drinking it!). Drain each bottle on the drying rack, which is shaped like a tall, skinny, spiky tree trunk. Now you’re ready to bottle. *Bottle rinsers run about \$20 each at home winemaking/homebrew stores. Find a “bottle tree” drying rack from about \$40 at home winemaking/homebrew stores.*

**Manual bottle filler** to attach to your plas-

tic tubing so you can fill each bottle in a controlled manner—just depress a metal pin at the end of the clear plastic rod by pushing it into the interior bottom of the bottle. When the wine is getting close to the top, just lift up the rod to disengage the pin and stop the flow of wine. *About \$6 online and at home winemaking/homebrew stores.*

**Corks** We wanted the real deal, not plastic and not a metal screw cap; prices depend on the quality of the natural cork, which is divided into several grades—top-quality corks are called “Flor” (*about \$150 for 250 corks*), but we decided to go with similarly top-quality 1¾-inch “overrun” corks left over from Napa wineries’ bottling runs (we paid \$19 per 100 corks at *MoreWine in Los Altos, California: www.morewinemaking.com or 800/600-0033*). Buy corks online or at a home winemaking store.

**Corker** Rent a “floor corker” at a home winemaking store, or buy time on a vacuum corker at a home winemaking or homebrew store. Hand corkers are available and cost less, but they limit your ability to move between bottling elements (to use one, you’ll be seated, bracing a bottle between your legs). *Buying a floor corker at a home winemaking store will cost at least \$85 and more along the lines of \$850 for a really sturdy one (the \$85 version should be fine).*

**Wax/foil** (optional). If you want to age bottles for a few years, consider sealing them with wax or a foil capsule. We didn’t do this, but a quick Web search found many options for both, and home winemaking/homebrew stores often carry the supplies.

**Labels** Use a design/graphics program like Adobe Illustrator, or work with your local home winemaking/homebrew store to create a label on their software. (To learn how we made our own labels, see below.)

## HOW WE DID IT A Step-by-Step Guide and Our Time Line

*Wine is a living creation, and your time line will vary based on environmental factors like temperature as well as starting sugar level and yeast health. Here’s the time line we followed; consult the resources listed in “Helpful Info” for more general guidance.*

**OCTOBER 4 Harvested 500 pounds of Syrah grapes** at Thomas Fogarty Winery’s Fat Buck Ridge vineyard in the San Francisco Bay Area’s Santa Cruz Mountains (they don’t usually sell to the public—we got lucky). Took grapes back to our office and **crushed** them, both by foot and with a hand-cranked crusher/destemmer (like a long trough with a rotating screw in the middle).

Put the destemmed must (crushed grapes, skins, and juice) into two food-grade plastic barrels and allowed it to **cold-soak** (to extract color and flavor) for four days.

**OCTOBER 8 Added yeast** (following package directions) to start primary fermentation.

**OCTOBER 12–28 Punched down** the “cap” of skins (which gives red wine its beautiful color and contributes certain flavor characteristics) two to three times a day with a “must plunger.” The cap was thick and radiated heat, and we needed to stand on a chair to get enough leverage to punch through the cap for the first few strokes of each punch-down session.

Every afternoon during this time period, we’d take **two measurements**: The first was the wine’s temperature (taken with a floating “dairy” thermometer) to make sure the wine was fermenting at a fairly constant and warm temperature (ours hovered around 78° F). The second was the wine’s sugar level (measured in ° Brix with a hydrometer) to check that the yeast was actively gobbling up the sugar and converting it into alcohol.

**OCTOBER 22 Started malolactic fermentation (MLF)**, a secondary bacterial fermentation that converts harsh malic acids into softer lactic ones. This might sound like high-tech chemistry, but “enacting” MLF is as simple as sprinkling the powdery bacteria into the wine (following package directions, of course).

**OCTOBER 29 Pressed** the Syrah off its “pumace” (the cap of skins and other solids, like seeds and stray stems) with a bladder press, catching first the “free-run” wine (what naturally spills through the slats of the press and is guided through the spigot with only gravity’s assistance)

and then the “press-run” wine (coaxed off the pumace by using a garden hose to inflate the press’s bladder to 15 psi).

As the wine streamed from the press, we ran a bucket brigade from the spigot over to sanitized 5-gallon carboys topped with splashback funnels. Then we **out-fitted each carboy with a “ferm lock”** (fermentation airlock) filled about halfway with “meta” solution (2¼ tsp. potassium metabisulfite dissolved in 1 quart water; we made our meta solution once and stored it in a sterilized gin bottle, so it was easy to refill our ferm locks at any time) and stuck it in a bung to create a seal on top of the carboy, keeping oxygen (the enemy of wine) and bugs (we don’t like to share, and we didn’t want to risk bacteria from their tiny legs) out of the wine while allowing carbon dioxide to bubble out.

**THE NEXT 5 MONTHS Periodically checked ferm locks** (refilling with new meta if wine had burbled into the ferm lock or if the ferm lock’s meta level was looking low) and **sampled** our wine to check it against our idea of a good Syrah. In mid-February, we gave some wine samples to Fogarty winemaker Michael Martella to **test pH and Total Acidity** to make sure things were on track (we were afraid that our fermentation had gotten stuck). Our numbers? pH: 3.8 (a little high; Martella thought it would come down, and we never tested it again, relying instead on our palates). TA: .64 (fine).

Each time we pulled wine out of a carboy with a wine thief (okay, turkey baster) to sample it, we’d have to **“top off”** the headspace (the air between the wine level and the ferm lock) with more Syrah (because, as mentioned above, oxygen is the enemy of wine). Where did we get this additional Syrah? We lost our “extra” jugs of Syrah to a homeless man who wandered into our breezeway and helped himself, so we opened bottles of other Western Syrahs. But we wish we’d added sterilized marbles instead (see “What We Used,” above).

**APRIL 29 Racked** the Syrah off its lees (the spent yeast and other sediment that drops out as fermentation ends) by siphoning it into fresh carboys. Here’s how you do it:

Put a full carboy on top of a work table and position an empty and newly sterilized carboy on the floor under it. Remove the ferm lock and set it upright in a sterilized container to save for the carboy you’re about to fill up. Start the siphon by putting one end of the vinyl tubing in the full carboy (don’t let the tubing end get too close to the lees at the bottom of the carboy—remember, this is what you’re racking away from), then use your mouth to gently suck the tubing’s open end until wine is flowing toward it. (Be prepared to quickly and strongly pinch the tubing and to slip your index finger over the open end before wine spills onto your shoes.) Put this open end into the clean carboy and let gravity do the work for you. Just keep an eye on the tubing in the full carboy—in addition to keeping the siphoning end away from the lees, you’ll need to keep pushing the tubing lower and lower toward the lees to keep wine flowing (if you pull up, air will enter the tubing and stop the siphon’s flow). Ask a friend or two to join you on this step and any other time that you think you could use some extra hands.

**Added oak chips** for body and rounded flavor. We placed 26 grams of small, medium-toast oak cubes in each 5-gallon carboy.

**Added SO<sub>2</sub>** in the form of ½ tsp. powdered potassium metabisulfite per 5-gallon carboy to protect our finished wine from spoilage by free microbes. **Filled headspace** by adding more Syrah (again, you could also use sterilized marbles). **Topped** new carboys with meta-filled ferm locks and **moved** them into a temperature-controlled environment (our basement) because outdoor temperatures were rising, and the heat could accidentally cook our finished wine.

**LATE JANUARY 2009** About 9 months after our last step detailed above, we’ll **bottle and cork our wine** (scroll down if you’d like to read about our Chardonnay bottling and corking experience). We’re letting the Syrah rest and mature a bit—as is typical of red wines—before bottling. We’re excited to see whether it tastes different (see “What We Made,” above) if we don’t

fiddle with it for a while (we’ll keep checking the meta level of each ferm lock, of course!). And then we’ll report back, both here and in our blog (go to <http://oneblockdiet.sunset.com> and click “Team Wine”), with final tasting notes and our bottling experience—if you’ve been reading our blog, you know that we have a tendency to get messy and do a bit of sampling on our wine workdays, and we can’t wait to celebrate a labor-intensive day of bottling by toasting with our own wine!

In anticipation of bottling (and to get some bottles camera-ready for the August 2008 issue of *Sunset*), we **created labels**, which we laser-printed onto white Avery 5265 full-sheet labels (available at office-supply stores and [www.officemax.com](http://www.officemax.com)). Atop a self-healing mat (available at craft stores and [www.dickblick.com](http://www.dickblick.com)), we lined up our metal ruler along a label edge and used a craft knife (available at craft stores and [www.dickblick.com](http://www.dickblick.com)) to cut out each label. (We also tried trimming labels with a paper cutter, but sticky bits gummed up the blade.) Then it was as easy as peeling and sticking a label on each bottle—as long as it was lined up straight!

**Labeling tip no. 1** Wait until at least 48 hours after you bottle your wine to start labeling; you want to give your wine some time to adapt to the bottle before you start handling bottles and slapping labels on them. We practiced labeling empty, uncorked bottles, not thinking about how messy bottling would be and how those labels will likely dissolve a bit if we spill some wine while bottling.

**Labeling tip no. 2** To get your label on straight, try just barely peeling back one corner of the label and using that sticky spot to help you position the label on your clean, dry bottle surface. Then reach under the label and gently remove the backing with one hand; with the other, smooth down the label as you peel off the backing.

## WHAT WE MADE

### Chardonnay

Having rested *sur lie* (on its yeasty “lees”), our Chardonnay has a creamy fullness to it, with the juicy acidity of ripe Granny Smith apples. It pairs very well with our One-Block Feast (go to [www.sunset.com/oneblockfeast](http://www.sunset.com/oneblockfeast) and click on “Get Recipes”).

## WHAT WE USED

### Materials, Prices, and Sources

**Clipboard, pencil, and log sheet** to track your wine’s progress and your additions (yeast and any preventative or preservative measures you take). We downloaded a free “log chart” from *WineMaker* magazine ([www.winemakermag.com](http://www.winemakermag.com)) and picked up a clipboard (about \$5) at an office-supply store.

**Wine grapes or juice** In midsummer, put dibs on “pressed juice” (an easier route, and the path we chose) or wine grapes (again, more complicated—for an idea of what this involves, see all the steps we took for our Syrah, above, keeping in mind that you’ll need to get all of the skins and stems away from your must right away; no cold-soaking unless you want your Chardonnay to be tinted like a rosé). We bought 20 gallons of pressed Chardonnay—enough to make just over 100 750-ml. bottles of wine—from Thomas Fogarty Winery in the Santa Cruz Mountains (they don’t usually sell to the public—we got lucky). But if you want to get your hands on your wine as much as possible, find a source for fresh grapes via MoreGrapes ([www.moregrapes.com](http://www.moregrapes.com)), where growers on the West Coast and beyond list available grapes, including Chardonnay from about \$1/pound.

A good first stop is to ask about grape options at your local home winemaking shop (to find one, go to [www.winemakermag.com](http://www.winemakermag.com) and click “Resource Guide” and then “Supplier Directory”); many homebrew beer shops have wine contacts too. They’ll likely refer you to small local growers or largely Web-based enterprises like F. Colavita & Son ([www.cawinegrapes.com](http://www.cawinegrapes.com)) that cater to home winemakers. Or they might suggest that you try a wine “starter” kit on your first adventure. We

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these are often called, are used with milk too. **Malolactic bacteria** to enact a secondary fermentation. \$15–\$20 for 2.5 grams, enough for 66 gallons of wine; buy online or at a home winemaking store.

**5-gallon glass carboys** These act as secondary fermenters—and surrogate barrels. Buy one for each 5 gallons of wine you’re making, plus one extra for racking into. About \$20 each at home winemaking/homebrew stores.

**Fermentation airlocks** aka “ferm locks.” These keep oxygen and bugs out of your wine but allow carbon dioxide to bubble out; buy one for each carboy. About \$1.50 each online or at a home winemaking store.

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**Two 3- to 5-quart nonreactive mixing bowls** (we chose stainless steel; do not pick aluminum or copper, which will react with acids) for sterilizing stoppers, tubing, and other supplies. Borrow them from your kitchen, or buy them for as low as \$10 each online or at a cooking-supply store.

**Wine thief** A glass tube used to “steal” wine from each carboy for tasting and testing. From \$25 online or at a home winemaking store. **Or a turkey baster** We used one as a low-tech wine thief. Find one for as low as \$5 online or at a cooking-supply store.

**Glass marbles** for filling headspace, the vacant space left after removing wine from the fermenter for tasting and testing (oxygen is the enemy of wine!). Try to buy one solid color (instead of a mix) and avoid milky “frosted” or white ones; they’re harder to spot in the yeast. \$5 to \$9 per pound of 3/4-inch “shooter” marbles; available at toy stores and some aquarium/pet-supply stores and online (check out the bulk selection of shooters at [www.moonmarble.com](http://www.moonmarble.com)).

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**Acid test kit** to determine your grape quality and add acid as needed. Optional; we relied on a professional winemaker for assistance with this test, but many home winemakers skip this bit of chemistry and instead rely on books to guide them toward what their palate is sensing and what steps to take. Chat with your local winemaking store to get a feel for what you're comfortable doing. *From \$10 online or at a home winemaking store.*

**Funnel** Preferably with one high side to avoid splashback. *From \$3.50 online or at a home winemaking or cooking-supply store.*

**2 lengths of food-grade vinyl tubing:** clear vinyl,  $\frac{3}{8}$ -inch interior diameter, each 6 to 8 feet long. Used to siphon wine, both off its lees (the spent yeast and other sediment that settles to the bottom as fermentation ends) and into a clean carboy when racking, and from a carboy into a wine bottle before corking. We liked having two tubes: one siphoning, the other soaking in sanitizer and waiting its turn to siphon. *About 30 cents/foot online or at a home winemaking or plumbing-supply store.*

**Sturdy work table** to elevate full carboys when racking. *From \$75 at home improvement centers.*

**Oak chips or cubes.** We used small cubes, adding a small handful per 5-gallon carboy of Chardonnay (we oaked half of our 20 gallons, which meant that two carboys got oak, and two did not). *\$10–\$30/pound, depending on oak origin and "toast" level; buy online or at a home winemaking store.*

**Digital kitchen scale** for weighing out oak chips. *From \$30 at cooking-supply stores.*

**Stoppers without a hole,** aka "bungs"; one for each carboy for lees stirring (rolling the barrels to add character and complexity). *About \$1.25 each online or at a home winemaking store.*

**Duct tape** to secure stopper when rolling carboys. *About \$4 at a home improvement center.*

**Thick cardboard or a thick old rug** for rolling carboys on (to stir the lees).

**Wine bottles** Reuse empty wine bottles (you'll need to scrub off the original labels

and sanitize the bottles) or buy new ones (sanitize these too). Consider a Burgundy-style bottle if you want your Chardonnay to look authentic. *From \$15/dozen at a home winemaking store; you'll need 26 750-ml. bottles for each 5-gallon carboy of wine you're making.*

**2 bottle rinsers and a "bottle tree" drying rack** When half-filled with a sanitizing solution of "bottle wash," your bottle rinser will be ready for you to slip a clean (washed and rinsed in plain water) wine bottle over the sprayer nozzle. By manually pumping a bottle up and down on this a few times, you'll sanitize the environment in which your wine will live and mature (if you can resist drinking it!). Drain each bottle on the drying rack, which is shaped like a tall, skinny, spiky tree trunk. Now you're ready to bottle. *Bottle rinsers run about \$20 each at home winemaking/homebrew stores. Find a "bottle tree" drying rack from about \$40 at home winemaking/homebrew stores.*

**Manual bottle filler** to attach to your plastic tubing and then fill each bottle of wine in a controlled manner—just depress a metal pin at the end of the clear plastic rod by pushing it into the interior bottom of the bottle. When the wine is getting close to the top, just lift up the rod to disengage the pin and stop the flow of wine. *About \$6 online and at home winemaking/homebrew stores.*

**Corks** We wanted the real deal, not plastic and not a metal screw cap; prices depend on the quality of the natural cork, which is divided into several grades—top-quality corks are called "Flor" (about \$150 for 250 corks), but our local winemaking store advised us to go with "Grade 3"  $1\frac{3}{4}$ -inch #9 corks, since white wines can't be cellared for long (we paid \$36 per 100 corks at *MoreWine in Los Altos, California: www.morewinemaking.com or 800/600-0033*). Buy corks online or at a home winemaking store.

**Corker** Rent a "floor coker" at a home winemaking store, or rent time on a vacuum coker at a home winemaking or homebrew store. Hand corks are available and cost less, but they limit your ability to move between bottling elements because to use one, you'll be seated, brac-

ing a bottle between your legs. *Buying a floor coker at a home winemaking store will cost at least \$85 and more along the lines of \$850 for a really sturdy one (the \$85 version should be fine).*

**Wax/foil** (optional). If you want to try aging your bottles for a few years (not a common practice for white wines), consider sealing them with wax or a foil capsule. We didn't do this, but a quick Web search found many options for both, and home winemaking/homebrew stores often carry the supplies.

**Labels** Use a design/graphics program like Adobe Illustrator, or work with your local home winemaking/homebrew store to create a label on their software. (To learn how we made our own labels, see below.)

## HOW WE DID IT A Step-by-Step Guide and Our Time Line

*Wine is a living creation, and your time line will vary based on environmental factors like temperature as well as starting sugar level and yeast health. Here's the time line we followed; consult the resources listed in "Helpful Info" for more general guidance.*

**OCTOBER 4 Purchased 20 gallons of pressed Chardonnay juice** at Thomas Fogarty Winery in the San Francisco Bay Area's Santa Cruz Mountains (they don't usually sell to the public—we got lucky).

**Added yeast** to start primary fermentation. Outfitted each carboy with a "ferm lock" (a fermentation airlock) filled about halfway with "meta" solution ( $2\frac{3}{4}$  tsp. potassium metabisulfite dissolved in 1 quart water; we made our meta solution once and stored it in a sterilized gin bottle, so it was easy to refill our ferm locks at any time) and stuck it in a bung to create a seal on top of the carboy, keeping oxygen (the enemy of wine) and bugs (we don't like to share, and we didn't want to risk bacteria from their tiny legs) out of the wine while allowing carbon dioxide to bubble out.

**OCTOBER 11 Added oak chips** to half of our carboys. Placed just a small handful in each 5-gallon carboy for body and added depth of flavor.

**OCTOBER 16 Took two measurements:** The first was the wine's temperature

(taken with a floating “dairy” thermometer), to make sure the wine was fermenting at a fairly constant and warm temperature in our outdoor courtyard with no temperature control. The second was the wine’s sugar level (measured in ° Brix with a hydrometer), to make certain the yeast was actively gobbling up the sugar and converting it into alcohol.

**OCTOBER 17 Started malolactic fermentation (MLF)**, a secondary bacterial fermentation that converts harsh malic acids into softer lactic ones. This might sound like high-tech chemistry, but “enacting” MLF is as simple as sprinkling the powdery bacteria into the wine (following package directions, of course).

**THE NEXT 4½ MONTHS Periodically sampled** our oaked and unoaked wines to check their progress against our idea of a good Chardonnay. Also, in mid-February, we gave some wine samples to Fogarty winemaker Michael Martella to **test pH and Total Acidity** to make sure things were on track. Our numbers? pH: 3.2 (low, which means our acidity is high, which is an excellent thing for a Chardonnay). TA: .68 (great). Each time we pulled wine out of a carboy with a wine thief (our trusty turkey baster), we’d have to **“top off”** the vacant headspace with more Chardonnay (because, as mentioned above, oxygen is the enemy of wine). Where did we get this extra Chardonnay? We didn’t have any extra of our own, so we opened bottles of other Western Chardonnays. But we wish we’d added sterilized marbles instead (see “What We Used,” above).

**MARCH 3** Temporarily swapped each carboy’s ferm lock for a **solid stopper**, then duct-taped down each stopper and **rolled** each Chardonnay on flattened cardboard boxes (we later switched to a thick, rug-size doormat from our breezeway).

**Added SO<sub>2</sub>** in the form of ⅓ tsp. powdered potassium metabisulfite (swirled in a little Chardonnay and slightly heated in a microwave to dissolve the powder) per 5-gallon carboy to protect our finished wine from spoilage by free microbes.

**Re-topped** each carboy with a meta-filled ferm lock.

**MARCH 27 Rolled** Chardonnays.

**Re-topped** with meta-filled ferm locks.

**APRIL 29 Rolled** Chardonnays.

**Re-topped** with meta-filled ferm locks.

**MAY 13 Rolled** Chardonnays one last time, **re-topped** with meta-filled ferm locks, and **moved** them into a temperature-controlled environment (our basement) because outdoor temperatures were rising, which could accidentally cook our finished wine.

**JULY 8 Racked the Chardonnay** off its lees (the spent yeast and other sediment that drops out as fermentation ends) by siphoning it into fresh carboys. To do this, put a full carboy on top of a work table, and position an empty and newly sterilized carboy on the floor under it. Remove the ferm lock and set it upright in a sterilized container; you’ll need it for the carboy you’re about to fill up. Start the siphon by putting one end of the vinyl tubing in a carboy of wine (don’t let the tubing end get too close to the lees at the bottom of the carboy—remember, this is what you’re racking away from), then use your mouth to gently suck the tubing’s open end until wine is flowing toward the open end—be prepared to quickly and strongly pinch the tubing and to slip your index finger over the open end before wine spills onto your shoes. Put this open end in the clean carboy and let gravity do the work for you. Just keep an eye on the tubing in the full carboy—in addition to keeping the siphoning end away from the lees, you’ll need to keep pushing the tubing lower and lower toward the lees to keep wine flowing (if you pull up the tubing end, air will enter the tubing and stop the siphon’s flow). Ask a friend or two to join you on this step and any other time that you think you could use some extra hands.

**Added SO<sub>2</sub> again** in the form of ¼ tsp. powdered potassium metabisulfite per 5-gallon carboy to protect our finished wine from spoilage by free microbes. **Filled headspace** (the air between the wine level and the ferm lock) by adding sterilized marbles or more Chardonnay. **Topped** new carboys with meta-filled ferm locks.

**OCTOBER 1, 2008 Bottled** our Chardonnay, after nearly three months of letting it rest. (We also wanted to wait for cooler

weather, as we bottled outside in our parking lot, and hot days don’t make for happy wine or happy bottlers).

With a drain and a hose-rigged spigot nearby for easy cleaning and clean-up, we dragged out a hefty work table; stainless steel bowls for sterilizing our siphon tubing, bottle filler, and corks; two bottle rinsers; and our “bottle tree” drying rack—to see our setup and many of the bottling steps in action, check out the video on our blog: Go to <http://oneblockdiet.sunset.com> and click “Team Wine.”

To sterilize our bottles (remember that you’ll need 26 bottles per 5-gallon carboy), we whipped up a batch of bottle wash (4½ tsp. potassium metabisulfite dissolved in 1 gallon water) and split this solution between our two bottle rinsers. We gave each bottle a rinse with bottle wash: Two pumps on one spring-loaded bottle rinser to wash away any dust, then two pumps on our second rinser to complete the sterilization (some home winemakers dump SO<sub>2</sub> into their wine before bottling to really keep the bugs out, but Team Wine likes to keep interventions to a minimum). Then we placed each bottle onto the tree for 10 to 15 minutes of drying.

Then we were ready to start a siphon and get bottling; here’s how: Stick one end of plastic tubing way down into a carboy (as close to the tiny amount of remaining sediment as you dare), then put the other end in your mouth. Pretend like you’ve got a giant straw in your mouth and start sipping. The wine will quickly start flowing, so keep a hand near your mouth to quickly and firmly pinch the tubing before wine tumbles into your mouth.

Holding up the tubing end that was just in your mouth, grab your bottle filler (a plastic rod with a spring-loaded tip that controls the flow of wine). Gently but firmly slide the rod onto the tubing, and you’re set. As long as you keep the rod end lower than the carboy that’s up on the table, your siphon is ready whenever you are.

Take a bottle off the tree and place it at your feet. Then squat down and poke the bottle filler into the empty bottle. As soon

as you depress its tiny tip, the rod will allow wine to pass into the bottle. Fill the bottle till it's approaching full, pausing to let the wine foam as needed (this is normal—it's just the SO<sub>2</sub> bubbling off), then gently lift up and remove the rod when the wine crests the top of the bottle neck (a quality rod neatly displaces the perfect amount of headspace for your cork). You have just filled a bottle of wine—almost as easily as you'll drain it when you're ready to share it.

**OCTOBER 1, 2008** **Corked** our Chardonnay. Even though they're natural, corks still need sterilizing before being put in contact with wine (which remains alive, even when bottled). So we prepped another sanitizing solution (for corks, it's ½ tsp. potassium metabisulfite dissolved in 1 gallon water) in a nonreactive stainless steel bowl. To keep the corks from bobbing up in this solution (and to keep us from having to constantly jab them down to ensure sterilization) we nestled a smaller nonreactive bowl on top of the bowl of corks, then only poked them every 5 minutes or so.

After 20 minutes of being dunked, the corks were ready for use. Instead of draining the solution and risking some bug or dust latching onto the corks as they dried, we left them bathing till we needed them, and we placed the bowl at the base of the floor corker for ease of access.

A floor corker is amazingly simple and complex at the same time; it's physics and mechanics in action. You simply place a full bottle on the spring-loaded platform, place a sanitized cork in the jaws of the "compression chamber" or iris, then brace the corker with your foot and use your hands to pull down the handle. In one fluid motion, the cork gets squeezed on four sides and a metal rod comes down to plunge the compressed cork into the bottle. Check it out in the video on our blog: Go to <http://oneblockdiet.sunset.com> and click "Team Wine."

Once in a bottle, the cork has just enough room to expand in the bottle neck, creating a tight seal and keeping the wine in and oxygen out. Because any SO<sub>2</sub> you added during the winemaking process is

still bubbling out of the wine at this point, and because wine is a living thing that needs time to adjust to its new environment, you'll want to place bottles upright (cork side up) in the case for 24 to 48 hours. After the bottles de-gas and adapt, flip them upside down in the case or store them horizontally, either in a wine rack or simply by tilting a full case of bottles on its side—choose whichever method you'd like as long as it ensures that the wine is staying in contact with the cork (which could wither if you leave it hanging high and dry above the wine's slight headspace, which you'll notice when a bottle is standing upright).

Now your bottles are ready to be labeled and shared with friends. But don't drink them right away—your living wine is adapting to its new life in a bottle and could be experiencing bottle-shock. Give them a few days to settle into their smaller confines, then uncork away.

**OCTOBER 3, 2008** **We labeled several of our bottles** using a design that we'd laser-printed onto white Avery 5265 full-sheet labels (available at office-supply stores and [www.officemax.com](http://www.officemax.com)). Atop a self-healing mat (available at craft stores and [www.dickblick.com](http://www.dickblick.com)), we lined up our metal ruler along a label edge and used a craft knife (available at craft stores and [www.dickblick.com](http://www.dickblick.com)) to cut out each label. (We also tried trimming labels with a paper cutter, but sticky bits gummed up the blade.) Then it was as easy as peeling and sticking a label on each bottle—as long as it was lined up straight!

**Labeling tip no. 1** Wait until at least 48 hours after you bottle your wine to start labeling; you want to give your wine some time to adapt to the bottle before you start handling bottles and slapping labels on them. We practiced labeling empty, uncorked bottles, not thinking about how messy bottling would be and how those labels will likely dissolve a bit if we spill some wine while bottling.

**Labeling tip no. 2** To get your label on straight, try just barely peeling back one corner of the label and using that sticky spot to help you position the label on your clean, dry bottle surface. Then reach under

the label and gently remove the backing with one hand; with the other, smooth down the label as you peel off the backing.

## HELPFUL INFO **Getting Started**

### GOOD BOOKS AND OTHER PUBLICATIONS

*The Way to Make Wine: How to Craft Superb Table Wines at Home* by Sheridan Warrick (University of California Press, 2006)

*The Winemaker's Answer Book: Solutions to Every Problem, Answers to Every Question* by Alison Crowe (Storey Publishing, 2007)

*WineMaker Beginner's Guide* (Battenkill Communications)

*WineMaker* magazine (available at home winemaking shops; find subscription information and many articles on [www.winemakermag.com](http://www.winemakermag.com))

### HOME WINEMAKING SHOPS

Find a home winemaking/homebrew shop near you: Go to [www.winemakermag.com](http://www.winemakermag.com) and click "Reference Guide" and then "Supplier & U-Vint Directory."

Our favorite local shop—MoreWine in Los Altos, California—also has an online shop (great for yeast, malolactic bacteria, and most equipment and materials): [www.morewinemaking.com](http://www.morewinemaking.com) or 800/600-0033.

A great Web-based store for equipment, materials, and kits is E.C. Kraus: [www.eckraus.com](http://www.eckraus.com) or 800/353-1906.

### HANDY WEBSITES

General and specific advice, plus free charts and sulfite calculator: [www.winemakermag.com](http://www.winemakermag.com)

General advice: [www.grapestompers.com](http://www.grapestompers.com)