

The Chef's Secret Weapon

What if one pan could do everything the best traditional stainless-steel, cast-iron, and nonstick pans can do—and, in some cases, even do it a little better?

➤ BY LISA McMANUS ⇐

Even if you've never heard of a carbon-steel skillet, you've almost certainly eaten a meal made in one. Restaurant chefs use these pans for all kinds of tasks, from searing steak to sautéing onions to cooking eggs. French omelet and crêpe pans are made of carbon steel, as are the woks used in Chinese restaurants. Even Julia Child had a few carbon-steel pieces alongside her familiar rows of copper cookware. In European home kitchens, these pans are hugely popular. Somehow, though, despite their prevalence in restaurants, they've never really caught on with home cooks in the United States. Given their reputation for being as great at browning as they are at keeping delicate foods from sticking, we wondered if it was time that changed.

We bought seven carbon-steel skillets, all as close as possible to our preferred size of 12 inches for a primary skillet, priced from \$39.95 to \$79.95. For fun we also threw in a \$230.00 hand-forged version made in Oregon. Bearing in mind carbon steel's multipurpose promise, we decided on a range of recipes for our testing: frying eggs, turning out cheese omelets, pan-searing steaks, and baking the traditional French upside-down apple dessert known as *tarte Tatin*, which begins on the stove and moves to the oven. Along the way we'd evaluate the skillets' shape, weight, handle comfort, and maneuverability. Washing the pans after every test would let us judge how easy they were to clean and maintain. Our key question: Could this one type of pan actually make owning the other skillets we've always had in our arsenal—stainless-steel tri-ply, cast-iron, and nonstick—more of an option than a necessity?

In Season

The first thing we learned about carbon steel is that, like cast iron, it rusts when it's bare. It requires seasoning, a process that bonds oil to the pan to not only provide a layer of protection but also start the process of making the pan nonstick. While two of the skillets we ordered came preseasoned, the other six arrived sheathed in sticky beeswax or thick grease to block rust formation in transit. After scrubbing off this temporary coating (which was sometimes



A well-seasoned carbon-steel skillet is so nonstick that fried eggs slip around in the pan.

easier said than done), we followed each manufacturer's seasoning instructions. At first we wondered if the need for seasoning might end up being a deal breaker. But we found a favorite method that is relatively easy. (For more, see "Seasoning Carbon Steel.")

When we got cooking, we were astonished at how nonstick even the initial seasoning made these pans. Our first test was to fry an egg in a teaspoon of butter. In nearly all of the pans, the egg slipped around like a puck on an air hockey table. Omelets slid out intact, with few exceptions. Each time we cooked, more patina built up. And as long as we cleaned it following manufacturers' instructions—no soap and a light coat of oil after drying, like cast iron—the nonstick surface kept gradually improving. Most of the time, we merely had to wipe out the pan with a paper towel—no washing at all—to find it clean as a whistle.

So our first discovery was a big one: Getting true nonstick performance from a carbon-steel skillet

is remarkably quick. Another virtue of carbon-steel skillets came to light when we seared steaks. A smoking-hot traditional stainless-steel tri-ply skillet does a perfectly acceptable job at this task, and it's what most home cooks are likely to use, even though we're partial to cast iron and find that it does a superior job (cast iron's heat retention makes it incredibly good for high-heat tasks). The carbon-steel pans trumped both. The impressively deep, even browning these pans produced was easily on a par with cast iron, but because carbon-steel pans are lighter and thinner than cast-iron skillets of the same size, the carbon-steel pans were able to heat up in nearly half the time. Later, using our winning carbon-steel pan, we saw equally great browning when we tried an assortment of other recipes, including frying sliced potatoes, cooking burgers, and stir-frying Sichuan green beans. This is a skillet worth owning if only for pan frying and sautéing, besting our favorite traditional skillet and equaling the best cast-iron skillet in terms of results but with less weight to lug. Like both of these types of pans, it can also go under the broiler.

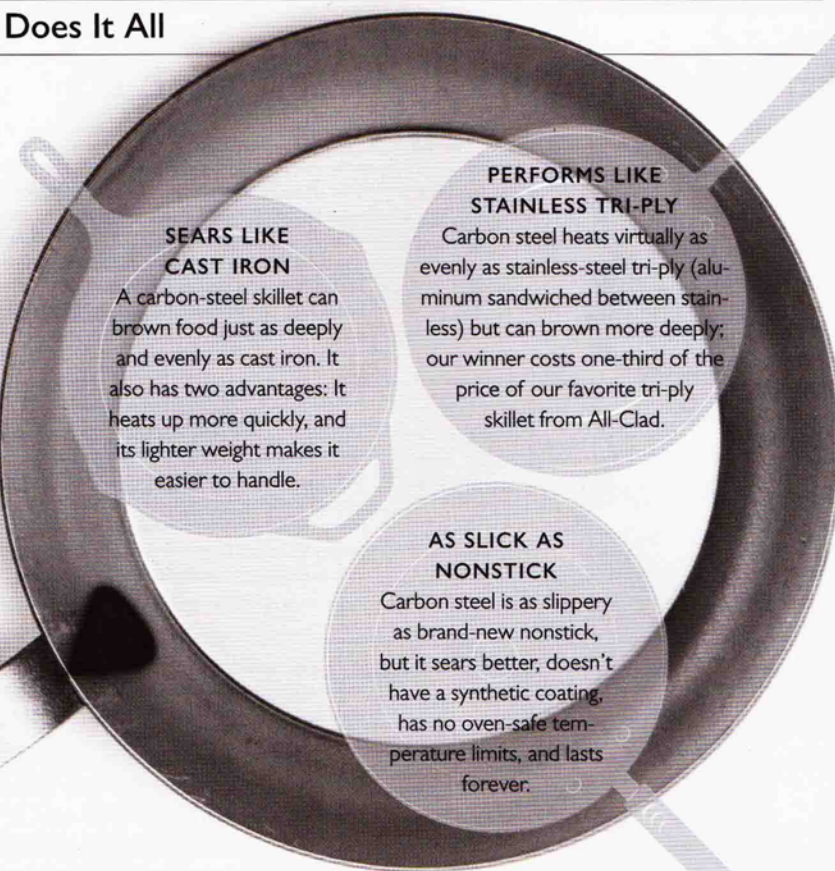
However, during these additional tests we did discover one downside. If you simmer an acidic tomato sauce in a carbon-steel skillet, as we did when we made a batch of skillet lasagna in our winning pan, the acid will strip off most of the pan's dark patina and the shiny silver interior of the

Carbon Steel: A Very Versatile Material

The composition of carbon steel, an alloy made of about 1 percent carbon and 99 percent iron, makes it a particularly functional material for cookware. It contains slightly less carbon than cast-iron, which makes it less brittle; as a result, it can be made relatively thin and lightweight but still be plenty durable. It's heavy enough to retain heat well but thin enough to heat quickly. And unlike cast iron, which is so rough that it requires multiple rounds of seasoning to become truly nonstick, the smooth surface of carbon steel makes it easy to acquire a slick patina of polymerized oil during seasoning. For a detailed comparison of carbon steel and cast iron, go to CooksIllustrated.com/carbonsteel.

The Pan That Does It All

A good carbon-steel skillet can literally do it all: You can bake, broil, sear, and stir-fry in it; plus, you can cook delicate foods like fish and eggs in it with no fear of sticking. It's no wonder that these skillets are used by so many professional chefs in restaurant kitchens around the world. The only caveat? Cooking with acidic ingredients will take away some of the seasoning, but it can be easily restored.



SEARS LIKE CAST IRON

A carbon-steel skillet can brown food just as deeply and evenly as cast iron. It also has two advantages: It heats up more quickly, and its lighter weight makes it easier to handle.

PERFORMS LIKE STAINLESS TRI-PLY

Carbon steel heats virtually as evenly as stainless-steel tri-ply (aluminum sandwiched between stainless) but can brown more deeply; our winner costs one-third of the price of our favorite tri-ply skillet from All-Clad.

AS SLICK AS NONSTICK

Carbon steel is as slippery as brand-new nonstick, but it sears better, doesn't have a synthetic coating, has no oven-safe temperature limits, and lasts forever.

skillet will reappear. However, we didn't notice any off-flavors when we tasted the lasagna, and a few rounds of stovetop heating and wiping the skillet with oil, which took about 10 minutes, restored the slippery patina.

Finally, design. We found two basic styles: very thin, shell-like pans and a thicker variety. The thin pans scorched food and threw off recipe times (butter instantly browned and even blackened before we could crack an egg to fry), and they warped by the end of testing. We preferred the thicker skillets. Even if they were a bit harder to lift—some weighed up to twice as much as our favorite traditional skillet, though still a few pounds less than our favorite cast-iron pan—they regulated heat much better and did not warp.

Other design features—issues that have come up in every skillet testing we've done—mattered, too. Some pans felt unbalanced or had slightly cramped cooking surfaces. Others had too-high sides that impeded access to the food or too-low sides that let liquids (like the egg for omelets) splash out. And several of the pans had unusually long, steeply angled handles; these made shorter testers grab them at awkward angles, and they barely fit inside the oven when we baked tarte Tatin.



► Lisa Explains It All

Video available free for 4 months at CooksIllustrated.com/oct15

Make Room on the Pot Rack

Despite these minor issues, though, our conclusion was clear: Carbon-steel skillets have earned a place in our kitchen. They possess some of the best attributes and lack several of the drawbacks from each type of standard skillet. They offer the versatility of a traditional pan, the heat retention of cast-iron at a lighter weight, and the slick release of a good nonstick skillet without the synthetic coating or the lack of durability. In fact, many of us would happily opt for just a carbon-steel pan in our own home arsenal. (Plus, perhaps, either a traditional or nonstick pan if we didn't want to fuss with reestablishing the seasoning after cooking acidic dishes.)

At the end of our testing, we had two top choices: First, the Matfer Bourgeat Black Steel Round Frying Pan, 11⁷/₈" , priced at an affordable \$44.38. This is a simple, classic pan that cooks beautifully. It's sturdy, easy to maneuver, and quick both to acquire slick seasoning and to clean up, with a smooth, rivet-free interior that won't trap food particles—in other words, it's all you need. But if you want a pan that's a showpiece as well, we also loved the Blu Skillet Ironware 13" Fry Pan (\$230.00). While our initial skepticism was well deserved given its price, we were surprised by what a great pan it was. It is beautifully crafted, sturdy, and well sized and shaped, and it performs perfectly, releasing food well from the get-go and only improving as we used it. However, its high price means it's not for everyone, and because the pans are made by hand one by one, wait times can be weeks long, depending on demand.

Seasoning Carbon Steel

Unless it comes preseasoned, a carbon-steel pan requires seasoning just as a cast-iron pan does. This process bonds oil to the surface, providing protection against rust and making the pan nonstick. The instructions that come with our winning pan, from Matfer Bourgeat, suggest an unusual method, but we found that it really works.

INITIAL SEASONING

First you'll need to remove the new pan's wax or grease coating (used to protect the metal from rusting in transit). Use very hot water, dish soap, and vigorous scrubbing with a bristle brush. Dry the pan and then put it on low heat to finish drying. Add $\frac{1}{3}$ cup oil, $\frac{2}{3}$ cup salt, and peels from two potatoes (these help to pull any remaining wax or grease from the pan surface). Cook over medium heat, occasionally moving the peels around the pan and up the sides to the rim, for 8 to 10 minutes. (The pan will turn brown.) Discard the contents, allow the pan to cool, and wipe with paper towels. You are ready to cook. (If you experience sticking, repeat once.) This method will work on any carbon-steel skillet.

MAINTENANCE

Avoid soap and abrasive scrubbing. Simply wipe or rinse the pan clean, dry it thoroughly on a warm burner, and rub it with a light coat of oil. If you accidentally scrub off some of the patina, wipe the pan with a thin coat of oil and place it over high heat for about 10 minutes until the pan darkens (it will smoke; turn on an exhaust fan).



► Blotchy is OK.

As soon as you season and start cooking in a carbon-steel pan, it changes from shiny silver to brown and blotchy. The blotches are a sign that the pan is building up a slippery patina, which will help it become increasingly nonstick. The blotches and nonstick capability may initially wax and wane, but with use, the pan's cooking surface will gradually darken and become more uniform in color.

Good ★★★

Fair ★★

Poor ★

TESTING: CARBON-STEEL SKILLETs

We tested eight carbon-steel skillets, all close to 12 inches in diameter, rating them on their cooking performance, sticking, and ease of use, including directions for seasoning. (Two pans were preseasoned; we seasoned the rest according to manufacturer instructions.) All pans were purchased online and appear in order of preference.

COOKING SURFACE

Official pan sizes are based on rim-to-rim measurements; we measured across the flat portion of the inside of each pan to assess the actual available cooking surface.

COOKING

We fried eggs, made omelets, pan-seared steaks, and baked tartes Tatin. Pans that performed well across the board earned higher ratings.

NONSTICK

Pans received high marks for consistently releasing food without sticking.

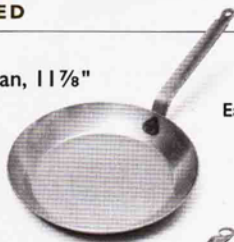
EASE OF USE

We considered design factors such as shape; weight; thickness; and handle angle, length, and comfort. We also rated pans higher if they were easier to clean.

HIGHLY RECOMMENDED

MATFER BOURGEAT
Black Steel Round Frying Pan, 11 $\frac{7}{8}$ "

MODEL: 062005
PRICE: \$44.38
WEIGHT: 4.7 lb
COOKING SURFACE: 9 in



Cooking ★★★
Nonstick ★★★
Ease of Use ★★★

CRITERIA

TESTERS' COMMENTS

This affordable pan had it all: thick, solid construction; a smooth interior with no handle rivets to bump the spatula or trap food; an ergonomically angled handle; and sides flared just right for easy access but high enough to contain splashes. Steaks formed a deeply crisp crust, tarte Tatin caramelized beautifully and released neatly, and fried eggs just slipped around in the pan.

BLU SKILLET IRONWARE
13" Fry Pan

MODEL: SQ2281937
PRICE: \$230.00
WEIGHT: 5.5 lb
COOKING SURFACE: 10 in



Cooking ★★★
Nonstick ★★★
Ease of Use ★★★

This costly, beautifully designed pan is a hand-forged piece of art, but it's also built to work hard. It arrived preseasoned, with the metal heat-treated to a lovely shade of slate blue, though it darkened with use. With its broad cooking surface, nicely flared sides, and perfect browning and release, it was a pleasure to use. Our only quibble (besides price): It's heavy. The large helper handle is a useful addition.

RECOMMENDED

MAUVIEL M'steel
Round Fry Pan, Steel Handle 12.5"

MODEL: 3651.32
PRICE: \$79.95
WEIGHT: 5.1 lb
COOKING SURFACE: 10 in



Cooking ★★★
Nonstick ★★★
Ease of Use ★★½

Very spacious and sturdy, with low sides and a reliably slick surface, this pan browned evenly but felt slightly heavier than ideal and lacked a helper handle to share the weight.

TURK
Heavy Steel Frying Pan 11"

MODEL: 66228
PRICE: \$79.00
WEIGHT: 4.3 lb
COOKING SURFACE: 8 in



Cooking ★★★
Nonstick ★★★
Ease of Use ★★

Solidly built, handsome, and well-designed—with low flaring sides, a handle at an accessible angle, and a slippery surface that never stuck—this pan was maneuverable and easy to use. Its seasoning was nicely durable. Its only flaw: a too-small cooking surface that made the pan feel cramped for full-size recipes—it would be best for recipes serving two.

DE BUYER
Mineral B Frypan, 12.6"

MODEL: 5610.32
PRICE: \$79.95
WEIGHT: 5.75 lb
COOKING SURFACE: 9 $\frac{1}{2}$ in



Cooking ★★★
Nonstick ★★★
Ease of Use ★½

This roomy, beautifully constructed pan browned foods well and with great release, eventually. The instructions for seasoning had us coat just the cooking surface with oil, leaving the sides to fend for themselves; they stuck and tore tarte Tatin. After more cooking, the sides caught up and the pan didn't stick. Its high-angled handle and heft made it more difficult to maneuver than other pans.

PADERNO
World Cuisine Heavy Duty Polished
Carbon Steel Frying Pan, 12 $\frac{1}{2}$ "

MODEL: A4171432
PRICE: \$42.34
WEIGHT: 6.2 lb
COOKING SURFACE: 9 $\frac{1}{2}$ in



Cooking ★★½
Nonstick ★★½
Ease of Use ★½

With enough cooking space and the lower-angled handle we prefer, this pan had plenty of promise. But it provided a slightly less slippery release than the top pans, and its sides were a bit too shallow. Its weight made it hard for testers to maneuver.

RECOMMENDED WITH RESERVATIONS

LODGE
12" Seasoned Steel Skillet

MODEL: CRS12
PRICE: \$39.95
WEIGHT: 4.2 lb
COOKING SURFACE: 9 $\frac{1}{4}$ in



Cooking ★★
Nonstick ★★
Ease of Use ★★

This comparatively light pan was very comfortable to lift and handle, and its factory preseasoning seemed like a plus because we could start cooking right away. But in contrast to the other pans in the lineup, its slick seasoning actually deteriorated as we cooked, and food began to stick. Slightly thinner, it also ran a little hot with a tendency toward hot spots; apples caramelized unevenly.

NOT RECOMMENDED

VOLLRATH
12 $\frac{1}{2}$ " Carbon Steel Fry Pan

MODEL: 58930
PRICE: \$45.01
WEIGHT: 3.3 lb
COOKING SURFACE: 9 $\frac{1}{4}$ in



Cooking ★★
Nonstick ★★
Ease of Use ★

This thin pan became superhot superfast—perfect for restaurants, where orders need to move fast, but not so great for home cooks. High, cupped sides made it hard to slide a spatula beneath foods, and an extra-long, steeply angled handle poked us as we stood before the stove. Hot spots made apples caramelize unevenly when we made tarte Tatin. The bottom warped by the end of testing.