Frame is the name of the game

Does steel put a spring in your sprint? Is aluminum-carbon blend your best friend? Or are you a titanium tycoon?

Maybe you have no idea what I'm talking about, but if you own a bike, or just shopped for one, you've at least heard about the different components in bicycle frames.

If you're a real gearhead, you not only know the lingo, but you likely have a hard-core devotion.

But don't think you know it all. Both the materials, and the way bike manufacturers use them, are changing. Some of those long-held beliefs, such as rock-heavy steel and fragile carbon fiber, are now myths.

And it doesn't necessarily pay off to pay more, because your ideal bike might not be the top-of-the-line $7,000 Seven titanium. It could be something far cheaper. It all depends on how you're built and how you ride.

It's not unlike buying a car, says Scot Nicol, owner of Ibis Cycles Inc., a California company that manufactures high-end bicycle frames.

"You can buy a Kia or a Honda and it's going to do really well for you," Mr. Nicol says. "But there's still a lot of BMWs sold. It's a matter of personal preference and what kind of statement you want to make."

Let's start with the basics. You have four main materials: steel, aluminum, carbon fiber and titanium. That order also roughly follows price, from low to high (although some carbon fiber bikes cost more than titanium).

Weight is a big factor for some cyclists when choosing a frame. Steel is heaviest, followed by aluminum and titanium, and carbon fiber is the lightest.

It's a range of about three to five pounds, says Russ Watson, store manager of Bicycles Inc. in Bedford. Most carbon frames are between 15 and 17 pounds; steel can top 21; and the others are in between, he says.

Just one extra pound is huge to performance cyclists and racers but maybe not such a factor to cyclists who routinely lug around an extra water bottle, spare banana, cellphone, etc.

RICKY MOON/Special Contributor

Manager Russ Watson shows off a bike with a carbon fiber frame at Bicycles Inc. in Bedford.

GEARING UP

PAULA LAVIGNE

Weight might be the most prominent difference, but there are many nuances, says Mr. Nicol, who wrote a seven-part Web series on bicycles and metallurgy.

While consumers have many great choices, he says, it's "a daunting task wading through the marketing mumbo jumbo." The good news is that advances in manufacturing mean that shoppers can get a good bike made of any material, he says.

As for durability, he says, titanium and steel lead the way, followed by carbon fiber and then aluminum. But any well-made bike will be durable no matter the frame material, he says.

Steel

Steel is the least expensive, easily repairable, strong and durable and "provides a great ride," Mr. Nicol says.

Steel's malleability and ease of welding also means that it's easy to fabricate. That makes it affordable to customize for people who have long torsos and short legs, or who are otherwise out of normal proportion. For this same reason, steel bikes also are among the most artistic.

Steel is still the heaviest material around, but new high-strength alloys enable makers to build very light frames.

Aluminum

Aluminum is lighter, and the frames are usually stiffer, which makes it more efficient, Mr. Nicol says. That means you get more "go" when you pedal. That stiffness can cut down on comfort and lead to fatigue. Yet manufacturers are able to counteract that by using new aluminum alloys and aluminum frames with carbon forks.

Aluminum also is not as easy to repair.

Aluminum is a good option for novice recreational cyclists, Mr. Watson says.

Those who become more regular riders tackling 70 to 100 miles a week should consider an aluminum and carbon mix, he says.

Aluminum frames range from about $600 to $1,500. Aluminum-carbon frame prices range from about $1,100 to $2,000.

Carbon fiber

Carbon fiber is the lightest material and has the most potential, Mr. Nicol says.

Carbon frames can be stiff in one area and soft in another, which makes the bike feel smooth on the road, yet responsive when the rider is out of the saddle and sprinting.

Most carbon frames are molded, so they're difficult, but not impossible, to customize.

Carbon fiber used to have a bad rep because it broke easily, but today's carbon fiber frames are much more durable.

Aggressive riders and those looking for a lightweight bike for racing should start with carbon and expect to pay upward of $1,500, Mr. Watson says.

Titanium

Titanium is the most expensive, starting around $3,000, Mr. Watson says. Its incredible durability resists scratching and denting. Mr. Nicol says titanium is lightweight and responsive and has a "magical ride quality."

It's also easy to shape and is better than steel for those who need a bike built for their body — and can afford it.

Making a choice

Of all the options, Mr. Nicol says he believes today's carbon bikes are superior, though he knows many cyclists who would "kick and scream at me making that statement."

Mr. Watson agrees that carbon is the best choice. "Carbon is the wave of the future," he says. "It's what all the manufacturers are coming out with."

Carbon fiber bikes are dropping in price as they become more popular, he says. And if manufacturers can avoid a supply shortage, then prices should continue to fall.

"We have one bike on our floor that sells for $1,700. A few years ago, the cheapest frame made out of carbon was $2,100," he says.

Even though carbon fiber provides a smoother ride, some people will still shell out the big bucks for titanium, he says.

"You'll feel more of the road underneath," Mr. Watson says. "A sports car is a rougher ride than a touring sedan, but there are a lot of people who prefer to drive a sports car."

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Links: Read the seven-part series on bike frame materials by acclaimed mountain biker and bike manufacturer Scot Nicol.
Also, see what materials other local cyclists say they prefer.
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