Sharpeners and steels in a real life kitchen

Posted by RogerHerbst - 02 May 2012 13:44

As a home cook, I have an interest in knife sharpening. I very much appreciate your well documented and scientific approach to sharpening...especially your microscope pics.

After getting all my knives to a polished razor edge, the joy of razor sharp slicing gives way to the reality of preparing daily meals. After a week or two, I re-examined the blades of my go-to knives (I have a $20 USB microscope, which is nowhere near the quality of yours, but is still a very helpful tool). Not surprisingly, there were nicks and edge-rolls. So comes the question - do I pull out a sharpening setup or give it a few strokes with a steel ?

The popular wisdom of a steel simply straightening the edge is complete BS from what I've seen. Mine aggressively removes metal, my angle control is imprecise and the previous precision angle-controlled polishing is pretty well torn up. That said, there is an improvement in cutting ability (though not as good as freshly sharpened), it's quick and easy, and looks cool in front of dinner guests.

It would be great to see an analysis of what sharpening steels really do, with recommendations on when and how to use (or not) in a real world kitchen.

Roger

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Re: Sharpeners and steels in a real life kitchen

Posted by RogerHerbst - 09 May 2012 14:37

Thanks to all the posters who have contributed to this topic. I've done a bit more testing, and I think we have enough information to draw some pretty good conclusions.

Here are some pictures to illustrate what we've learned

1. A knife sharpened to .3 microns, with a hair for size reference. It's a very cheap knife, which I then beat up a bit.

2,3 The edge after being beat up

4. The edge after steeling with a groove steel

5. Knife re honed, then steeled with a diamond steel

6. I don't have a smooth steel, but the 1/2 " of my Henkles steel next to the handle is smooth, so I did what I could with that after re-honing the blade

7 Reality. Paper thin tomato slices, from left to right Cheap knife with grooved steel, cheap knife freshly honed than smooth steeled, and my fav santoku freshly honed. Note the diamond steeled knife isn't shown...it could not break the skin of the tomato.

Conclusions.

It's interesting that almost 100 % of the talk about what steels do, including that coming from celebrity chefs, refers to the smoothing effect of a smooth steel, while almost 100% of the steels out there are grooved, and behave completely differently. So much for the wisdom of crowds. On a more practical note, we can conclude that:

1. A freshly honed edge is the ultimate solution

2. A smooth steel will touch up a well honed edge without destroying it. Over time, though, as the edge truly dulls, it will need to be re-honed, as the smooth steel will not remove metal and reshape the edge.

3. Grooved steels are ugly under a microscope, and will completely re cut a honed edge, so I wouldn't even bother fine honing a blade I intend to steel. That said, they produce an effective edge, and remove enough metal that a grooved steel alone can keep a knife in decent cutting condition, if used properly.

4. My diamond steel is the all time loser. Don't know why, or if other diamond steels are the same, but the grooved steel produces a much more effective edge.

So I'm pretty satisfied that we've gotten to the bottom of this, except we haven't talked about strops for quick touch ups - I'm playing with them now and may have more on that in the future.

Roger

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Re: Sharpeners and steels in a real life kitchen

Posted by mark76 - 09 May 2012 16:57

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wickededge wrote:

We'll be receiving our new line of ceramic stones in 2 weeks that are extremely smooth 1.4um and .625um respectively. If we like those two stones really well and they become popular, we might add another set in at .375um and .25um. These are super hard, super fine stones from Coorstek and will be a great tool for quick maintenance.

Did I just miss a covert announcement?

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Re: Sharpeners and steels in a real life kitchen

Posted by AnthonyYan - 09 May 2012 19:19

I just posted this to www.knifeforums.com, but I thought it would be of interest here as well:

About the company Coorstek that is mentioned as the manufacturer of ceramic stones for WEPS:

I believe Coorstek is a company that branched off of Coors, the beer company. It sounds weird, but years and years ago, Coors used to make ceramic tools, including ceramic hammers. Why a ceramic hammer? well, it's for those applications where positively absolutely you cannot afford to generate a spark. If you work in the natural gas industry, or explosives, then you know why this is a good idea.

Metal hammers spark when you chip off a tiny tiny piece of iron, and it combusts (to form iron oxide; or rust). Many ceramics are metal-oxides, so well, they're already burnt and cannot burn again! (Okay, not under "normal" situations.) The problem with this is, most ceramics are brittle, which is not good for a hammer. So the hammer is made of a special type of ceramic: transformation-toughened zirconia. This is the same ceramic used in almost all ceramic knives (Boker in addition to zirconia, also has some knives in other types of ceramics).

Want to know more about transformation-toughened zirconia? You can read about it in the awesomely wonderful book: _Why Things Break_ by Mark. E. Eberhart.

www.amazon.com/Why-Things-Break-Understa...336605192&sr=8-1

"Though Coors is well known as a brewer of beer, it is less well known as the world's largest producer of specialty ceramics producs. This particular hammer was made from transformation-toughened zirconia, a polycrystalline material made from the oxide of zirconium."

--_Why Thinks Break_ by Eberhart (2004)

This snippet and more can be read from Google Books:

books.google.com/books?id=e6eVD2MDGLMC&a...20hammer&f=false

A picture of a Coors ceramic hammer:

ceramicsmuseum.alfred.edu/exhibitions/conspicuous/hammer.html

Isn't that cool? Now go have a beer.

Sincerely,

--Lagrangian

"What grit sharpens the mind?"

--Zen Sharpening Koan

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Re: Sharpeners and steels in a real life kitchen

Posted by wickededge - 10 May 2012 13:48

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That is so cool, thanks for sharing it!

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Re: Sharpeners and steels in a real life kitchen

Posted by wickededge - 10 May 2012 16:10

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I'm really excited about these stones. We don't have a name for them yet or photos or prices. We're sort of stuck on the name part because we already used Superfine Ceramic and these are finer than our current stones. They will be a great next step after current ones and will also be wonderful for maintaining a well polished knife.

mark76 wrote:

wickededge wrote:

We'll be receiving our new line of ceramic stones in 2 weeks that are extremely smooth 1.4um and .625um respectively. If we like those two stones really well and they become popular, we might add another set in at .375um and .25um. These are super hard, super fine stones from Coorstek and will be a great tool for quick maintenance.

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Re: Sharpeners and steels in a real life kitchen

Posted by peppersass - 10 May 2012 18:36

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How about:

Microfine Ceramic Stones

-or-

Microgrit Ceramic Stones

And if you come out with an even finer line of stones, you could call them Nanofine or Nanogrit.

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