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 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.

Did I just miss a covert announcement?

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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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Re: Sharpeners and steels in a real life kitchen
Posted by Razoredge - 10 May 2012 18:36

How about ultrafine, megafine and uberfine?

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Re: Sharpeners and steels in a real life kitchen
Posted by AnthonyYan - 10 May 2012 19:24

I like "megafine"! It's almost like saying something is "mega-small" or "hugely tiny".

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Re: Sharpeners and steels in a real life kitchen
Posted by BassLakeDan - 10 May 2012 23:59

AnthonyYan wrote:

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.

Yes the history of Coors Ceramics is fascinating, and a shining example of the kind of people and early entrepreneurs that 'made America great'. It is so interesting a story that Coors themselves realize that people everywhere want to know more about it and have given a page on their web site to help tell you that story. Here is a link: www.coorstek.com/history.asp

If you follow the tracks in the yellow brick road the hobby of knives will take you to many interesting places, like the Coors example above shows so well. I was interested to see your reference to the explosives industry above. It is not well know to most knife makers and users, but the reason that they have in their hands high quality powder metallurgy steels is because of the explosives and solid rocket fuel industries need for high specification powdered metals. It is these high precision powdered metals that form the base material for the product of companies like Crucible and Bohler-Uddeholm. If it had not been for the need to develop these very pure and high quality powders for explosives and solid rocket fuels you might not now have the blades that you put into your WEPs for sharpening!

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Re: Sharpeners and steels in a real life kitchen

Posted by jendeindustries - 11 May 2012 06:20

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I'm thinking "atomic" for the ceramics

Roger, You did some great documentation!

I think steeling works for short term touching up because your overall geometry is still "sound", despite the microbevel of the steeling itself, as you've shown.

Diamond steels and stones can be misleading, and tend to create what I call a false-positive for sharpness because the diamonds cut cleanly through the thickness of the knife's edge, leaving a very clean, yet serrated edge that passes all kinds of sharpness tests, yet the edge of the edge itself is not thin enough to actually be as sharp as it seems. I see this all the time with straight razors passing the HHT at the 1K diamond level, and is the likely reason IMO to explain why the diamond steel edge failed the tomato slice test.

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Re: Sharpeners and steels in a real life kitchen

Posted by AnthonyYan - 11 May 2012 07:14

Hi BassLakeDan,

Wow neat! Thanks for that link on Coorstek history.
I also did not know about the connection between rocket engine development and powdered metallurgy; also interesting!

[Off Topic] I can't resist, so here is a small story from the space race:

I forget who was trying to spy on whom, but I think it was the Soviets spying on the British (could be wrong about this). Anyways, there was some kind of tour, or open-house for a (British?) jet-engine or rocket development factory. I think it was the Soviets, who, at that time, had trouble with their metallurgy for aerospace engines. So they sent a guy to the open-house. As a spy, his real mission was to get physical samples of secret high-tech metals. How? The bottom of his shoes were soft and sticky; as he walked around these picked up any tiny metal shavings which are everywhere in a metalshop. Afterwards, his shoes were sent off to a metallurgy lab.

I could've gotten wrong who spied on whom for this, and I forget if it was for rocket or jet engines, but the idea of sticky shoes always amused me.

Sincerely,

Lagrangian

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Re: Sharpeners and steels in a real life kitchen

Posted by PhilipPasteur - 11 May 2012 08:28

I kind of like the "nmicrogrit" or maybe "microfine" that could be followed by a number indicating the grit size. as in Microfine 0.625. This would also cover any finer grades that may come later.

Phil

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