The edge of the edge... What is really going on?

Posted by razoredgeknives - 25 Jun 2012 23:00

So there is a thought out there among those of us who love the science behind the edge of a blade that says that the more refined you make an edge the thinner it becomes (i. E. If you were to use a metallograph and take a microscopic picture of the edge looking directly down on it). I don't have the article here, but this has been done on a commercial razor and it measures around 4um if my memory serves me correctly. But I know that several people can attest to the fact that they can get hair whittling edges at relatively low grit.... So what are your thoughts on this? Does the edge get thinner the more you refine it? Does that make it weaker for edc use?

I'll try to find that article and post it soon... It's an interesting read

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Re: The edge of the edge... What is really going on?

Posted by BenBurke - 26 Jun 2012 13:18

About what level of refinement is good for EDC use I've read 600 grit stones will get you a sharp edge that lasts. See here: bit.ly/MYhQsY

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Re: The edge of the edge... What is really going on?

Posted by razoredgeknives - 26 Jun 2012 14:13

Clay, can't wait for the microscope pictures and the coming experiments!

Dan, thanks for the post. Those are excellent points... But in this thread I am not really trying to define "sharp" per say, just see if anyone can offer any experience or data to show that the edge of the edge does indeed get thinner with higher levels of polish or grit. And if so, will this degrade the edge quicker due to it being weaker?

Ben, thanks for that thread! That is very relavent to what we are discussing... It would appear that a course edge (i. E. Maybe 1k diamond) is more durable in the long run. Hopefully after Dan gets this "tester" done we can have some standards with which to test different kinds of edges!

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Re: The edge of the edge... What is really going on?

Posted by BassLakeDan - 26 Jun 2012 21:30

BenBurke wrote:

About what level of refinement is good for EDC use I've read 600 grit stones will get you a sharp edge that lasts. See here: bit.ly/MYhQsY

Ben,

Thanks for the link. These discussion from 2005 that Cliff participated in are a very valuable reference, and should be required reading. It was around that time that Cliff coined the phrase "cutting ability" and spelled out in an understandable way several important concepts.

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Re: The edge of the edge... What is really going on?
Posted by wickededge - 26 Jun 2012 21:41

A quick note for you guys - I've also started an actual knife WIKI on this site, much like the actual Wikipedia and would like to begin populating it. I'm hoping to get some help with writing articles on everything from steels, knife history and construction, edge geometry, blade designs, abrasives, heat treating, sharpening theories etc... essentially everything knife related. The address is here: wickededgeusa.com/wiki/index.php?title=Main_Page.
(Embedded link won't work so you'll have to copy and paste.)

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Re: The edge of the edge... What is really going on?
Posted by BassLakeDan - 26 Jun 2012 21:49

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razoredgeknives wrote:

.. if anyone can offer any experience or data to show that the edge of the edge does indeed get thinner with higher levels of polish or grit. And if so, will this degrade the edge quicker due to it being weaker?

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well OK, it is perfectly OK to bring me back on track to thread discussions.
Now that we have this new topic area I feel a license to "drift off" a bit, but of course, that is not always appropriate.

So to address your specifics above I would venture to say that

1.) polish of the side of the edge positively may or may not make the apex become finer! It depends if the polish is applied in a particular way that continues to narrow the systems apex. It would seems that it is possible to just polish, abrade and polish, *only* the sides and never touch the apex. Then I would say you get no harm / no foul to edge longevity. In that case you potentially lessen frictional coeffiecients with the material being cut but there may be a trade off there as "stiction" is a real factor in material science. That effect when discussing knives I call the "cheese paradox".. it is the reason that a dull single wire cuts cheese better than a finely polished and very sharp razor blade.

2.) the degradation during use (slice cutting) of ever finer apex is really in the realm of, and up to, the steel in question. Can it handle it? some do some don't. That is why (see my previous post with the image link) that applications of things like Boron Nitride are very effective on keen edges on lesser steels. Of course super fine edges are subject (in the real world) to "rolling" and other deformations, so geometry also becomes an important factor. It is an interplay of factors, there are no easy "one size fits all" answers.

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Re: The edge of the edge... What is really going on?

Posted by BassLakeDan - 26 Jun 2012 21:52

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wickededge wrote:

.. (Embedded link won't work so you'll have to copy and paste.)

yeah, what's going on with that.. I cannot get the 'tool-bar' thing to work anymore ???

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