How do you get that perfect mirror finish?

Posted by Scott Sherman - 21 Oct 2012 20:46

This may be on of those depends type discussions, but I think I will ask it anyway. I can make the apex of my knife blade as sharp as I could ever desire it to be, I mean my knives are really sharp. That part is actually easy and WEPS excels at making amateur knife sharpener get expert results. But it seems to me that there are two camps when it comes to knife sharpening. The first is the utility blade, toothy cutting edge for a given purpose, food prep, box, rope, binder cutting etc. This is not the issue I want to address. The second group is concerned with the cosmetic aspect to knife sharpening. Obtaining a mirror finish. These are the big spenders, the micro and nano obsessed crowd that can not seem to get enough technical information on knife sharpening.

These are the ones that will eventually make Clay a multi millionaire because they buy every grit and gadget in pursuit of that perfect mirror finish. I include myself in that group

So, here is what I would like to discuss here if anyone else is inclined to. I have had trouble getting a "perfect mirror finish" and I am not sure exactly what I am doing wrong. By perfect, I mean glassy clear no scratches visible when observed with out magnification or maybe a 10x loupe. I am not talking 200x or 2000x here.

I have seen the result I am after in photos here and at other forums and on Youtube, but the process by which folks get there is a bit vague. I don't think it is (in my case at least) not having the right tools. I have every stone and grit from 50 to .5uM. That should do it. I suspect my problem is that I am either not using the right technique such as direction I drag the stones over the steel of the blade or I am not doing enough strokes from stone to stone and trying to get more out of the finer stones than they were designed for or perhaps it is because I am using them in the wrong order.

The first possible problem, direction of travel for the stones over the metal...

Do I do a circular scrubbing motion or an up and down sawing motion or push up, disengage the stone, reposition the stone below the knife and push up again and repeat until the stone has made it as fine a scratch pattern as is possible? I have tried different methods and the circular seems to get the best results at the medium grit level but not when it gets to polishing and shining. There it seems that the up and down sawing motion works better with the micro fine ceramic, and then the strops which are obviously one directional to prevent scarring the leather. I don't know, if you have a suggestion, I would love to hear it.

Next is the question of how many strokes and when do you advance to the next level of finer grit or abrasion?

This is probably the depends part. I know that different steel hardness, and thickness of the metal and other characteristics of the blade come into play, but I am wondering if there is some kind of rule of thumb. How do you know when you are done with a certain stone. To much and you are needlessly wearing away metal on the blade and may wind up making one side more beveled than the other. Not enough and the next finer grit stone or whatever is being asked to do too much or at least more than it was designed to do. I'll exaggerate to make a point here. You would not try to re-profile a blade with a 1000 grit stone. It could be done but it would take forever and is better done with a progression of stones. I think you all get the point.

And my last proposed issue, is grit order and where do you need to stop?

I suppose there are a couple of aspects to this. First if you start at 50 grits to say re-profile an edge, you are starting with some pretty deep and severe scratches. If you keep grinding away with the 50 then the 80 then the 100 etc. it seems like you are just eating away metal and perhaps even moving the apex from side to side making the bevel uneven. Not sure about that part, but logically it makes sense. So it seems like you should stop just when you get a burr on both sides and immediately go on to the next grit. That makes sense a the lower grits, but as you progress, it becomes less about the edge and more about the polish on the shoulder of the edge. So, how long do you continue this grinding away metal with a given stone?

Should the answer be, you just have to experiment and learn by failure or success? Or is there some sort of clue as to what to look for in the scratch pattern or shiny-ness of the bevel. I don't know. I just kind of scratch away until I feel like I have gotten the whole side about even and there is a burr. Problem is when I get to the final grits for burnishing, there are always still some obvious scratches visible without magnification on an otherwise shiny mirror finish.

Also, with regard to grits and abrasives. The grit on two of the diamond pastes for leather strops (5 uM and 3.5um) is between the coarse and the fine sides of the super fine ceramic. But because they are on leather, do they actually polish more than the ceramic stone which is more fine on the fine side (1600) than the paste. Also, at what level do you have to go to actually get a flawless shiny blade edge without magnification? Is .5uM enough, do you need to use the sprays at .012 or can you go from the fine paste at .05 to the bare kangaroo strop to get that result? Kind of like the amazing shrinking man movie in the fifties for those of you old enough to remember that. He kept shrinking until he became microscopic and then he realized that he was entering a whole new universe where the process started over again to sub atomic particle size. It's the everything is relative theory.

I know at some point you are polishing to high magnification levels of shine not visible to the naked eye, but how far is it practical to go on these stropping sprays and abrasives to get a real world mirror finish?

If you have stuck it out to read down this far, I apparently have tapped into a dilemma that you may

have. I suspect that this issue is central to a number of people from reading the various threads here. There is a constant theme of getting a mirror finish and so many threads and posts are asking questions related to this in one way or another. I hope that in some way, this will help one or more of you, as i hope to learn here from others experience and knowledge.

So thanks.

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Re: How do you get that perfect mirror finish?

Posted by Scott Sherman - 22 Oct 2012 08:10

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Billabong wrote:

Hi Scott, I found this old thread which may interest you.

"What grit/micron should I have mirror polish?"

wickededgeusa.com/index.php?option=com_k...id=892&Itemid=63

Keep asking the questions, as I'm sure there are many lurkers who are enjoying your posts also.

OMG, you nailed it! The link you provided here and subsequent links within this thread completely answer my question and I am now comfortable with what I need to do to achieve my desired objective.

To boil it down, I would say to others looking to make their knives athletically pleasing by creating a sharp and mirror finish, these are the primary considerations;

1. Give your new stones adequate break in usage before expecting optimum results.

2. The closer you expect to get to a highly reflective mirrored polish on your blade, the finer the grit you need to get there.

3. If pursuit of perfection in obtaining this mirrored reflective surface on your knife is your goal, try to

have as many stones and abrasives as you can manage in as close a succession of progressively finer grits as possible. So there is actually a place in the line up for the super fine and micro ceramics as well as the finest waterstone you can afford and then as many finishing surfaces as you can afford down to the finest spray on kangaroo or nano paper. This is again if perfection is your goal.

4. Last but probably most important, decide on a clear definition in your mind of what perfection means to you. As I now know there is different levels of perfection in a reflective edge to what I would call an impractical level of perfection achievable only by use of the most sophisticated equipment currently available, and taking into consideration maximum potential for the properties of the steel you are polishing. In other words, make your expectations realistic. A knife can bring oooh's and aaah's from friends without having the reflectivity of the Hubble telescope. So you may not actually need every single stone,or paste or spray or nano whatever to get to the oooh's and aaah's you seek. Or maybe you will never be satisfied with just good enough, and that's okay too. That is why there are so many levels of polishing available and you may be the guy that invents the next level not yet achievable if that is your goal. (As long as your not hocking your wife's wedding rings or taking out a third mortgage on your house to do it).

I guess most of all have fun and enjoy the ride, take it slowly and don't try to do too much, too fast. It will get better over time I think.

Many thanks to Chris, Phil, Clay and all who have participated and contributed to these great threads with so much knowledge and experience for helping me to resolve some of these issues, which have been nagging at me.

And be assured Chris, I will continue asking questions (and sharing answers where I can). Thanks for the encouragement!

These threads and links really need to be made sticky or added to the Wicki reference postings somehow. I know there will be many others with the same questions in the future who might benefit from this but might otherwise miss it. As I said originally there are only two camps as far as I can tell when it comes to WE users, those who want very sharp knives that cut very effectively through different materials, (the pro pack 1 group) and those seeking to have aesthetically beautiful polished knives with a good push cut sharp finished edge, (the PP2 group). I suppose Clay will have to come up with some version of a Pro Pack 3 for those possessed with the pursuit of the perfect mirror who will not settle for good enough. If you are reading this, you may just be that guy.

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Re: How do you get that perfect mirror finish?

Posted by BobNash - 22 Oct 2012 22:22

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JamesBell wrote:

Being new to this, great topic by the way, all of you keep referring to "How well broken in your stones are is another very big factor" At about how many knives does it take to get them broken? Is the feeling of how they are working the metal something I would notice? I guess my next question, what is the life of the kits diamond stones. Have you see a difference after many hundreds of usages.

Hi James and welcome to the forum! 😀
And to sharpening (assuming that what you meant by being new to this)

How many knives it takes to break in varies quite a bit, but usually by at least 6 - 10 you should have most of the loose diamonds knocked off and your edges should be noticeably better. For some people, they never really notice the break in at all, and others take longer. You'll see that powder coming off on your base as you work. I don't know that I notice a real difference in the feel of them working as much as a difference in how fast they cut. Maybe others are a bit more sensitive to that feel and could say. I think what I really notice as they break in is how the edge catches when I test it with my finger nail, and how well it cuts through paper when I'm done - smooth and without snagging. And then as they continue to break in, how well they polish. When I first started doing shows with Clay he would finish with his 1000 grit and the knife he was doing would have a polish on it that was comparable to or even better than what I was able to get with my strops given the break in of my diamonds.

As for life, Clay and I just had this conversation again a few weeks ago to see how our experiences were comparing. For both of us, we use our full set of diamonds on the vast majority of knives we sharpen (at shows and on knives folks send in for demos) - i.e. we start at 100 and work up to 1000 - so our usage is a little different from how most folks use the system since most of what we do is only one visit with the knife. Usually you would only use your coarse stones once on a knife and then touch it up with finer stones (assuming you aren't constantly re-profiling) so the 100/200 and 400/600 get much less use than the finer stones and strops. We have both found that we trade out to a new set of 100/200 stones somewhere around 300-400 sharpenings at least for show use (I then use them at home or give them to customers who want a set that is really broken in). At that point the diamonds are still cutting but they are slow - to slow for a show where we try to finish in 10-15 minutes at the most per knife. My 400/600 sets that I am using at shows are at somewhere around 1200 knives (I have 3 sets at this point that I change between them randomly) and my 800/1000s are well over 3000 knives and just keep getting better the more I use them. So for most users, you are never going to hit the life span of the stones.

You can see though that we are very quick in our usage, so if you are working a lot of abrasion resistant and super hard steels and/or are working for a long time on every grit, and/or are putting a lot of pressure on the stones against the blade as you work your life span is going to vary.

Hope that helps -

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Re: How do you get that perfect mirror finish?
Posted by Billabong - 22 Oct 2012 22:43

Deleted!

edit - After reading my post again I realized it was a dumb question so I deleted it.

Cost me a Karma vote.

Oh dear!

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Re: How do you get that perfect mirror finish?

Posted by JamesBell - 23 Oct 2012 09:39

To Bob Nash. Thank You

Great answers to my questions, sounds like I will have many years of enjoyment working with my Wicked edge. Have sharpened about 25 thus far, most Chicago Cutlery that just need a good edge. My EDC a Chris Reeve small Sebenza now is a mirror edge. Have played with a Spyderco that I am no where close getting it setup. This is great fun, you can not purchase the therapy or satisfaction you get working with the Edge.

One question everyone tags a Thank you at the bottom of their note, how does that work?

Thanks

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Re: How do you get that perfect mirror finish?

Posted by cbwx34 - 23 Oct 2012 10:31

JamesBell wrote:

One question everyone tags a Thank you at the bottom of their note, how does that work?

The user doesn't put the Thank You button, the software does (if I understood your question). You can't see it on your own posts, I guess 'cause you can't thank yourself.
If you see a post you like, you hit their Thanks button and let them know!!

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Re: How do you get that perfect mirror finish?
Posted by JamesBell - 23 Oct 2012 10:42

That was the answer I was looking for, makes since can not thank yourself.

Thanks

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Re: How do you get that perfect mirror finish?
Posted by Billabong - 23 Oct 2012 23:05

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cbwx34 wrote:

If you see a post you like, you hit their Thanks button and let them know!!

I see a few regulars thank someone in a post but don't hit the button.

Does hitting the button a certain number of times add one Karma vote?

So they only want to give a little thanks.

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Re: How do you get that perfect mirror finish?
Posted by wickededge - 24 Oct 2012 07:55

Billabong wrote:

cbwx34 wrote:

If you see a post you like, you hit their Thanks button and let them know!!

I see a few regulars thank someone in a post but don't hit the button.

Does hitting the button a certain number of times add one Karma vote?

So they only want to give a little thanks.

Also, when should I add or remove a Karma vote?

I lost one recently, now I can't sleep.

Might ask another question in the wiki thread.

Thanks in advance.

I added one back for you

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Re: How do you get that perfect mirror finish?

Posted by Billabong - 28 Oct 2012 23:37

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wickededge wrote:

I added one back for you

Thanks Clay, that will help me get to zero.

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