Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by wickededge - 21 Aug 2012 15:14

This was a really fun study to do on the Wicked Edge knife sharpener - I started by sharpening a blade to a near perfect finish using kangaroo strops and .25 micron diamond spray. Here is the edge just after the strops:

There are a few small scratches but the bevel is very smooth overall.

Then I created a micro-bevel 5 degrees wider with a set of .6 micron Micro-Fine ceramic stones that I had not previously lapped. Here is the image:

It's easy to see the micro-bevel and the way the metal has been grooved.

Next I used a set of .6 micron ceramic stones that I had lapped to create another micro-bevel at 4 degrees lower, so just in between the stropped edge and the unlapped micro-bevel. Here is that picture:

You can see the smooth section where the blade had been stropped, then 1 degree wider there is a small band where the lapped .6 micron ceramic stones were used and then a wider band where the unlapped .6 micron ceramics stones were used. Clearly, lapping the stones will yield a more refined edge. I'll try another experiment soon where I use each stone on the very edge. I find the ridge of metal being pushed toward the stropped portion interesting. I was using edge leading strokes, pushing into the blade and clearly pushing metal back up the bevel toward the stropped area.

You can check out the zoomed images on my here on my **blog** .

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by mark76 - 21 Aug 2012 17:09

Wow, these are incredible pictures! Your new microscope is definitely paying off 🙂. And that convex edge looks terrific. It must be unearthly sharp. I will nominate the third-last picture for the best edge ever to be put on a photograph.

In the second-last picture, where you applied the .6 micron stones to the smooth edge, did you use the lapped ones or the unlapped ones? On the picture their coarseness seems to be a bit in the middle, compared to the lapped and the unlapped ones before. (The scratches left by the lapped stone in the third picture seem very tiny.)

And have you ever compared the kangaroo strops to the nanocloth strops? The kangaroo strops leave a very smooth edge, but the nanocloth strops should not be abrasive by themselves either. And they have the advantage that they do not (should not) round the edge.

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by wickededge - 21 Aug 2012 17:35

Thanks Mark! 🙂 I used the lapped stone in the 2nd to last and last images. I'm not sure why it looks a little coarser there, maybe because it's biting into the curvature instead of a flat bevel...

I will be doing a lot of studies with the nano-cloth thanks to a generous contribution by Ken Schwartz. He sent me a bunch of pieces for testing. Right now I'm preparing the samples to get them super smooth so each grit I test will start on a clean slate. It should be a very exciting study!

mark76 wrote:

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by mark76 - 21 Aug 2012 18:10

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wickededge wrote:

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It definitely should be. My experience thus far is that the nanocloth strops indeed do not have any abrasive powers by their own. (That probably also means they don't really help much in smoothing out existing scratches, but I wonder how important that is for edge sharpness - smoothing out these scratches looks great, though, of course.)

The main question I have is how to use the nanocloth optimally effect for material removal. Even if I spray them literally with diamond spray, they seem to remove relatively little material and not have a great impact on edge sharpness. Maybe I'm doing something wrong (like not making them wet - I too noticed some dust) or maybe I use too little pressure.

I'm very curious about your findings.

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by PhilipPasteur - 22 Aug 2012 08:43

Hey Mark.

I think the whole point of the nanocloth is that it brings nothing to the party on its own. If we have a substrate that does nothing, then the results that we get are entirely due to the abrasive that is applied. I have a set of paddles with nanocloth mounted on them. I use them with 0.05 and 0.025 CBN. They definitely remove metal. I can see the metal grey ultrafine particles left on the cloth when I use them. I don't use them any differently than any of the other strops that I have, but they definitely are abrading and removing metal, though at these grits it is a lot like sub-micron polishing rather than sharpening in the normal sense.

The concept of using them wet had not occured to me. I have always applied the sprays and let them dry completely before using them. I will have to give the wet strop idea a try.

Phil

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by wickededge - 22 Aug 2012 08:45

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I've found that getting the nano-cloth slightly damp really helps, otherwise, the diamonds or CBN flies off in a powder.

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Re: Lapped and Un-lapped Micro-Fine Stones at 800x

Posted by mark76 - 22 Aug 2012 09:50

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wickededge wrote:

I've found that getting the nano-cloth slightly damp really helps, otherwise, the diamonds or CBN flies off in a powder.

I will definitely try. The problem with the nanocloth strops I have experienced is not that they don't work at all (they get slightly black-ish with metal filings), but that they work so little.

I think the whole point of the nanocloth is that it brings nothing to the party on its own.

Agreed. That's why I wondered how they compare to the kangaroo strops, which bring nothing to the party on their own either. (That may not be entirely true; they will probably burnish somewhat, but not abrade.)

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