Non-diamond stropping compounds

Posted by mark76 - 16 Feb 2012 15:57

I am a bit dazzled about non-diamond stropping compounds. With diamond pastes and sprays you know what you get, since you know the material and the grit size is specified. (Although you don't know yet how pure the stuff is.)

However, with non-diamond compounds it is often less clear. A local hardware store sells hards blocks of unspecified green stuff (well, it is labeled "fine"). They told me I should rub it on leather. I doubt that works, but even if it would, I don't know how fine the stuff is.

It is confusing, because a lot of people say they work with "green paste" or "red paste". Green paste often contains chromium oxide with a grit size of 0.5 micron (although I also encountered chromium oxide with a grit size of 3 microns) and iron oxide is red. But for example Dovo makes "green paste" with a much larger grit size, while they also sell a (probably green) compound with chromium oxide. And their red paste does not contain any iron oxide.

In short: my head swims a bit. Who can enlighten me?

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Re: Non-diamond stropping compounds

Posted by wickededge - 24 Feb 2012 16:58

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mark76 wrote:

I just found an amazing article on the effects of stropping, with highly magnification photographs of edges.

Wonder photos..

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From 1931!

Great article, thank you for posting it! I really like this quote "Stropping a safety razor blade presents exactly the same theoretical problem as does a barber's razor. The blade being in most cases only slightly thicker than a piece of paper, there is no shank to serve as a guide to the proper angle. The solution is to use a mechanical stropping device that will hold the blade at the proper angle."

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Re: Non-diamond stropping compounds

Posted by mark76 - 24 Feb 2012 17:57

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wickededge wrote:

The solution is to use a mechanical stropping device that will hold the blade at the proper angle."

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Re: Non-diamond stropping compounds

Posted by KenSchwartz - 15 Mar 2012 23:24

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"I forgot where I read it, but a nice method to make your own stropping compounds is to collect the slurry from your whetstones, put it on some paper and let it dry. The micron size of the particles in the compound should be equal to or less than that of the grit size of the stone."

That would probably be me.
I've been using stones, both natural and synthetic as a source of stropping compound for years, using paper originally and balsa later as a substrate. I harvest various forms of stone slurry, derrived from flattening or surface conditioning stones with diamond plates of various levels of fineness, typically from 120 to 1200 grit. In some instances, primarily with natural stones, I also harvest swarf produced from sharpening activity which includes both the metal slurry and the metal swarf. In some instances the metal swarf forms a useful component for example swarf from a clad knife. It is a dry technique and is quite useful.

Lately I've extended the technique to incorporating CBN, Diamond and most recently Alumina suspensions, all in a water soluble medium, in stone abrasive slurries and using this hybrid slurry in a similar manner to straight stone only slurries.

At this point I have both a paper and Balsa slurry 'library' that I've collected over the years.

One interesting 'trick' in using these slurries is that, in addition to usually getting a finer finish than the original stone, by applying paper under various supporting structures from glass to neoprene, you can control the 'hardness' of the stone. So for instance, you could take the swarf from a 30K Shapton and put it, dried on paper, over a piece of neoprene / mouse pad and make a 'soft' 30k Shapton surface for a convex edge. Or take a soft natural stone like a Hakka Tomae or Monzen Aoto and, using this technique, put the dried mud on paper over glass to produce a hard Hakka stone effect, making the surface suitable for a straight razor which usually prefers a harder stone. You could also take a natural stone like a Shinden suita, which has pores or 'su' that clog and use the swarf rather than the stone directly, eliminating the clogging issue entirely. And so on.

Collecting these various swarfs on balsa for the WEPS would be a fun sub-hobby in itself

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Ken

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Re: Non-diamond stropping compounds

Posted by KenSchwartz - 15 Mar 2012 23:44

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"It is confusing, because a lot of people say they work with "green paste" or "red paste". Green paste often contains chromium oxide with a grit size of 0.5 micron (although I also encountered chromium oxide with a grit size of 3 microns) "

Chromium oxide (CRO) is not as precisely specified as good diamond and CBN products. It is a dual use product and is often used as a pigment in paints where precise grit specification is not at all critical. Sometimes this same stuff is used for honing (sharpening/ stropping). Because it is so much cheaper than diamond and CBN, it like aluminum oxide is a commodity product usually purchased in coarser amounts than individual carat weight (grams to tons)

I have tested various CRO products specified as being as fine as 60 nanometer (0.060 microns) particles and 0.3 microns (300 nanometers) and found horrific discrepancies from their advertised sizes, some having mean particle sizes well in excess of several microns and with very broad variances and various contaminants. If you wish to use CRO, I would strongly recommend you not using the powdered form, but rather get it already formulated in a paste or slurry formulation from a reputable vendor. The powder is a serious irritant to eyes and respiratory system (lungs, etc) and I wouldn't work with it without a hood and a respirator for fine particulates.

I'm not a big fan of green sticks which usually contain low grade CRO that are loosely specified grit

sizes, plus other abrasives (contaminants).

Ken

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Re: Non-diamond stropping compounds

Posted by KenSchwartz - 16 Mar 2012 00:12

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Monk69bl wrote:

Thanks for all the nice info Mark76. Something comes to mind as well. The Dry stones seem to chip pieces off the edge, whereas the waterstones seem to give a much smoother finish. This could be because it is using water as a lubricant and thus there is slightly less friction on the metal surface. Perhaps the liquid in the diamond pastes and others is not water and could be more oil based to help form the suspension. Maybe a slightly higher viscosity liquid to help keep the particles in suspension.

Not sure if the more experienced guys have used oil instead of water. Car engine oil comes to mind as that comes under alot of heat and friction. Not sure what that would do to the stones but on the wood and leather strops should be ok. Also Ceramics is used in some modified car engines so I think that could also be ok.

I would stick to the leather and some oil and see how that works. Maybe edible oil would be better for the kitchen knives and engine oil for the EDC/working knives. One can always wash the knives after the Oil strop with dishwashing soap.

There are various ways of putting abrasive particles in a liquid or paste preparation. Personally I use three methods.

For tiny particles, the particles 'float around' and sink very slowly so a simple preparation is adequate and IMO preferred. I find, as a practical matter that particles below 4 microns (about 4000 grit stay suspended quite nicely with just a quick shake after settling, so my CBN and diamond products are simply put in deionized water. Why deionized? Well if there are charged particles or ions in the water the electrostatic forces on small particles will cause them to clump or agglomorate, effectively acting like larger coarser particles and you get scratches from these large particles.

For larger particles, I prefer to keep them suspended. Suspensions are a copmplex topic in their own

right. Roughly there are aqueous (water soluble) suspensions and oil or lipid based suspensions. A good suspension won't separate into it's subcomponents and a bad one will. I have observed bottles of my coarser CBN suspensions, with particle sizes as large as 80 miorons not settle at all for more than 6 months at a time sitting on a shelf.

In some instances you might want an oil type suspension. These should be kept away from waterstone, specifically synthetic Japanese stones and only in the rarest of instances on a select few natural stones should they be used. I tend to avoid their use in many instances BUT they are superb to use on leather sharpening belts and other motorized sharpening applications.e For use on strops they are also fine, BUT one should avoid cross contamonating stones with a blad that has some residual paste on it. I have the CBN available in a paste formulation going from as fine as tenth micron to as coarse as 180 microns (about 80 grit). The paste is optimized to spread easily, conditions the leather and sticks well to leather. I prefer to dab a bit on and spread it with either a disposable glove and or a butter knife (one you haven't sharpened ☺ You know who you are). Pastes can range in viscosity from a thin oil to a thick waxy stick. I've had multiple levels of viscosity that I tested until I came up with what I liked to get something that gives me a pretty uniform spread without applying a hugh amount of it.

Ken

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Re: Non-diamond stropping compounds

Posted by KenSchwartz - 16 Mar 2012 00:20

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"You can actually get diamond papers down to 0.10 micron Ken Schwartz has them for the edge pro, and I'm sure he can put them on the Wicked Edge. I've actually got the whole product line coming in the mail to me as we speak, but not on the WEPS."

Be glad to ☺ Going from a 165 micron extra heavy duty diamond film to 0.1 microns in a series of steps (165, 125, 74, 45, 30 20 15 9 6 3 1 0.5 and 0.1 microns) I also have them in a bench hone size 3x8" too. I can mount them flush to a WEPS blank or put a slab of glass inbetween to raise the surface to the height of a sharpening stone (1/4 or 1/8 inch thickness).

Ken

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