

WATERSTONE SHARPENING

CARE & USE OF JAPANESE WATERSTONES

The Stones

All of the waterstones sold by Highland Hardware are man-made stones, providing very consistent grit size, reliable freedom from impurities, and predictably superb performance. Using these stones is not much different from using oilstones or any others you might have used in the past, at least in terms of how you hold and move the tool you're sharpening. What is most remarkably different is the speed with which the job gets done and the quality of the cutting edge you can achieve.

In part, the fast cutting action of these stones is due to the inherent sharpness of their individual grains of abrasive, but probably the most significant factor is the relatively weak resin bond that holds the abrasive together. Every stroke of a tool across the surface of a waterstone breaks loose abrasive grains, constantly exposing fresh, sharp grit and simultaneously building a muddy abrasive slurry which greatly speeds the sharpening process.

The water on waterstones is there for the same reason one uses oil on oilstones: the liquid greatly increases the range of effective cutting angles for each particle of abrasive, and surface tension keeps the swarf (bits of broken grit and tiny fragments of steel) from jamming into the surface of the stone and limiting a tool's contact with the abrasive. At its worst, such clogging can build a hard, shiny black glaze that seals off the stone and brings sharpening to grinding halt, so to speak. Thus it's quite important to keep your stones wet while you work, but without adding so much water that you wash off the slurry that so effectively accelerates the work. If you should accidentally glaze a stone, the flattening procedures described shortly will quickly restore it to good working condition.

Getting Ready to Work

To keep them reliably wet during use, man-made waterstones should be thoroughly saturated before you start work, providing an internal reservoir that lets you sharpen without the need for constant re-wetting. Soaking time required varies with the size and kind of stone. Our Green Stone is so porous that five minutes' immersion will be plenty. The brick-red medium stones will need about ten minutes for



the regular size and up to twice as long for the large stones. 4000, 6000 and 8000 finishing stones are so dense that it might take twenty minutes for them to become fully saturated. You can be sure that medium and fine stones are ready when water remains standing on the surface rather than soaking in right away. The Green Stone is too porous for this test, so just give it at least five minutes and call it done.

If you use the stones every day, they may be stored in water so they're always ready for use at a moment's notice. Plastic food storage boxes with snap-on lids make good stone containers, as does our Veritas Stone Pond. The bases of the finishing stones may be immersed right long with the stones themselves. One in a hundred stones might come off the base after years of use; should this happen to one of your stones, just let it dry thoroughly and epoxy it back in place.

Rinse and store your stones in clean water at the end of each day's work. This keeps them from becoming contaminated with muddy waste, and it prevents a smelly and remarkably unpleasant bacteria bloom which can become a nuisance after a few warm days in dirty water. If your stones begin to stink, wash them off and store them in fresh water laced with a few drops (not more) of Clorox as a disinfectant. There's no permanent harm done, and the odor really is far more bark than bite.

If you don't use your stones every day, or whenever you'll be out of the shop for a while, rinse them off and allow them to dry until you need them again. Very frequent drying and re-wetting isn't a good idea; constant wet/dry cycling might lead to the finish stones delaminating from their bases, and could conceivably cause mineral salts to accumulate on the stones, interfering with their sharpening action.

Freezing a wet stone will shatter it into a heap of gravel. It can take several days for the stones to dry completely after you've removed them from the water, so if your shop is unheated you must handle them with due care.

Sharpening

All you need to get started are an apron, a stone holder and a work surface that won't be harmed by water and mud. If you sharpen on your bench, a temporary surface (a scrap plywood tray, for instance, or even just a piece of cardboard) should be used to keep your prime work surface free of water and grit. We often recommend the floor as a durable work surface where the occasional muddy spill is of little consequence. For positive control on any surface, we highly recommend our rubber-footed stone holder. Unscrew its knurled nuts as far as possible and ignore them; just slide the adjustable foot to fit any stone and go to work—the stone isn't going anywhere, and there's no need to clamp it in place.

When you take a stone from its bath and lay it out for use, wipe any standing water off the surface before you begin. This will minimize the time it takes to build good slurry of the proper muddy consistency. As you start to sharpen, you'll see a darkish paste of stone and steel swarf building quickly on the surface. Keep working, using the entire surface of the stone, until this slurry becomes a fairly thick mud, and then as needed fling on just a few drops of water to keep it from going dry. You don't need to press hard to get the job done fast—let the stones do the work for you.

Keep working until the characteristic appearance given by that particular stone has reached all the way across the tool's bevel, with no coarser scratches visible anywhere along the cutting edge. Prepare to move to a finer stone by applying less and less pressure while allowing the slurry to become drier. The tool will end up floating on the barely fluid slurry, polishing the edge a good bit sharper than the stone itself could do and easing the transition up to the next finer grit in your collection.

Only the Green Stone turns up a perceptible burr, or "wire edge". By the time you've sharpened to 1000 or 1200 grit you won't be able to detect a burr on the back of a tool. Only after polishing the bevel on 4000, 6000 or 8000 grit should you turn the tool over and lightly polish the back as well, aiming to cut away whatever microscopic burr theory says must be there. When using the finishing stones, apply very light pressure. As the shine on the edge tells you you're close to completion, use less and less pressure with every stroke. Add one or two drops of water to prevent glazing, turn the tool over and slide the back

along the stone with almost no pressure. Give the bevel another couple of strokes, then the back, then a couple of ceremonial final strokes on the bevel. Now handle that edge with care—it's likely considerably sharper than a razor blade!

Routine Maintenance

As mentioned earlier, waterstones are made to wear relatively quickly. Thus they'll require flattening often, but it won't take much work to get the job done. Ideally, flatten your stones every time you use them, so they're always ready to work and never need more than a few seconds' light lapping to restore them to good condition. We've found only one satisfactory way to flatten the Green Stone, which is lapping it on a slurry of coarse silicon carbide abrasive. Sprinkle a generous pinch of grit on a piece of 1/4" glass (perhaps 8" x 16" or so), bring on the fully saturated stone and grind away, rinsing and checking frequently so you can stop as soon as the stone is flat. Lap with a compact circular scrubbing motion like a random orbit sander, working over the entire surface of the glass. Flatten all four sides of the stone. Rinse it well before returning it to its storage container.

Use the abrasive mud remaining on the glass to flatten your medium stones. Alternatively, medium and finish stones can also be flattened on wet-or-dry sandpaper slapped on a piece of glass. Stones of similar grit, such as 800, 1000 & 1200 or 4000, 6000 & 8000, can be touched up by rubbing them face to face, though this is most useful only for light dressing. When lapping leaves a stone with crisp, sharp edges, blunt them on the concrete floor or with a piece of coarse sandpaper. Lightly chamfer all ends and edges, leaving no sharp corners that might easily be damaged as you work.

Routine maintenance of 6000 and 8000 finishing stones is best done with a Nagura, a small fine dressing stone used with a circular scrubbing motion (like flattening your coarser stones on glass) to lap the entire surface of the finish stone. Our man-made Nagura should be soaked along with your finish stones, so it's ready at hand as soon as you take the stone out of the water and at any time during sharpening if a hollow spot or glazed area should become evident. Please note that the Nagura is for use only with 4000, 6000 and 8000 grit finishing stones; it will wear itself out without accomplishing anything at all on medium or coarse stones.