



Choosing and Maintaining Waterstones

What exactly is a waterstone?

A waterstone is a manmade sharpening stone composed of carefully graded particles held together by a bonding agent. Waterstones are graded according to the size of these particles and identified by a grit number; the American or Japanese grading systems are used depending on the country of origin, but in practice the differences are slight and of little concern to the average woodworker. The coarsest is usually around 220 grit, roughly equivalent to a traditional medium India oilstone; they progress through 800, 1000, 3000 to 6000, 8000 and 10000 grit or beyond, though not every grade will be offered by each individual manufacturer. There's also the Nagura stone, a small chalky block used to create a slurry on the surface of the finest stones (8000 grit and above) to aid the sharpening process.

How do they work?

Waterstones sharpen by constantly presenting new unworn grit particles to the steel edge of the blade being sharpened. Lubrication is of course provided by water, both within the stone – think of a wet sponge – and sprayed on the surface occasionally as you sharpen. The surface is designed to wear as sharpening proceeds, constantly refreshing itself and preventing any possibility of glazing. However, this means that the flatness of the stone needs to be regularly checked and re-established – a quick and simple process (see below). It does NOT mean that your stone will vanish before your eyes like a bar of soap; it takes a long time to wear away, so don't be discouraged from flattening your stone when it needs it or, ideally, just before.

How many do I need?

That depends on the nature of the work you do and the quality of the edge you need. Bear in mind the definition of a sharp edge – two perfectly flat surfaces meeting at an angle. Both the initial manufacture of a tool and its subsequent sharpening will produce tiny scratches on tool steel, and the larger those scratches, the less flat the surfaces will be at the point of meeting and the coarser the edge. Equally, when the scratches are so fine that the edge presents a mirror-like finish, it's near perfect for most practical purposes.

Assuming that your tool is not damaged in any way, you can begin with a 1000 grit which will shape and sharpen the edge but leave visible scratches on the bevel. These will benefit from being reduced on a finer stone – a 3000 or 6000 – and this will give a good result for most purposes. For fine work, or in search of that mirror finish, a fine finishing stone (8000 or 10000) is needed, used (optionally) in combination with a Nagura. But if you prefer to try waterstones before committing too extensively, the 1000 and 3000 or 6000 will give results that will please you. Most manufacturers offer double-sided combination stones with a coarser grade on one side and a finer on the other, and these offer a good starting point, or an economical way of extending your range.

Old, corroded or damaged tools will need to be tackled on coarser grits before progressing to the 1000+ grades. The coarser the grit, the faster it will remove steel but the scratches will be larger and the edge poorer. You can of course cut back a blade in poor condition on a 1000 stone but it will take longer and create more wear on the stone. This is why it's best to sharpen by stages, and not to jump from, say, a 1000 to an 8000 or 10000; an intermediate grade will give you a better end result and be more economical in terms of your time and wear on the stone.

For seriously damaged tools or boot sale basket cases, it is of course perfectly possible to use a bench grinder, diamond stone or Tormek to cut back quickly to clean steel and form the basic bevel shape, and then progress to the 1000 waterstone and beyond to get a sharp working edge.

Do I have to keep waterstones in water?

The straightforward answer is no. You simply need to ensure that the stone is saturated before you start to sharpen – think of the sponge again. So most waterstones (NOT ceramic stones like Shaptons, which are a different kind of beast) will need to be soaked in water before use, to the point at which bubbles stop rising to the surface. This happens quite quickly for coarser grades but takes a little longer for finer stones – about the time it takes to make a cup of coffee, for example. In practice, therefore, if it suits you to keep them in water, do so; the plastic boxes sold for keeping bacon in the fridge are ideal for this, though change the water now and again to avoid garden pond syndrome. If you use them only occasionally, or move between locations, soak them before use, and wipe them dry afterwards.

The exception to this general advice is the fine finishing stones, say 8,000 grit and above, which don't have to live in water and will work quite satisfactorily with a fine but generous spray of water on the surface. The water spray – a plant spray or a carefully washed shower cleaner bottle, for example – is an essential accessory for all waterstone sharpening, as otherwise the surface dries quite rapidly as you work.

Note about Toishi Ohishi – they require very little soaking, in fact the 1000 and above can just be used with a water spray.

What about flattening?

Waterstones wear by design, and a worn waterstone will operate unevenly, ultimately deforming the tool you're sharpening. Fortunately, flattening is easy and simple, and should be done routinely, certainly after any significant period of use, and always if you're in any doubt about when you last checked it. And don't assume it's flat when you buy it; check before first use.

Any abrasive surface that is harder than the waterstone itself and known to be absolutely flat will remove unevenness on the waterstone surface – you can use a diamond stone, or even another waterstone of coarser grade. The simplest flattening surface is a piece of heavyweight glass, float glass for preference, with a sheet of wet abrasive of 180 or 220 grit stuck to it - surface tension may be enough. If you have a granite plate or any other kind of reference surface, that will work equally well. Norton make a reasonably-priced abrasive flattening plate which is convenient but will itself need to be checked occasionally for flatness. The Rolls-Royce solution is DMT's Diamond Flattening Plate – expensive, but once acquired

you'll never use, need or want anything else.

Whatever you use, the procedure is the same. On the surface of your (wet) waterstone, draw a grid of lines in pencil and rub it on your flattening agent. On any high spots the grid will disappear immediately, but low areas will show the pencil lines until the whole surface is reduced to the same level. Once the lines have completely disappeared, the stone is flat.

Further Information

The Perfect Edge: the ultimate guide to sharpening for Woodworkers, Ron Hock (Popular Woodworking Books)

Sharpening, Thomas Lie-Nielsen (The Taunton Press)

Plane Sharpening: Hand Tool Techniques Part 1 (DVD), David Charlesworth (Lie-Nielsen Toolworks)

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