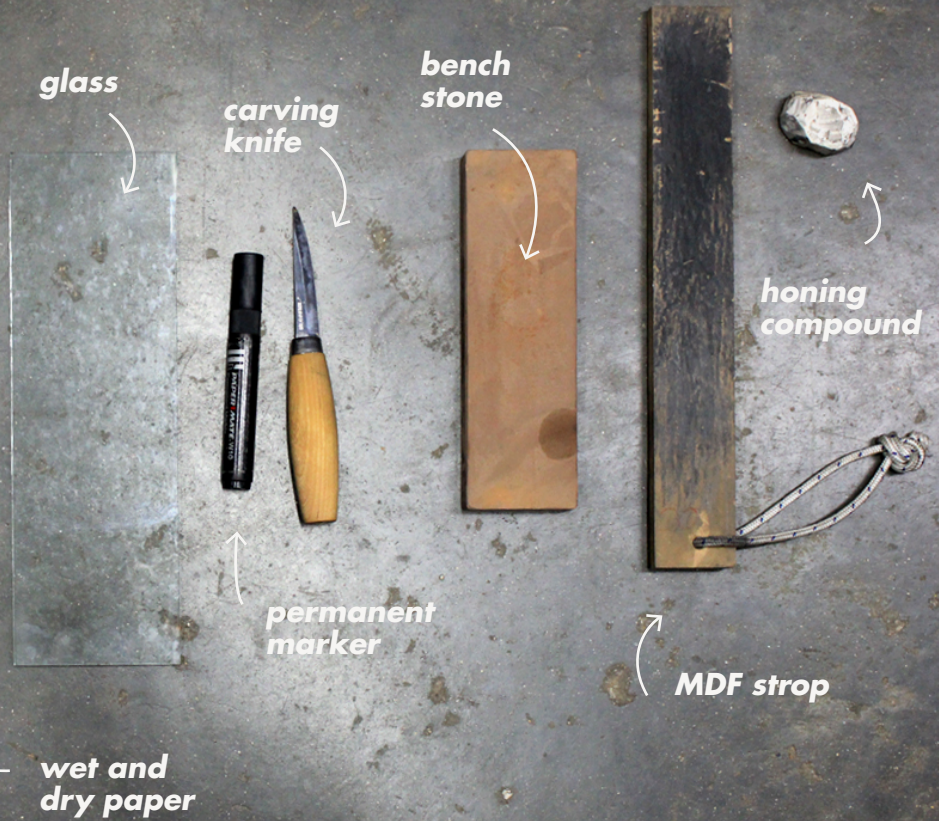


# SHARPENING A STRAIGHT Knife



## What is sharpening?

We define *sharpening* as, *creating a shape*, and *polishing it* - all of which is done with abrasives. We tend not to use the following words, although they are in common use:

## The sharpening process

### **Grinding**

Removing lots of material using a machine.



### **Honing**

Not using a machine. Using finer abrasives. Flattening a hollow grind, or putting on a secondary bevel.



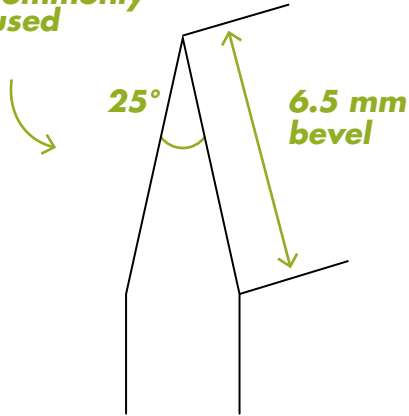
### **Stropping**

The last stage in the process, using the finest abrasive.

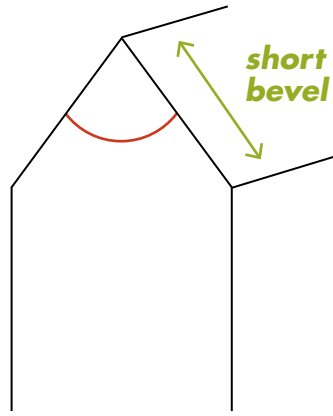
# Theory of Edge Geometry

## Bevel length and angle

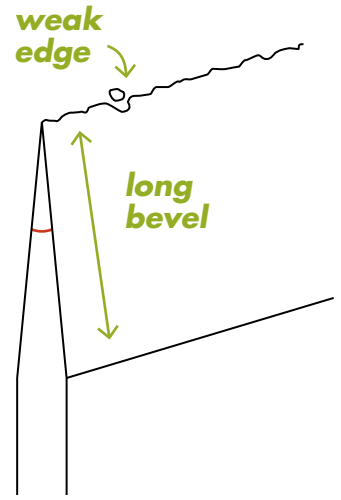
**Most commonly used**



✓ **fine acute angle**

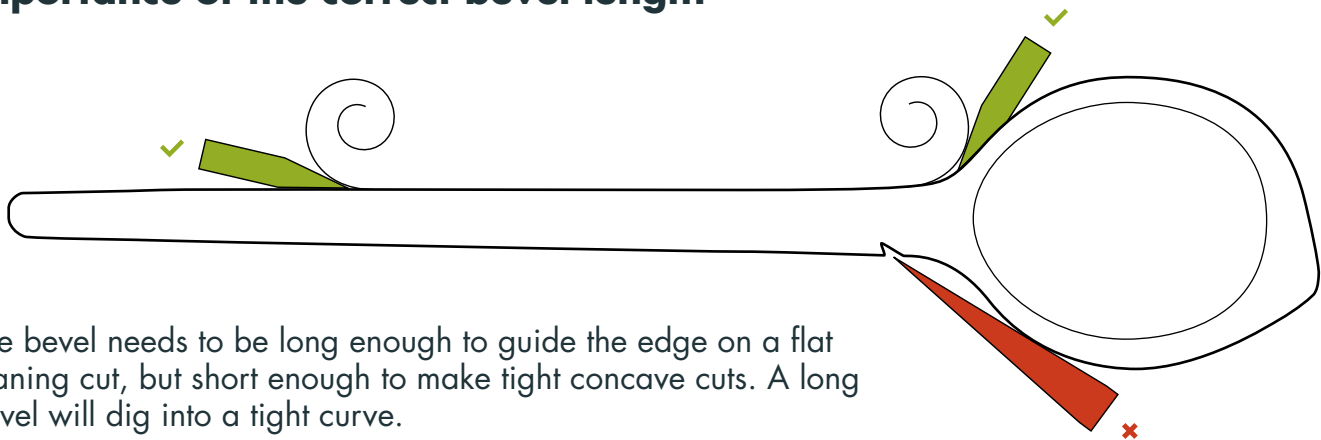


✗ **fatter obtuse angle**



✗ **very acute angle**

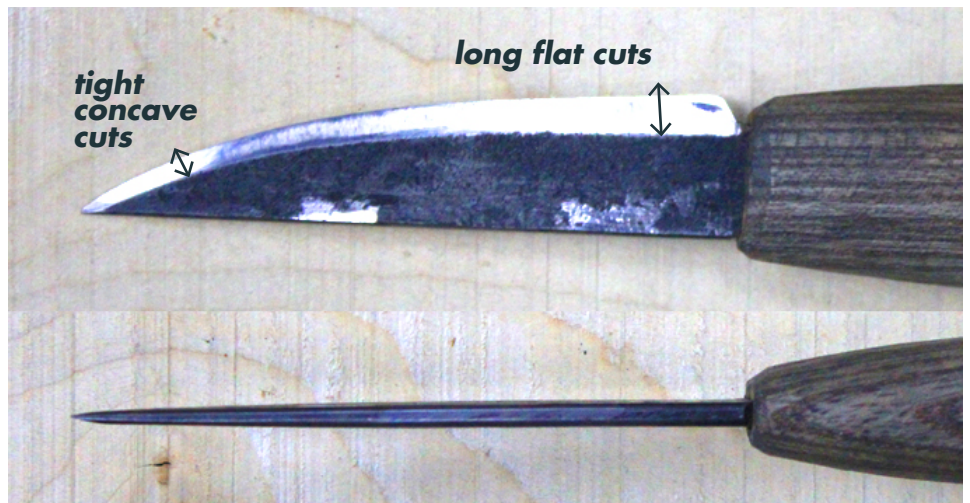
## Importance of the correct bevel length



The bevel needs to be long enough to guide the edge on a flat planing cut, but short enough to make tight concave cuts. A long bevel will dig into a tight curve.

## Benefits of a tapering blade

Bevel length varies along the blade. A long bevel towards the handle is good for long flat cuts. Short bevel at the tip is better for tight corners.

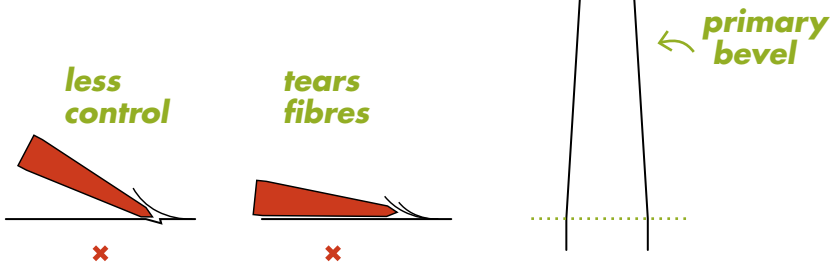


## Other types of bevel

### Secondary bevel

e.g Kitchen knife

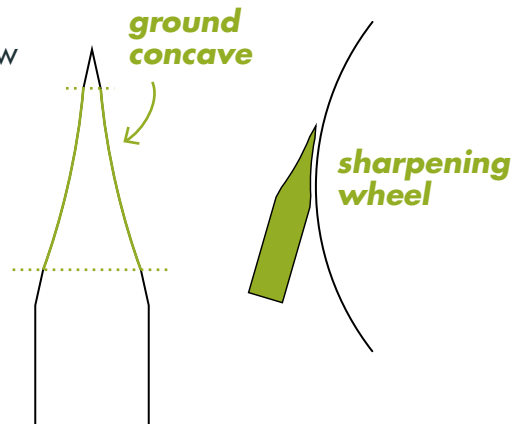
Not good for wood carving



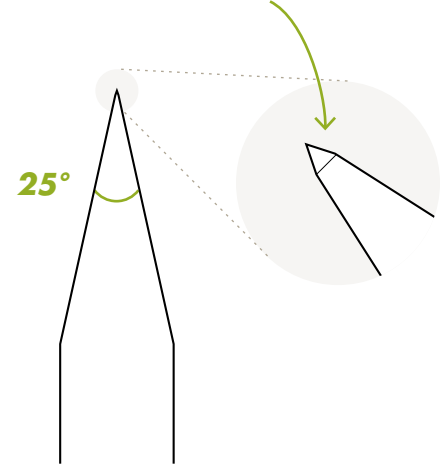
### Hollow grind

When sharpening, a hollow ground surface makes creating a flat bevel easier and quicker.

Nice to have, but not essential.



### Micro bevel

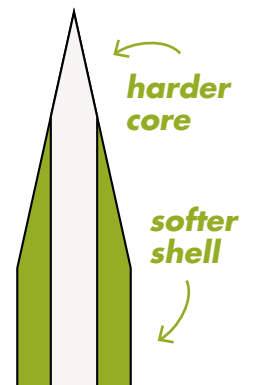


Not to be confused with a *secondary bevel*, micro bevels are a good thing. Micro bevels are often talked about in knife sharpening (more on this later).

### Laminated blades

Harder = Holds sharp edge longer, but brittle

Softer = Strong blade that does not snap



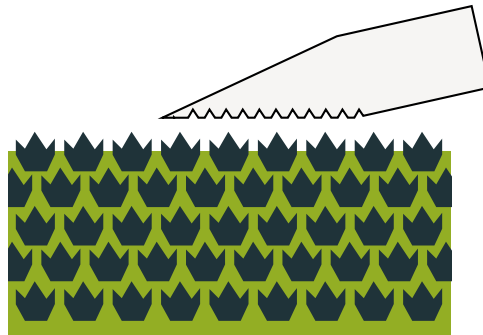
# Theory of Abrasives

## What is an abrasive?

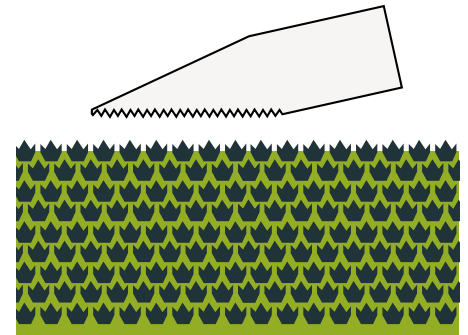
Every part of sharpening is done with abrasives - particles of harder material that scratch away the metal.

A good abrasive has:

- › Very uniform particle size, leaving a nice even surface.
- › Sharp particles, removing material faster. (Stays sharper longer).



**lower the number  
the coarser the abrasive**



**higher the number  
the finer the abrasive**

## Different abrasives

### Bench stones

Bench stones tend to be laid flat on a bench so you can move the tool across them, rather than being held in the hand. They're good because they reveal new sharp particles as they wear.

Bench stones are lubricated to remove particles of metal that clog up the abrasive.

### Diamond stones

Particles of diamonds stuck onto a flat metal surface. They're good because they stay flat.

You need a good quality product however because if the diamonds wear away, that part of the stone becomes redundant.

### Abrasive paper

Wide variety of standardised grits available. Easily applied to different flat surfaces, eg. glass.

### Lubrication

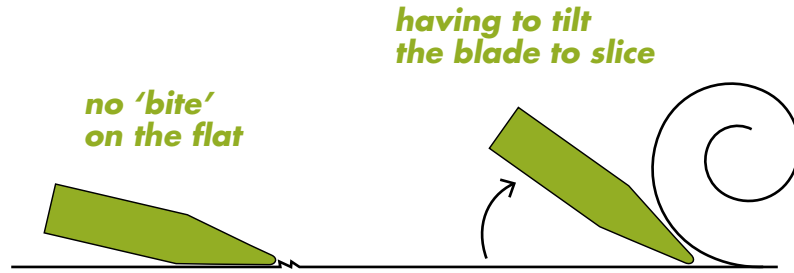
Harder stones	Oil
Softer stones	Water



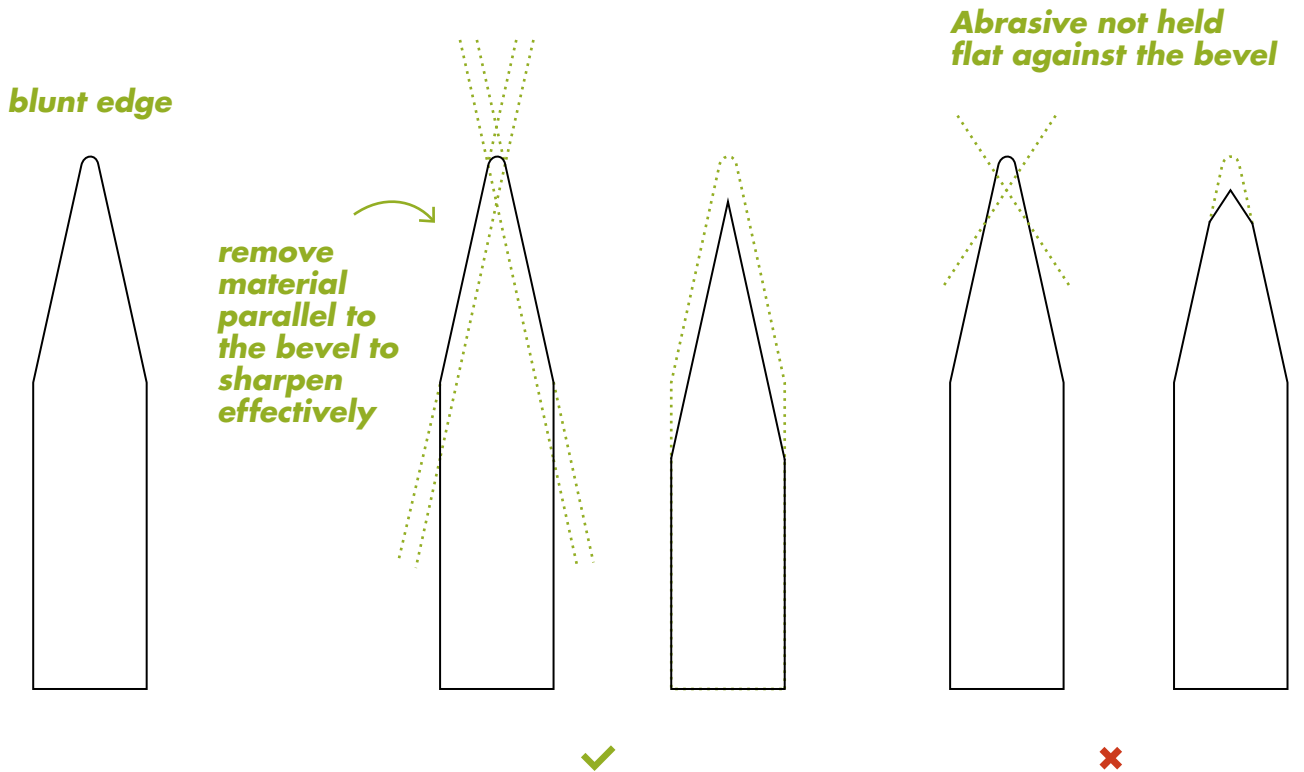
## How to know if your knife is blunt

Notice how far you have to lift the knife before it 'bites' into the wood. It should cut well on the flat.

If you have to lift the knife from the bevel to slice cleanly the blade tip may be rounded.



## The temptation to round the tip



Avoid the temptation to sharpen the edge only as this alters the blade geometry

# Create a Flat Bevel

Move the *flat* bevel, in a *flat* action, on a *flat* abrasive

## Flat abrasive

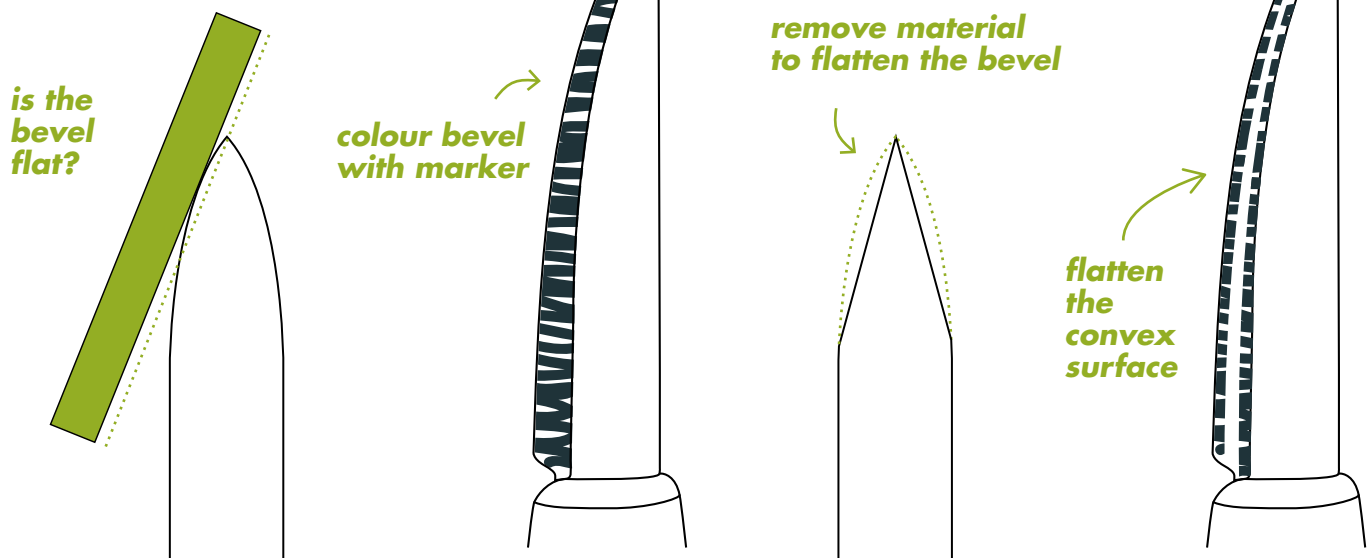
Either use wet and dry on glass, or, use a bench stone previously flattened with wet and dry on glass.

Draw a pencil wiggle on the stone to highlight where you're removing material. Flatten the benchstone with the wet and dry.



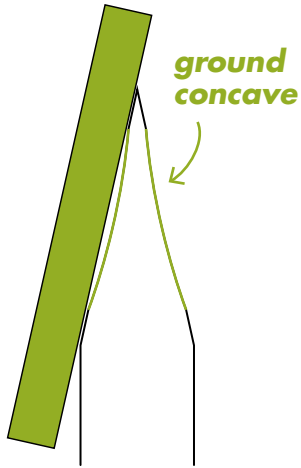
## Flat bevel

Check if you have a convex bevel on your blade by holding it against a straight edge, eg. a metal ruler. If so, correct this by flattening the bevel.



## Flat bevel

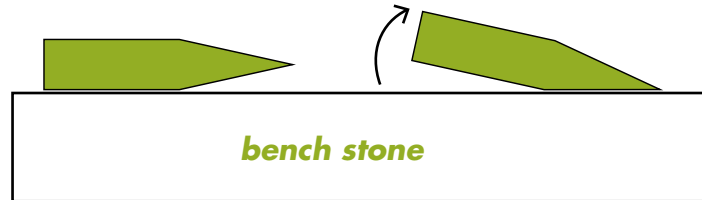
Alternatively use a hollow ground bevel. A hollow ground bevel lies flat more readily.



## Sharpening with a bench stone

lay knife on back of the blade

tilt until blade makes flat contact with the surface



! The feel of the bevel being flat to the surface is all important

## Maintaining symmetry

The action needs to be the same on both sides of the knife to maintain an even grind. Two methods for keeping this even are shown below:

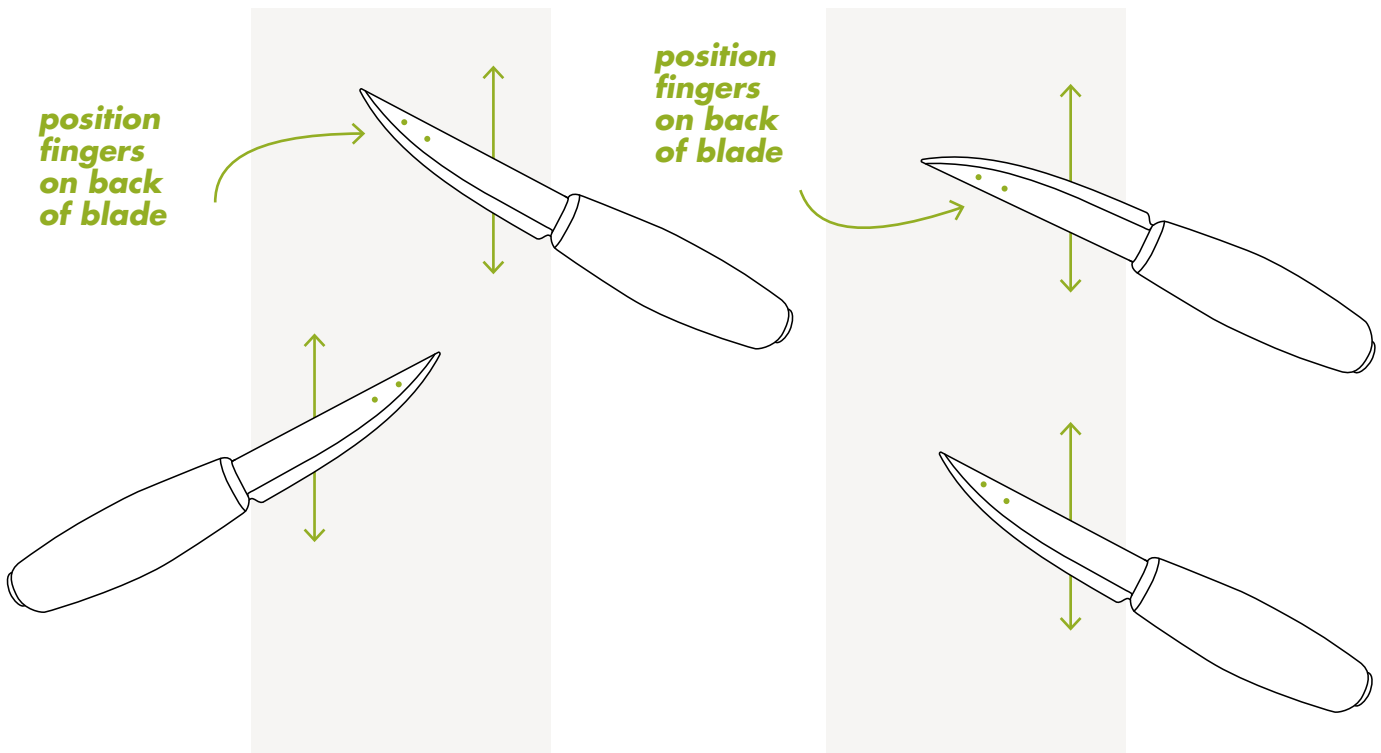


**A**

**B**

position fingers on back of blade

position fingers on back of blade



## The action

Dragging the knife diagonally so as much of the bevel is in contact with the stone as possible, helps keep it flat.

Continue the sweep to the tip of the knife (by lifting the handle ever so slightly) to keep the bevel in constant contact with the stone.

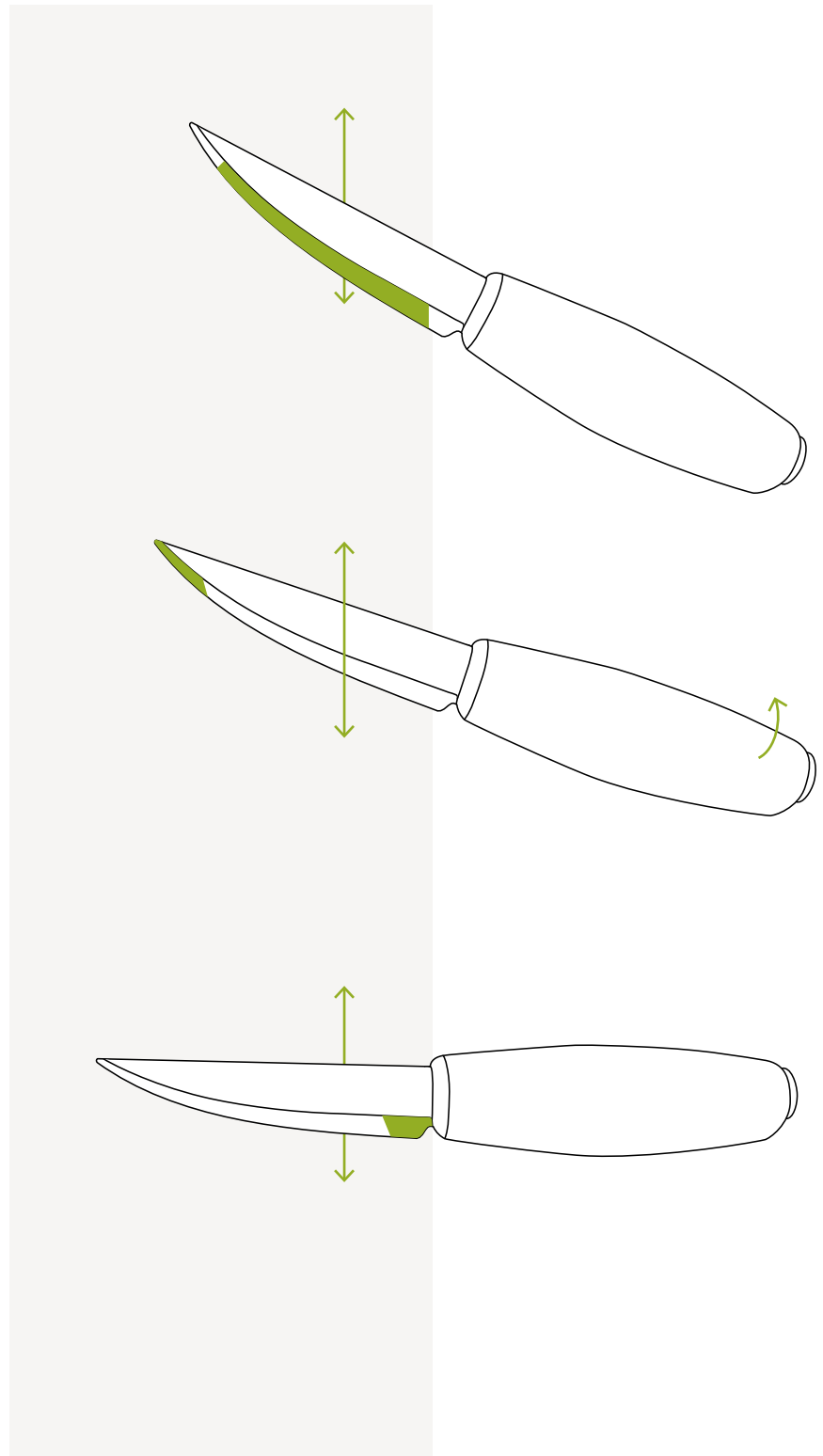
Finally, place the knife at right angles to the stone to sharpen the area closest to the hilt

## Direction of motion?

Some people like to abrade towards the cutting edge. They say it reduces the size of the bur. Some say this leaves swarf in the edge. There is some argument that the edge biting helps maintain a flat bevel.

We just rub it back and forth.

Never push towards the cutting edge on abrasive paper.





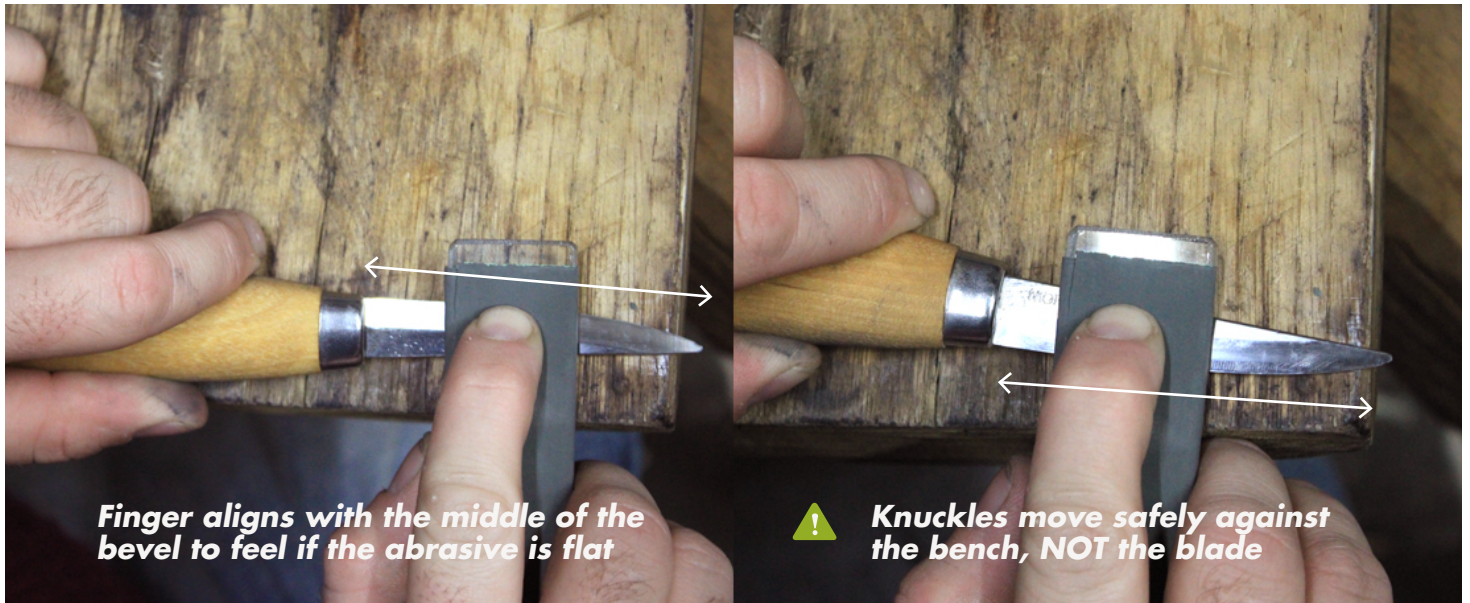
## Sharpening with a 'Slip Stone'

This could be:

- › Diamond stone
- › Japanese Waterstone
- › Small piece of glass wrapped in wet & dry.




## The motion



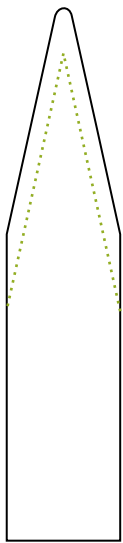
## The bur

### How to know if you've created the right shape

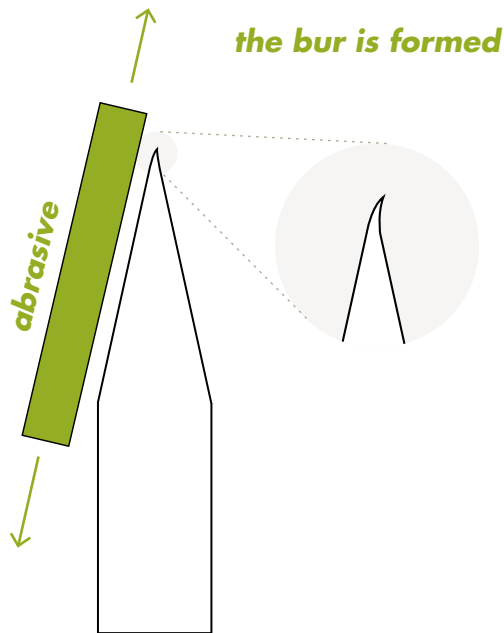
The bur is the best way to know you've sharpened right to the edge.

 Note: This doesn't necessarily mean you've created a flat bevel

*blunt edge*

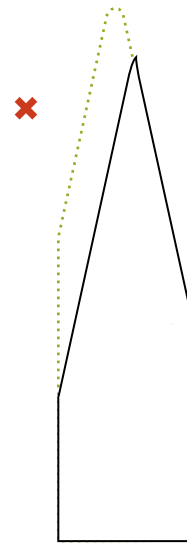


Remove an even amount on both sides until a bur is created.




Once enough material has been removed the abrasive pushes a tiny 'bur' over the edge.

*asymmetrical grind*



Don't over abrade one bevel to create a bur, you may end up with an asymmetrical grind.

 Feel for this extremely gently with the tip of your finger, always brushing off the bevel away from the blade edge. Never run a finger along the blade edge.

# Polishing

## How to refine the surface

You're achieving the right shape but the edge is still rough. Once pristine the edge will be more durable and will produce a polished finish on the wood.

Polishing is achieved by working through a series of different grits. Start with the roughest you need to create a bur quickly. Work through progressively finer grits until the surface is polished.

⚠ It's important to maintain the correct edge geometry.

## What grit to start with?

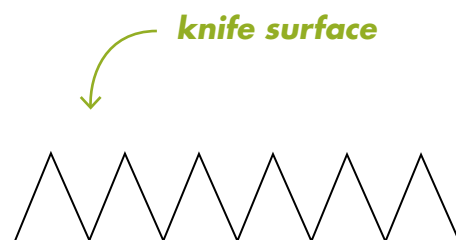
Chip in edge	Approx 400	Rough
Normal wear and tear	800 - 1500	Fine
Pretty sharp	2000 - 3000	Super fine

## Tips

If it's taking a while to create a bur choose a rougher grit.

⚠ As you work through each progressive grit you must make sure you remove all scratches from previous grit.

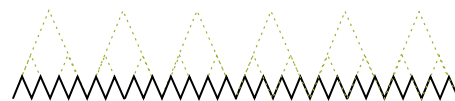
## Progressing through finer grits



**Rough grit**

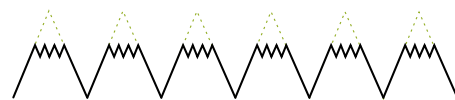


**Medium grit**



**Fine grit**

## Avoid skipping grits



**= weak edge that blunts quicker**

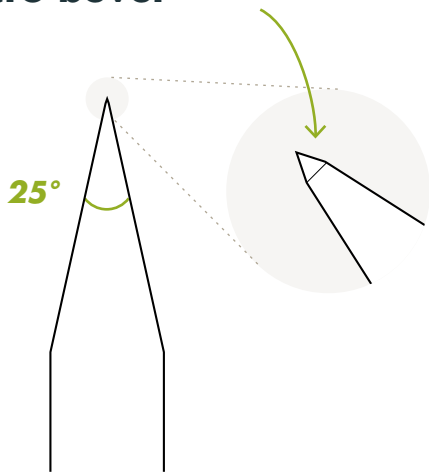
# Stropping

## The final stage

Stropping is the final process of polishing. Use polishing compound on a flat surface eg MDF or a flat piece of wood. This removes the last remnants of the bur and creates a 'micro bevel'.

Use a similar motion to sharpening on a benchstone.

## Micro bevel



## MDF strop and honing compound



You're ready to carve!