

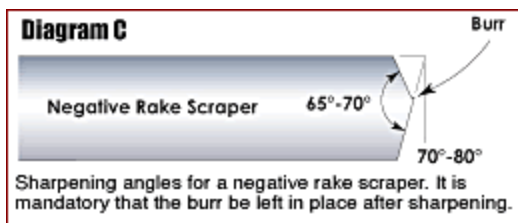
## Negative Rake Turning Tools

Negative angle scraping is not new. In fact, it has been used for hundreds of years by turners working blackwood and ivory. Simply, this approach is similar to laying a skew chisel down flat and using the edge as a scraper.

However, some of today's turners, such as Stuart Batty, are using negative angle scraping with a burr that is left on the cutting edge. It is this negative angle with the burr that makes this technique special. Negative rake scraping is when the end of the scraper is ground with two angles. The top surface of the tool is first ground at an angle, and then the underside is ground to another angle which produces a burr on the edge. Since it's only the burr that does the work, when the burr is worn off, the scraper is dull and the burr must be restored. Sometimes the burr may be lost in just a few seconds of cutting.

During sharpening, the burr forms on the top of the edge of the scraper because many of the abrasive particles have negative rake angles. Such particles tend to plough a groove through the steel without removing much of the material. The encounter with the negative rake particles on the top edge of the scraper deforms the steel at that point, producing a lip, which is the burr that does the cutting. This burr can also be produced with commercial burnishers for HSS scrapers.

The sharpening process for scrapers generates a lot of heat by deforming the steel. Be sure to use clean, dressed wheels when sharpening scrapers to keep heat buildup to a minimum.



It is easy to grind an old scraper to the shape or profile you want. Then grind the secondary bevel on the underside, which will leave a burr on the cutting edge (see Diagram C at right). This can be done with either HSS tools or carbon steel tools. However, keep in mind that the harder the steel, the longer the burr will last.

The benefits of using negative rake scraping only apply when using the scraper as a finishing tool where you are taking light, tissue-like shavings. A surface can be greatly improved using this technique; in fact, certain hard dense woods can be scraped to a glass-like surface, requiring little sanding. You must remember that this is not a technique for removing large amounts of wood and shaping turned pieces.

**Negative rake scrapers are a finishing tool!**