

## Aaron Gesicki – for Coulee Region Woodturners, 2021

### TOOLS

	Which tool is the best tool for my money?
	What is the best way to put a burr on a scraper and do I need a burr?
	How do carbide cutters compare to the titanium nitride coated cutters? What are the advantages of each?
	Which tools require they be sharpened on a wet stone? What happens if sharpened on a slow speed grinder?
	How many?

### MATERIALS

	Is there any value in high carbon steel tools? [these are <b>not</b> high carbon tool steels]
	How do powdered metal tools compare to the high speed steel tools?
	HIP check, but not hockey.
	What is Carbon Steel, and how is it different from Tool Steel?
	Tradeoff - Cheap or Good?

### ERGONOMICS

	Stance, position, the dance, and proprioceptive learning.
	“Practice doesn’t make perfect. PERFECT practice makes perfect” – Stuart Batty
	You can whittle, so Pet the Dog.
	Sharpening the breadknife.

### HEAT TREATMENT

	How are the various brands heat treated? Are there tradeoffs for this heat treating?
	Who, and how, is really important.
	What’s retained austenite or hypereutectoid carbon? So what?
	Carbides – we don’t need no stinking carbides!

### MISCELLANEOUS STUFF

	With a little help from my friends, or, be a namedropper.
	Opinions about demonstrators and Symposia. Personally, I need more perspiration, not more inspiration.
	Science, engineering, and BS, especially from urban legends and the internet.
	Why did that happen? Those mythical monkeys did it.
	Raise the bar. You CAN do it. Remember the Ant Farm.
	James Prestini – lessons from the Bauhaus. “Less is more” .... Mies van der Rohe
	Newbies – how to start?
	Sensitization and Industrial Hygiene. What you need to know.

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The chemical composition of wood varies from species to species, but is approximately 50% carbon, 42% oxygen, 6% hydrogen, 1% nitrogen, and 1% other elements (mainly calcium, potassium, sodium, magnesium, iron, and manganese) by weight. Wood also contains sulfur, chlorine, silicon, phosphorus, and other elements in small quantity. These latter elements, as oxides, contribute greatly to reduced machinability as their amounts increase. In other words, more of these cause increased rates of tool wear. These small quantity elements also affect the metallurgical and chemical interactions with the tool, adding to tool wear.

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CPM 15V is Crucible's highest vanadium, abrasion resistant CPM tool steel. It contains 50% more hard vanadium carbides in its microstructure than CPM 10V, to provide even higher wear resistance. CPM 15V is intended for applications requiring exceptional wear resistance. Applications where CPM 10V is successful, but even longer tool life is desired, or applications where sintered carbide tooling is prone to fracture or difficult to fabricate, are likely to be well-served by CPM 15V.

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"While HSS and other highly alloyed tool steels like CPM 10V (A11) resist abusive grinding, compared to High Carbon steels, they still can be damaged quickly and easily.

Two temperatures are important to consider when grinding tools made from HSS as well as CPM 10V (A11) - the critical temperature (approx. 1550F) above which the steel will begin to reharden and become brittle; and the tempering temperature (about 1025F) above which the fully heat treated steel will soften or "temper back".

At 1025F the steel is barely showing a very dull red color in a darkened room. In your shop, you can easily exceed it and not see it with the lights on. If you see deep blue/gray color around the ground edge - you have exceeded it!

In excess of 1550F, the edge will be medium to bright orange during grinding. If you see a bright edge while grinding, you are way too aggressive. As most are aware, you can very quickly achieve very bright colors on the edge, if not careful.

It is very easy to damage tools made from the highest alloy high speed and tool steels by grinding. If you take the time and care to grind them properly, they wear for a long time. This is why I am a proponent of grind a little, hone a lot.

For detailed information on specific grades look up [www.crucibleservice.com/eselector](http://www.crucibleservice.com/eselector)"

Jerry Wright

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