President's Letter

Superfilers

Ron Oliver
Roseburg Forest Products Company
Roseburg, OR
Last month I mentioned that a young filer (young by my standards) came up and asked about brake cleaner for cleaning saws at the Woodtech conference. He wondered how well it worked compared to other choices, he didn't like the smell and the company was always looking for ways to save money.

It turns out he was really right. We did a little work and came up with a way to make the workplace more pleasant, clean saws better and save the company money. Just because he asked**.**

Gene Moore
The Cutting Edge in Marysville, Ohio
I was talking to him and he mentioned doing missionary work. I have heard this term mean many different things. It is sometimes used as a sales term for exploring new sales territories, for example. Anyway, I asked him what he meant and he said that he repaired and sharpened saw blades free for a few missionary groups.

I think is pretty classy and a reminder that you can do good in many different ways.

Austin Williams
Owner of MVP Sharpening in TX.
He wanted to thank us for doing such a great job on his tips and shipping them out to him so quickly.

He had a question about how grinding wheel heart could crack carbide see P. 2

Carbide Processors, Inc.

Northwest Research Institute, Inc.
Newsletter June, 2006
3847 S. Union Ave. Tacoma, WA. 98409 (800) 346-8274
sales@carbideprocessors.com www.carbideprocessors.com

Buy Our Premium Grades of Carbide

* It has been tested and approved by industry leaders
* It is a little hard to get sometimes because so many people want it. Order now to get yours.
* We have well over a 90% reorder rate.

Super "C" is an extremely tough, hard to break grade that also gives very long wear. Use it to replace grades C- 1 through C-3. If you want extremely long wear try our Comet X, for very tough applications try our comet M See P.3 to see why they work so very well

If you have to get drunk and Stupid

We don't encourage irresponsible behavior (at least not so much as we get older) but if you have to get drunk and do something stupid then go buy a whole bunch of lumber.

Carbide Brazing

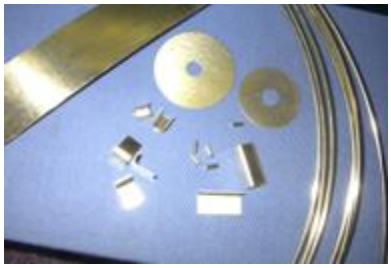
Once Again We Did Something No One Else Could Do

On the left is a carbide ring about .230" thick and about 7" across. On the right is the steel housing for it. This is an oilfield downhole application. The carbide is a seal on a valve. When it fails in use it costs $100,000 to pull all the tooling up and change it. We got this job after several big, national names had tried and failed. Our parts worked first time and they are working every time.

When your brazed parts have to work they have to be ours.

We do contract brazing as well as selling carbide, braze alloy and flux

Braze alloy at good prices



We buy a lot of braze alloy. We resell it at a very low markup to keep our volume discounts. Call and buy now.

We buy scrap carbide

Heat Checked Tips

A message from Emily

I received a call today from Mr. Austin Williams –Owner of MVP Sharpening in TX.

He wanted to thank us for doing such a great job on his tips and shipping them out to him so quickly.

Being a very nice man he also mentioned that with my voice I should be on the radio, he then amended his sentence to say I was good looking too so TV would be an option as well. (Editor's note – The above paragraph may or may not be true.)

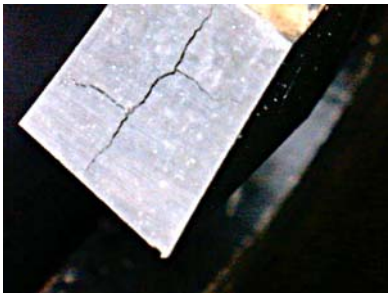
Mr. Williams was at a show in NC last week, speaking with Tim Cook and they both had a question they were hoping you could help them to answer.

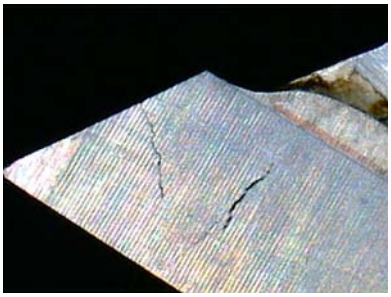
The grinding wheel companies have warned them that they should use extreme caution while grinding with a fine grit wheel, because they can get very hot and end up damaging the carbide tips(even with use of coolant)

Austin was wondering how and why the grinding operation would get hotter than the torch he uses to braze.

I told him either you or I would call him in the morning.

Answer





Heat checked tip photos

Tips get heat checks from grinding but not from brazing because of the way the heat is applied. With brazing the whole tip is heated pretty well uniformly. The center heats just a bit slower than the edges but very, very little.

If you have a dull wheel or one plugged with grease, etc then all the heat is applied against a single edge. Not only that but the rest of the wheel is being cooled with the coolant.

You can generate as much heat as you want by friction. Approximately 1200 F is sometimes given as a temperature at which cobalt starts to soften.

You have a wheel rubbing one side of the carbide. This makes a lot of heat the other side is cold.

The wheel also puts a lot of pressure on thee carbide and carbide does move just a bit, especially once the cobalt gets warm so there is tendency to pull it apart.

Roughly a diamond wheel sharpens by pulling out carbide chunks and scraping off the exposed binder. Another mechanism for harder materials is a chipping effect. If your diamonds (CBN) are sharp and clean then they grab well and scrape cleanly. If they are coated with grease (oil, etc.) then they tend to slip much more.

It is common to try to improve grinding speed with wheel pressure which just makes the rubbing problem worse.

Those of you that really know grinding know there is much more to it than this.

Personally I think your supplier has an obligation to help you use their products. Some suppliers are much better than others at this. I suggest you use a supplier than can answer your questions no matter what you buy.

Trouble Removing Flux?

If you are having trouble removing flux then let it cool completely. If you don't use enough flux then it gets "used up" and is very hard to remove. If you use enough flux it should come off with warm water and gentle scrubbing.

Dangers of fire and Explosion caused by Static Electricity when using straight oil for grinding

http://www.fiberglasstankandpipe.com/static.htm

Static electricity is generated by the separation of like or unlike bodies. For significant electrical charges to develop, the bodies must become and remain insulated with respect to each other.

In the petroleum industry, the static charge results from contact and separation that takes place in a flowing liquid. Also, the rate of electrostatic generation in a hose increases as the length increases. Further, when the charged stream enters a container, charge separation occurs and will be induced on the tank wall.

As a result, once a means of generating an electrostatic charge exists, it will be a source of ignition under the following three conditions:

1. The accumulated electrostatic charge is capable of producing an incendiary spark.
2. There is a spark gap.
3. There is an ignitable vapor-air mixture in the spark gap.

When large plastic or other insulated containers are filled, a grounding rod should be inserted to the bottom of the container before filling. A recent survey documented 27 fires involving both metal and plastic filling when a plastic truck bed or carpeted car trunk supported the container.

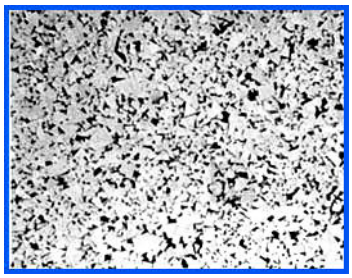
However, small plastic containers (e. g., one gallon) are less of a problem if the filling velocity is slow and the container is placed on the ground surface.

Turn Sump Sludge into Whiskey

This much sump sludge, dried out, powder dry, was worth over a dollar. A quart of dry sump sludge will about buy a quart of whiskey.

Why Our Advanced Grades Work So Well

First is grain size. Our super C grade and our Comet X grades work so well because they have very fine grained structure.



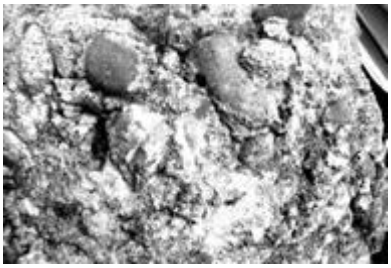
Carbide micrograin

Our comet M works very, very well because it has very big grains.

Carbide coarse grains

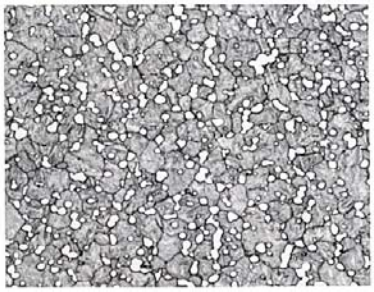
In some ways concrete and cement are like big chunks of tungsten carbide.

Above is cement which is very fine grained and very easy to break.



This is concrete which has a very coarse grain (rocks) and this which makes it hard to break

You can make fine grained carbide a lot tougher by certain proprietary processes. This has an effect much like adding rebar to concrete.



One of the real keys is how ell the carbide is made. Good carbide will have a very even dispersion of the carbide grains and the cobalt as in the picture above.

Interstitial carbides

We are dealing with interstitial carbides. Which means the small atoms are packed inside the big atoms. Interstitial carbides, such as tungsten carbide (WC), form when carbon combines with a metal that has an intermediate electronegativity and a relatively large atomic radius. In these compounds, the carbon atoms pack in the holes (interstices) between planes of metal atoms. The interstitial carbides, which include TiC, ZrC, and MoC retain the properties of metals. They act as alloys, rather than as either salts or covalent compounds.

Super Micrograin Carbide with Titanium

Carbide is a metal powder and binder mixture molded at high temperatures and pressures. Wear occurs because grains of the hard metal powders break away. The larger the grain size, the faster the cutting edge dulls, and large grains creates "lakes" of binder which weakens the structure. Binders also break down from the chemical attack from the acids found in wood products. Freud is one of the few saw blade companies who manufacture carbide. Our grain size is smaller than other grades and titanium is added making it more impervious to chemical attack. We produce several carbide mixtures for different cutting requirements, manufacturers who buy their carbide usually have only a few mixtures to choose from and these are usually formulated for metal cutting

Grain Size Information - Microns	
Ultra Micro Grain	.2 to .5
Sub Micro Grain	.5 to .7
Micro Grain	.7 to I
Fine Grain	1 to 1.4
Medium Fine Grain	1.5 to 2.5
Medium Grain	2.5 to 4
Coarse Grain	4 to 10

Some idea of how to classify carbide. What follows is how one company classified their carbide grades. It makes a lot more sense than many other systems used.

1 Micron is one millionth of a meter. A meter is 39.37 inches. One micron is 0.00003937 (Four over one hundred thousand inches.) There are about 2.5 microns per .001" inch.

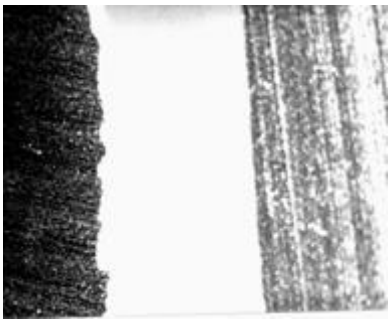
Grade	**% CO**	**Grain Size Microns**
1a	9 ± 1	7 ± 3
1b	9 ± 1	3.5 ± 1
2	7 + 1	2.5 ± 1
3	5 + 1	1.75 ± .5
4	5 ± 1	1.25 ± .5
5	14 ± 2	3.25 ± 1.25

Grade	**Hardness Rockwell A**	**Transverse Rupture Strength PSI**
1a	89 ± 1	450k ± 50k
1b	90 ± 1	400k ± 50k
2	91 ± 1	350k ± 25k
3	92.5 ± 1	325k + 25k
4	93.5 ± 1	300k t 25k
5	90 ± 1	375k ± 25k

Honing

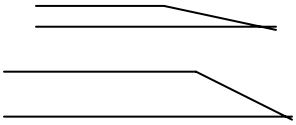
Conditioning of the cutting edge, such as a honing or chamfering, to make it stronger and less susceptible to chipping. A chamfer is a bevel on the tool's cutting edge; the angle is measured from the cutting face downward and generally varies from 25° to 45°. Honing is the process of rounding or blunting the cutting edge with abrasives, either manually or mechanically.

A light honing can make a huge difference in tool success or failure. There are two reasons to hone. 1. Carbide edges can chip in grinding. Each little chip serves as a force concentrator and helps tear the carbide apart. Honing removes those chips.



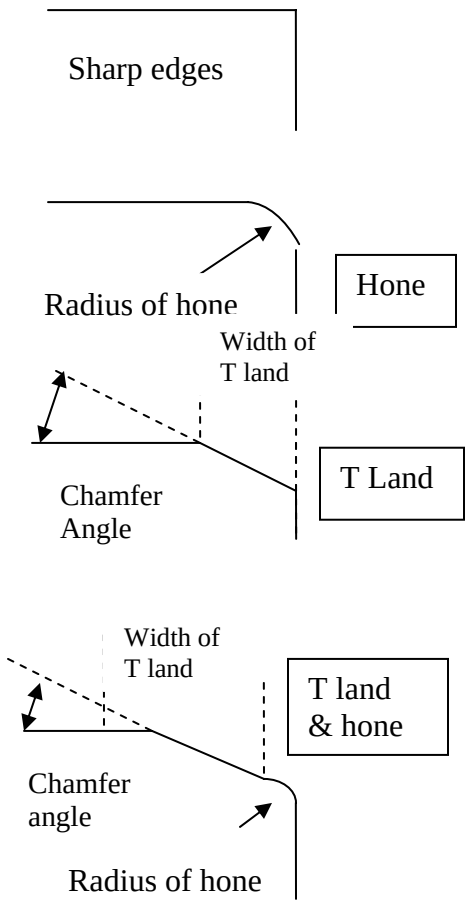
Carbide at 100x - rough edge left and smooth edge right

2. Carbide edges can get much sharp enough that the very edge is very thin and can break easily.



A light hone as a rolling edge or as a T land spreads the force of the first cuts just a bit and makes the edge much stronger.

Set of three diamond hones $19.95
The blue diamond hone works well for fast cutting. Blue 45 micron – Coarse – 325 grit, Red 25 micron – Fine – 600 grit, Green 9 micron – Very fine - 1200 grit



NEW Saw & tool Cleaner

For the last couple months we have been testing saw and tool cleaning chemicals. They all had some good to them so we took the best of each of them and had a special formula made.

This concentrate has a high pH, it made by PICO with a reacted caustic base to inhibit its effect on base metals such as carbide.

PICOCLEAN 123 ORANGE has a variety of uses so that you can use the product for maintenance as well as a production saw blade cleaner.

Dilutions will vary depending on the application. Heated soak tanks will probably run 5-10% and spray bottle hand cleaning about 3-5%.

PICOCLEAN 123 ORANGE does have a strong pH so that precautions should be followed by all workers handling the product and involved with any cleaning processes. After cleaning blades should be rinsed, then a corrosion inhibitor applied to bare steel to prevent any rusting.

This is a heavy-duty, water-based cleaner and degreaser used to dissolve a wide variety of ink, paint and resin coatings, dirt, oil, carbon and grease from floors, equipment and other substrates.

It is biodegradable and has a pleasant odor as well as being formulated with non-solvent cleaning additives, surfactants and wetting agents, which are non-flammable and non-carcinogenic.

This cleaner replaces flammable, toxic, hazardous solvent based products historically used for this type of cleaning and it forms a stable, low foaming solution when diluted with tap water and is completely free rinsing.

Product features and benefits:

- biodegradable
- non-flammable
- water dilutable
- low volatile emissions
- high detergency
- petroleum solvent free

Application:
Use this cleaner concentrated or diluted up to 50 parts with hot or cold tap water to remove the ink, paint or resin coatings, dirt, oil, carbon and grease from floors and other substrates. Note: time, temperature, concentration and severity of cleaning should be considered for total effectiveness.

Use it as well in steam cleaning, soak tank cleaning, manual type cleaning operations and industrial floor cleaning machines.

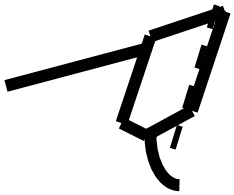
We recommend that parts are rinsed with water after use.

Recommended dilutions:
Heavy duty cleaning for dip tanks and fast cleaning. Spray bottles and other light cleaning use it at 4% (25 parts water to 1 part concentrated cleaner.

Basic Ideas in Good Tool Sharpening and How it Saves the Tool User Money

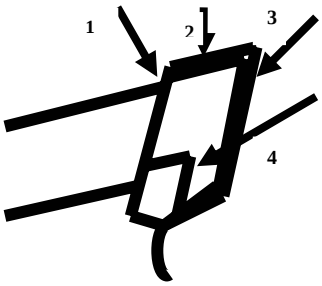
We have problems explaining to our customers why our superior quality is a benefit to them. Many of our customers who sell and sharpen tools have the same problem with their customers. Here is some information to help explain how and why a good sharpening job is important. This was done in response to the claim that face grinding alone was good enough as well as cheaper. I found this several places on the web. I ran it down to the original magazine article and got permission to use it.

If you want to use this call Emily at 800 346-8274



Regrinding of Carbide Tip saw blades requires knowledge, maximum attention and most important, the proper machines.

1. A round of 0.02mm or 0.008in, on the edge of the tips is the maximum you can accept before regrinding if you want to keep down the cost of your tools.
2. Regrinding must be done first on the face and second on the top of the tips to maintain correct concentricity of your tool.
3. Face and top, both must be ground each time with diamond wheels that will leave the finest micro finish.
4. 'Shoulder-Steel' support of tips must be recessed whenever necessary.
5. Hollow teeth must be ground perfectly.

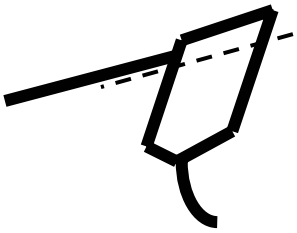


A properly serviced saw must have a certain amount of material removed from both the top and the face of the tooth.

1. Maintain proper relief behind tooth
2. Remove 2/3 material from top
3. Remove 1/3 material from face
4. Maintain proper geometry throughout blade life

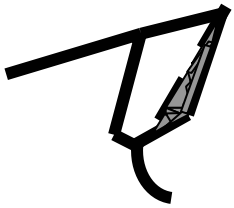
<u>Low price often means poor quality</u>
A good blade with a cheap sharpening won't be that bad. The blade life will be dramatically reduced but the customer won't realize that.

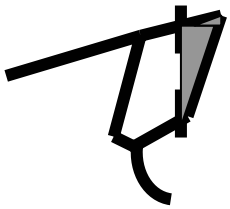
Face grind only & top grind only



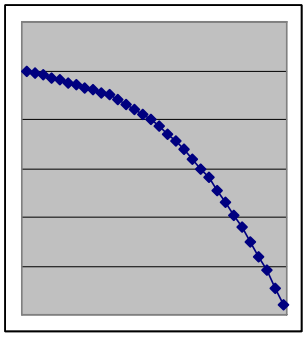
You can sharpen a saw blade by just grinding the face but you lose roundness this way. Also you remove more carbide than you need to by sharpening just the face shorten blade life. Think of it as sharpening a knife on one side only. (Note: there are very effective techniques that involve

Bad face grinding can change the hook angle and make it more positive or more negative. In both cases the cut is much worse and it severely shortens the life of the tool.





<u>Rules of thumb for saw blades</u>
1. 18 or more sharpenings
Weyerhaeuser once ran test and they determined that they could get at least twenty regrinds out of a saw blade. This depends on how dull the saw blade gets.

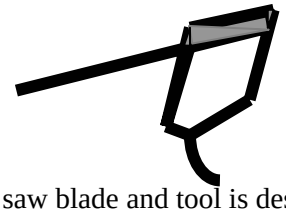


If a saw blade should run 10 hours and have 10% wear when it is run twenty hours it will have 30% wear. All this depends on the materials, machine, saw blade, etc. But it is always true that dulling is not a linear process. The duller a tool is the faster it gets more dull. In addition dull saw blades are much more likely to lose teeth, which is expensive, and much more likely to have shoulders rip off which is really expensive.

A good shop will help you determine how long to run your tools and will be able to tell you why.

2. A good shop will bring your tools back to "like new" condition.

Bad top grinding can give bad cuts or weaken the shoulder behind the tip.



Each saw blade and tool is designed for a certain job. All the angles and clearances are carefully calculated and tested. Sometimes a cheap shop will not have the equipment or the skill to resharpen properly or just won't care.

You can greatly reduce your sharpening costs.
1. Don't let your tools get overly dull.
2. Handle your tools carefully.
3. Do not drop them or allow them to knock together.
4. Package your tools carefully for pick up. It is common and very expensive to just throw dull tools in a box. Dull router bits thrown together can readily chip and greatly increase the amount of grinding necessary.

Not only a pretty face but also great customer service

Here is Emily, who is always perky and always happy to help customers. If we can't supply you but we know who can we will refer you. No matter what you want we will work really hard to find it.

Why quality counts

On the left is an expensive plug, $4.50. We went with the cheap one on the right. The cheap one burnt out and tripped breakers. We had two conveyors down for over an hour while we went out and bought the expensive plug.

Our Hero – Tim Cook

Cook's Sharpening Service in San Marcos, TX

Founder of Yahoo "Industrial Tool Sharpening"

Tim started a free discussion group on yahoo called Industrial Tool Sharpening. It has grown to 200 members in a very short time. What is really impressive is the quality of the members.

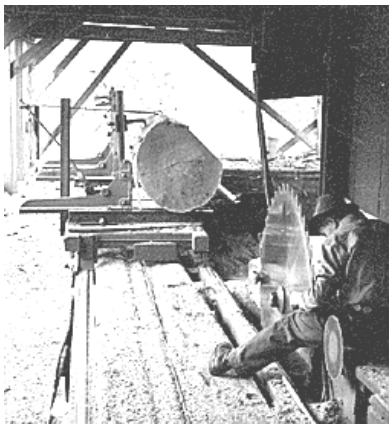
The idea is that an honest exchange of information benefits everyone. This is maybe seen most clearly when someone asks about buying a new machine. It is also a good place to get help solving problems, find products and supplies as well as sources of excellent technical information.

I believe that folks should work for the benefit of the industry and Tim cook is certainly doing this.

http://finance.groups.yahoo.com/group/IndustrialToolSharpening/

Dangers of fire and Explosion caused by Static Electricity when using straight oil for grinding

http://www.fiberglasstankandpipe.com/static.htm see p.2



Ready for something new
Get our "What's New" flier
800 346-8274 or
sales@carbideprocessors.com

New Cleaner for Saws & Tools

New, Improved, Strong & cheap Switching from brake cleaner to a Caustic solution can save a company better than $1,000 a year as well as giving better quality and a safer workplace. See P. 4

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