



President's Letter

### Chris Sands at Multi Metals Our Hero

Multi Metals is now part of Robert Bosch which means new computer systems. As part of this we were having trouble getting paid. It was just one of those things that happen however the problem went back a while. We finally spoke to Chris Sands at Multi Metals who did a lot of work to get things straightened out. I suppose she was just doing her job but she did it very pleasantly and graciously and very efficiently.

### Wes at Cascade Hardwoods

Wes is a fine, handsome, intelligent man who is loved by kids and dogs and admired by all. Actually we have never met Wes but he emailed Emily to say that he loves the Hot Rod and the Squeezy flux so we just sort of knew that he was smart, good-looking and an admirable person in every way.



### HOT ROD saw tip piker \$12.95

Ask a Simonds rep how to get one free



All kinds of flux including our own Purified flux and Emily's Squeezy flux

# Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter October, 2005

3847 S. Union Ave. Tacoma, WA. 98409 (800) 346-8274

sales@carbideprocessors.com [www.carbideprocessors.com](http://www.carbideprocessors.com)

## Laser Cut Saw Plate – You Do Have To Grind The Pockets Out.

I received a question from a customer asking if you had to gum out laser cut saw plate. I called Carol at Peerless because that was his supplier and she said that you should gum it out. Carol also added that Peerless can supply pregummed plate. I also called Steve Bergerson at Western Saw and he also said that you should gum out laser cut plate. Both talked about the need to get past the heat effected zone from the laser. The laser doesn't really cut the saw plate. It burns a line of holes. The heat from burning through the steel changes the character of the steel.

Steve and Carol both added that plate cleanliness was also important. You want a notch that is clean and free of oil and grease before you braze. Steve added that Western Saw will ship plates without oil if the customer requests. Ordinarily saw plate is oiled to keep it from rusting.

### Your Supplier Owes You Answers

When I called Peerless and when I called Steve Bergerson I was able to get answers immediately. This is not always possible but you should be able to get answers from a supplier about how to use the parts you bought.

Carol Phillips – Peerless

800 826-9072

Steve Bergerson - Western Saw

503 781-5013

Paul North

Coast Grinding, Arcadia CA

Keep asking until you get the answer you want. Paul was working on a new project and called to ask my opinion. I gave him my answer and I could tell by his tone of voice he wasn't happy with it. So he and I agreed that you should call around until you get the answer you want.

## You Do What You Have To



### Emily & Lawrence Doing a Rush Order

It was late Friday before Labor Day and a customer called. He needed tips sooner than he had thought he would. As a matter of fact he really needed tips the next day which was Saturday of Labor Day weekend. All the assemblers had gone home and the ovens were cold. It was just Lawrence, Emily and I. We took the automatic equipment off an induction unit, laid the tips out on the backs of paper tablets then put them on the turn table by hand.

I worked about an hour with them then they decided they could do without me. They worked about two hours each. It took us five hours total labor to do 800 tips. The standard for this is about 45 minutes total labor so we were pretty slow but we got the parts done in time for the customer.



### Filter Systems Available Through

Peerless Saw Co. (800) 826-9072

Smith Sawmill Supply

(800)598-6344

Burton/Fit Saw & Supply

(800)848-3313

Equipment Ltd. (800) 533 2006

# Mike Halterman Saw Analysis

Simonds International has decided that one of the advantages they are going to offer their customers is the very best problem solving service in the industry.

To do this they formed an unofficial group including their own people, the folks at Carbide Processors and the folks at Multi Metals.

Mike Halterman is one of their salesmen and he sells lot of tips because he is not afraid of tough problems.

Here is how the group solved a tough problem. I, Tom Walz of Carbide Processors, took the pictures and did part of the analysis. Mike Halterman, Norm Brown and Kim Peterson of Simonds supplied things I missed and just didn't know. Dave Bell of Multi Metals filled in very important things the rest of us missed or didn't know.

Here is the latest problem Mike brought us.

“These are the tips we broke out of a saw. Two that were side ground and one that had just been brazed into the saw and not ground.

Since they started using the 5/16 X .100 they are getting some tip loss. Sometimes it is two or three tips per saw and others it is more.

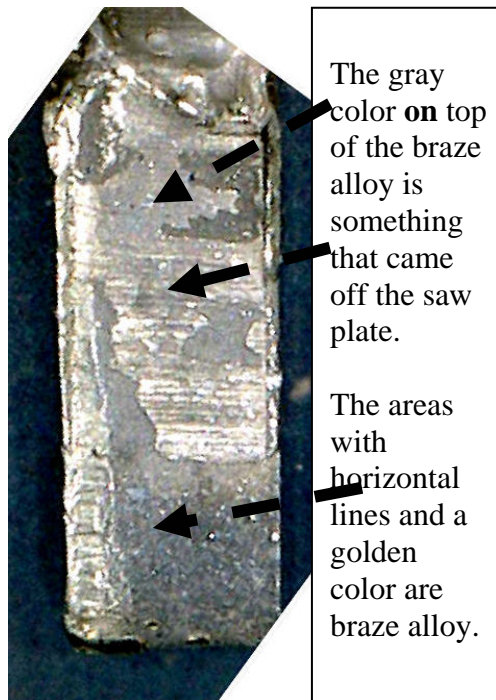
Thanks,  
Mike Halterman  
(509) 990-5131”



Here are 50x pictures taken using our Proscope.



My First Analysis



Note: We sometimes see horizontal lines in the braze alloy in tip loss situations such as this. The horizontal lines have, in the past, been coincident with brazing to laser cut plates that

were either not gummed out properly or not gummed out at all.

I sent these pictures and some samples to Dave Bell and here is his reply.

“I have some preliminary information (and as a result, some questions) regarding the failure. The single tip that came off of the blade failed near the steel/braze interface. It is a very unusual failure. The majority of the tip surface has steel attached to it (meaning that a thin layer of steel separated from the blade). I also found a pure chromium layer between the steel and the braze alloy. Is it possible that the blade was chromium plated prior to brazing, or maybe it was a reworked blade that did not have the chromium layer removed prior to rework? Please tell me all you know about this blade (even if you think it is insignificant).”

Dave thought the direction of the shear was unusual because the tip failed in testing. The saw blade was tested by hitting it with a stick. This is a good test but it does not deliver impact the same way that a saw mill does.

This saw was tested in the manner shown in the accompanying photographs. No one thinks it is all that accurate but no one knows a better, simpler method of non-destructive testing.”



Kim Peterson supplied the following information.

“This mill buys chrome plated saw plate. These plates are flash chromed.”

The chrome surface is designed as a wear surface. It is not designed to have the kind of peel or tensile strength needed to hold a saw tip on.”

### Conclusion 1 – Gray Layer

Dave Bell saw the gray color on top of the braze alloy and identified it as chrome using a scanning electron microscope.

“the chromium appears to be the culprit here. The chromium must be completely removed from the seat pocket prior to brazing.” Dave Bell

I didn’t see what you were talking about originally but Norm Brown, from Simonds, pointed out the light gray color on top of the braze alloy.

The saw plate was not gummed well enough to remove all the chrome from the pocket before brazing. Given the thickness of the layer of chrome and the thickness of metal removed by gumming the question might be raised as to whether the notches were gummed at all.

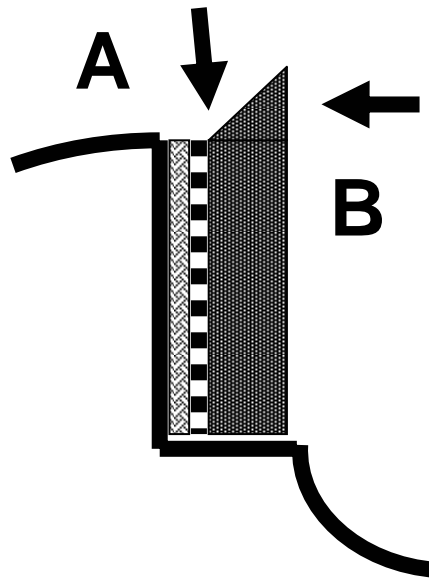
### Conclusion 2 – Bare Carbide

The carbide surface, at least in some areas, did not respond well to the treatment. This is evidenced by the fact that many carbide grains were visible in these areas. As a result, the braze did not adhere to the carbide in these areas.

Here, again, is how the parts were tested. A stick is used to strike the tips. The idea is to try to duplicate the impact the saw blade sees in actual sue. Instead the best you can do is to strike the tip in a direction that only roughly approximates what happens in a mill. In actual practice the tip is pretty well struck from the top and not the front in this test.

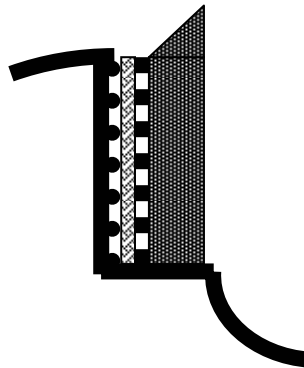


A is how the tip is struck in testing and B is how the tip is struck in a mill

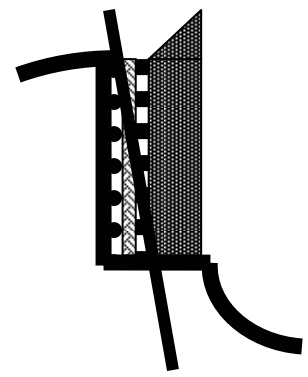


You really have a sandwich here. You have saw plate on the left. Next you have the dotted line ● ● ● ● which is the chrome plating. After that is the braze alloy. Some carbide has a surface treatment to make the carbide wet well. Finally you have the carbide.

This sandwich is designed to hold the tip, in place against a direct hit and to cushion the tip against impact.



In this case the impact was applied from a different direction. It is somewhat like the difference between chopping a log and splitting a piece of wood



It looks like the tip filed along the line shown. At the top the chrome came off the steel and worked its way through the various layers.

### David Weathers Says

We were talking to David Weathers of Bruce Hardwoods and he brought up the point that business is getting tougher all the time. He added that he likes way to brighten someone’s day when he gets a chance. With that in mind I include this picture I found while looking for pictures of wood cutting on the Internet. Thanks, David. (P.S. That’s not David.)



This picture comes with advice.

1. Never Park downhill of a tree you are cutting
2. When in doubt, always park at least twice as far away as the tree is tall
3. Just because you live near a forest, doesn’t mean you are a lumberjack.
4. Always use the neighbor’s truck.

### Rory Bean Says

"Life is not a journey to the grave with the intention of arriving safely in a pretty and well-preserved body, but rather, to skid in broadside, thoroughly used up, totally worn out, and loudly proclaiming -- 'WOW What A Rush!!!'

# Underbrazing Solving the problem



We buy 6" mild steel strips for testing. We grind one end in a bench grinder to remove the scale.



After we have brazed the parts on we take a pair of pliers and try to twist them off.



In another version we will leave part of the test piece sticking well over the end.



We hook the projecting part on a table and beat on the steel to try to pop the braze loose.



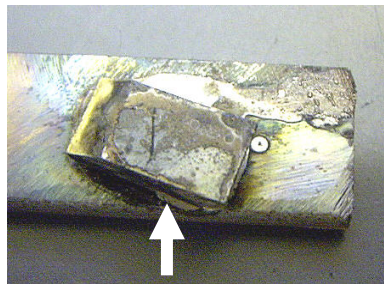
In a good braze the steel part bends but the tips stays on.



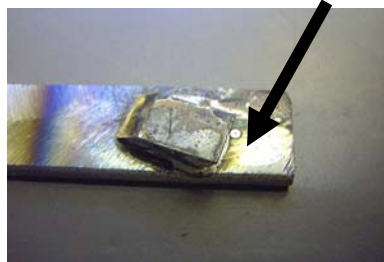
A good braze joint will have flow onto the steel



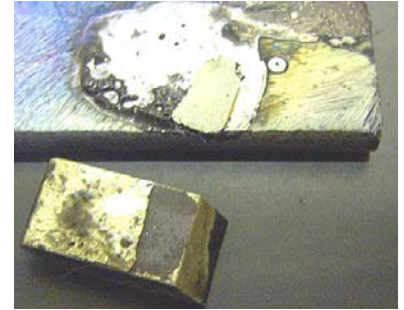
These were all good and they all had braze alloy on the steel.



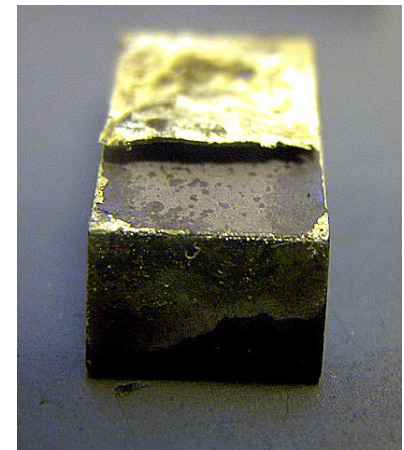
This is a part that failed. There is only a tiny bit of braze alloy on the steel.



This is the part and the steel after we twisted it off. You can see where part of the braze alloy stuck to the steel and parts stayed on the tip.



Below are a side view and an end view of the filed tip. You can see where the braze alloy peeled off.



To get a good braze joint all three parts (tip, steel and braze alloy) have to be hot enough. Steel heats up much faster than the tip does. Because everyone is careful not to overheat the steel you can underheat the tip.

**If you go by color you know how hot the tip is. If you go by feel you know how hot the braze alloy is. You have to go by flow to see if everything really got hot enough.**

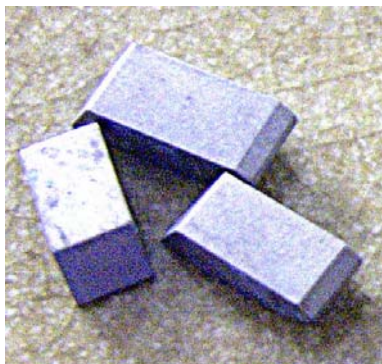
## Paul Duclos of Peerless Saw And Carbide in a Fire

Paul called because one of his customers had had a fire in his shop. The customer asked Paul if the carbide would be all right. Paul added that the carbide looked good but the fire got hot enough to warp steel.

I called the local fire department and they say that a hot fire reaches a temperature of 1,800 F and maybe 2,000 F but that is the hot gases at the ceiling. It gets several hundred degrees cooler as you get closer to the floor.

We used to run the little ovens up to as much as 2200F before we put the tips in and there weren't any problems doing that. We don't do it any more because we have better equipment.

If a tip lays in an oven at 1500 degrees F for a few days (call it 40 hours or more) it can come apart like popcorn. See attached photo.



Steel warps at a temperature much lower than this.

I would suggest he clean the tips with a caustic solution such as Easy Off oven cleaner or similar to remove oils and greases. Another way to do this would be to put them in mesh bags and run them through the pots and pans cycle in a dishwasher.

## Mike Riggs Weyerhaeuser Raymond, WA



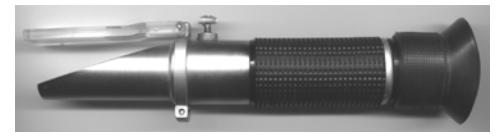
CP 2002 \$2038.00

Mike called about coolant so I went to see him. Mike is one of those guys who starts out by saying he's not an expert then he asks a really good question. Then he says he's not the smartest guy in the world and follows it with a darned smart statement. (He did say his two big interests in high school were smoking cigarettes and chasing girls. We believed him on that one.)

Anyway he wanted to buy a filter system and he wanted to know how to manage his coolant. He is using Coolube 220 and couldn't get any information from the supplier. He is sending us a sample of his coolant and we will do the research here. If you want to know how to manage your coolant we would be happy to do the same for you.



Wall Mount CP 2002 \$675.00



Refractometer, Cobalt test strips and pH paper

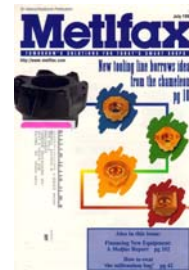


## Coolant

Coolube 220  
5 gallon pail - \$190.99

Rustlick Carbide Grind  
5 gallon pail - \$165.00

**Get information on coolant management** from articles about our technology in magazines such as Metlfix, Canadian Wood Products, Cutting Tool Engineer and many others.



## One Ranger – One Riot

Emily didn't know what it meant so here's the story.

It was in the old west and a group of drunken cowboys was tearing up a Texas town. The town fathers telegraphed Texas Ranger headquarters for help. The answer came back to meet the three o'clock train. At three o'clock the town fathers were at the train station expecting at least a full company of rangers. They watched folks get off the train and finally the last person off was a little guy wearing a star. The town fathers went up to him and told him that they had a big riot and asked why the rangers didn't send more help. The ranger looked at them a second, paused and said "You only have one riot so all you need is one ranger." Then he went on to prove he was right.

## Emily Found Her Customer "The Bear"



Emily got so excited taking orders for 4x shirts that she forgot the customer's name. Fortunately he called. Here is the message from Rick Paul of Charles GG Schmidt. "Just thought you'd like to see where your 4X shirts went. His name is Pete, we call him Bear. He's not a saw filer, but he makes a great bar of steel for us, and he's one of our best mechanics. Thanks for your help"

We've known and worked with guys like "The Bear." If you ask them to do something they pretty well just go away and do it and they do it very well. They don't make a lot of noise about it and they don't ask for a lot of credit. They are just sort of a John Wayne / One Ranger – One riot type of guy.

A big part of what we like about this business is that there are a whole lot of really nice, highly competent folks in it.

## Emily Is Selling Braze Alloy Great prices by the troy ounce or 300 ounce spool



### Really Good Information Sources

Silver Solder / Braze Alloys

<http://www.brazealloy.com/>

Tungsten Carbide

<http://www.therightcarbide.com/>

Coolant Filtering

<http://www.coolantfiltering.com/>

Our Main Web Site

<http://www.carbideprocessors.com/>

### Carbide Saw Manual

By Lowell C. Freeborn

With Mr. Freeborn's permission, we have put this in digital form because it is just too good to lose. If you have email we will send it to you free. We can send you a paper copy bound but it costs \$12 to have it copied, bound and shipped.

### Internet based discussion group

Membership is free. Simply send an email to [IndustrialToolSharpening-subscribe@yahoogroups.com](mailto:IndustrialToolSharpening-subscribe@yahoogroups.com)

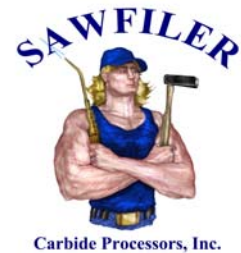


## BIG, HUGE Carbide Clearance Sale

Over 600,000 tips and strobs  
281 Separate Items

A big customer asked us to help clear out his old inventory.

These are pretty good prices so call, write, email or fax for the list today.



## Sawfiler T shirts

A nice T shirt with a picture of an average saw filer on it. Up to 6x

### Books we sell

1. Building Superior Brazed Tools  
267 pages, 271 illustrations covering more than seventy topics.
2. Failure Analysis In Brazed Tools  
\$50 on line, \$100 printed & coil bound

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