

Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter

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

October 2001

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Ceramic Tipped Saw Big Success In Primary Wood

Steve Bergerson



Hula Z, where the saw is running.
The saw is in the orange guard.

16 weeks and still good vs. 3 weeks for carbide

This test is being run at Cascade Hardwoods in Chehalis, Washington USA. Mike West is the Head Filer. The saw has been used on a chop saw to trim the ends of dry Maple and Alder. The boards being cut are unsupported at one end.

The Cermet saw is running on a "hula saw" which is a chop saw type of trim saw. This saw is used to improve the quality of the lumber before it is graded. It is used to trim defective ends on planed or sanded, dry boards in the planer mill. The saw is a 20" X 100 tooth trim saw with zero degree hook. (cont. p.2)

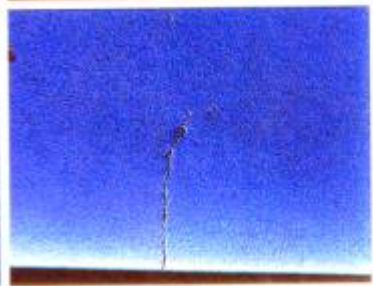
Honest People

We accidentally under billed Multi Metals. They caught our mistake and paid us the correct amount. Thanks, Sharon

Solving a Carbide Breakage Problem



Broken Tooth



Internal Crack

Sintex Cermet Blanks



Sintex is now making cermet blanks as well as saw tips. This makes it easy to use cermets as wear parts and to get blanks you can EDM for routers. As always with Sintex the quality is excellent. These parts were very true and square. We pretinned with High Impact alloy that has nodules of manganese to cushion impact.

September 11



Please accept our sincere regrets to all who lost someone. Thank you to all our friends in other countries. After September 11 we received messages of sympathy and support from many in other countries. We sincerely appreciate them and, yes, they did help.

Class Acts

One of the reasons I really like this business is the people in it. In the last couple of months we have had several people go out of their way to help us. I want to say "Thank you" again. These are just some of the nice folks we do business with. If you get a chance we can recommend that you give them a try.

Brian Wallinger at West Coast Saws, Grant Gehlman and Ron Erickson of IKS Systi Matic, Shawn Teague and Sharon Simpson from Multi Metals, Paul von Holten Of US Diamond, Dave Marshall from Dave Marshall Sales in Ontario, Gord Jarabek of Jay Rod sales in BC and all the nice folks at Munnell & Sherrill

Cobalt Remover

We have finished testing a cobalt remover that really removes cobalt and other metals from coolant.

A Great Freebie

Feed / Speed / Chip Load / Tooth Count Calculator & More

Peerless Saw Co. has a "Circular Saw Chip Load Calculator". It is really well done and free. We had to steal ours from Paul Duclos at the Western Saw Filer's meeting but he says that he will give one to anyone who calls. Peerless (800) 973-3753

Cermet wear parts & Cermets for routers, shapers, Etc.

We just got the first Cermet wear parts from Sintex. The first thing we noticed is that they are true and square. They measure the same at each end while many carbide parts do not. Sintex can make some standard shapes for wear parts and we are developing cutting methods to cut the blanks into router parts and other complex shapes. Dr. Szymani of the Wood Machining Institute has long held that this should be a good application and would be well worth trying.

Wood Machining Institute

By the time you get this Wood Tech will be over. If you are not familiar with the Wood Machining Institute you should contact Dr. Szymani for some information. It is probably the best source of information in the industry. P.O. box 476, Berkeley, CA. Ph (925) 943-5240, Fax (925) 945-0947
szymani@woodmachining.com

New financial software

We have new financial software. It will provide: 1. More automatic invoicing features to improve accuracy 2. Better customer records. 3. Easier access to customer accounts for billing, pricing and payment questions 4. Lower operating costs to save you money

Free Coffee Mug

Let people know how good you are. We have free china coffee mugs. One side has our motto "The Best In The World & Getting Better" and the other side has a list of what we do. We figure that our customers are very smart, very good at what they do and also modest. This way you can tell the world how good you really are and then modestly blame us. Call (800) 346-8274 for free mug(s).

Mill Supply Close Out

1,100 items with a list price of \$300,000 contact: Inter Export 30788 Calle Chueca San Juan Capistrano, CA 92675 Ph (949) 493-2848 Fax (949) 493-1416 ietc1@aol.com

Saw Tips for sale - cheap - 2,000 WF 7500

These are top quality Carbide Alloys tips and they are pretinned. We pretinned them like saw tips, which is what they are, and the customer uses them differently so they want the tinning on the face. It may or may not have been our fault but it was definitely our customer and our guarantee. We replaced them no charge of course. We have about \$1300 in these and we would really like a little cash instead. Call and make an offer.

Method Of Treating Ceramics For Use As Tips In Saws And Other Tools Or Other Structures

On august 16, 2001 our patent attorney, Hughes & Schacht, received official notice that our patent has been allowed. This is important technology. We want to see it used widely. We are making it available in whatever manner is most convenient for the customer. We will do pretinning or supply pretinned parts. We will also license the technology to people who wish to do it themselves.

Changes at IKS / Systi Matic

We got started in business by Systi Matic and they are just up the road so we get asked about them. They are making big changes. We are very impressed by what they are doing. We are very willing to do all the work they care to give us and to extend them credit on the work.

What made Systi Matic great

In 1978 the rest of the industry was sort of poking around with carbide tipped saws. Systi Matic took hold and made them work. Where everyone else saw problems, they saw opportunity. There is now the same opportunity in ceramic tipped saws. Systi Matic went from about \$2,000,000 to \$12,000,000. A big part of that was due to a commitment to the 'new' carbide tipped saws in 1978.

North American Filers Groups

1. Intermountain - Greg Turbin, Stimson Lumber, PO Box 6600, Coeur D'Alene, ID 83816
2. Maritime - Larry Mackay, Bowater Mersey, PO Box 1150, Liverpool, NS B0T 1K0 Canada
3. B.C. - John Hebert, Gorman Bros, PO Box 26052, Westbank, BC V4T 2G3 Canada
4. Southern - Don Till, Weyerhaeuser Co., PO Box 280, Holden, LA 70744
5. Southeastern - Ross Simmons, Weyerhaeuser Co., PO Box 280, Ayden, NC 28517
6. Northeast - David Jones, Cersosimo Lumber, 1103 Vernon St., Brattleboro, VT 05301
7. Cal-Western - Bob Ward, Collins Pine, PO Box 796, Chester, CA 96020
8. Western - Steve Dean, Roseburg Forest Prod., PO Box 1088, Roseburg, OR 97470
9. Lake States - John Jewell, Northern Hardwoods, PO Box 189, South Range, MI 49963
10. Midwest - Ralph Manting, Hanchett Mfg., 623 Lilac, Big Rapids, MI 49307

New Patent

Ceramic Tipped Saw Big Success

In Primary Wood (cont.)

The saw makes about 3 or 4 cuts per minute. It has been running for at least 14 weeks so that would be about 200,000 cuts. This is the same saw that was taken off after four weeks and displayed at the March 2001 Wood Technology Show & Clinic in Portland, OR USA. After the show it was returned to Cascade Hardwoods. When they got it back, they just put it on the machine. It has never been sharpened.

This Cermet saw now has 14 weeks of use on it and has never been sharpened. The carbide saw on the other hula has three weeks use, which is about normal before needing re-sharpening.

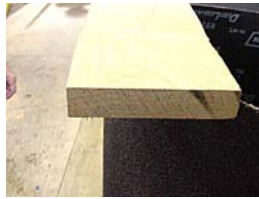
Initially the payback on the cermet tipped saw was expected to come from fewer sharpenings and the purchase of fewer saws. It cost about twice the price of a similar carbide tipped saw but should run longer and need much less sharpening. Once in use it was seen that the major benefit was the elimination of downtime for saw changes. This saw is very difficult to take off and put on the machine. So far the cermet tipped saw has eliminated four saw changes and is still going strong. In this case downtime includes the labor and, more importantly, the lost production.



This picture shows the saw stopped on the arbor at a lunch break. This saw is dirty and smeared with pitch

and resin but not dull after 14 weeks use. The teeth are all in good shape. It will cut for quite a while yet.

The following pictures show the similar results of carbide after 3 weeks and cermets after 14 weeks. The primary thing to look for is the "whiskering", or tear out and splintering on the bottom of the board. Both saws show about the same amount. This small amount is very acceptable in this application. A dull saw will pull more fiber out than a sharp saw. Too much whiskering and the board will have to be down graded.



Excellent quality end trim with a cermet saw in use for 14 weeks.



Similar quality end trim with a carbide saw in use for 3 weeks.

Cermet saws are following the same path carbide did. First specialty use with good machinery, then trim saws in mills, finally universal use.

Combined MSDS Sheet - Pretinned Carbide with Flux

Information from: U.S. Dept. of Defense, Vermont SIRI, and Cornell U. We combined three MSDS sheets into one to make it handier. Let us know if you would like a copy.

Saw Reviews

"One of the most significant, and sometimes controversial, developments in the machining of lumber."

"Either the greatest thing that has happened to the industry or the worst, depending on the success of the operator."

"Trim saws have come into use on multiple-saw drop trimmers. Particularly for the frequently used "end" locations where each board is trimmed to square it up."

"They will operate longer between sharpenings. While there is no mystery to this, some people still have difficulty accepting it."

These comments apply to cermet tipped saws. They were originally said about carbide tipped saws in 1978. Cermet saws now are where carbide was in 1978. These quotes are from Williston's book, *Saws* and Hewitt in the *Armstrong Carbide Filer's Handbook*. Both are excellent books and still very valuable.

Western Saw Filer's Meeting Big success

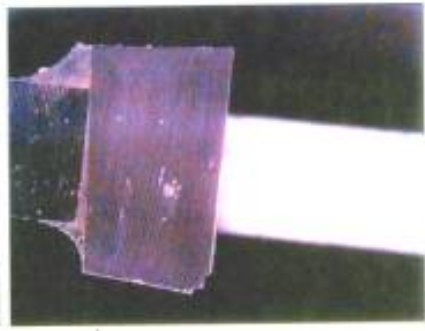
The annual Western Saw filer's meeting was in Portland in early September. It was very successful both socially and from an educational standpoint. Many vendors went to a great deal of effort and expense to bring in equipment and set up displays. Most of the credit goes to Tom Jones of Willamette Industries. Tom worked long and hard and had things really well organized.

Equipment for sale

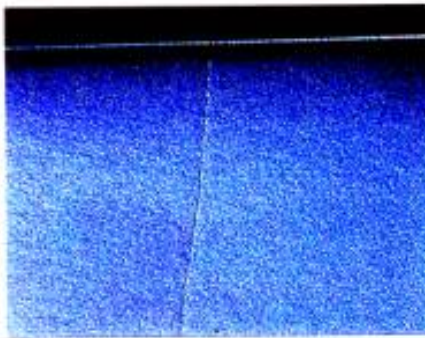
Used Grinders for sale
Stan Nielsen
Centralia WA (360) 304-0119

Bad Carbide?

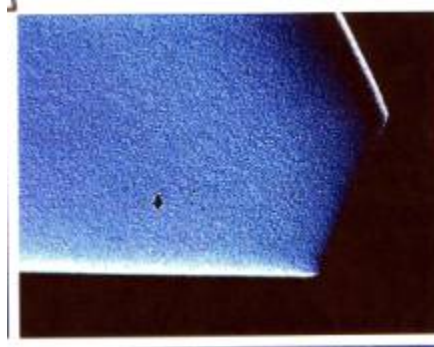
The customer reported some chipping and breaking during grinding. It wasn't all the time and some times it was a lot worse than others.



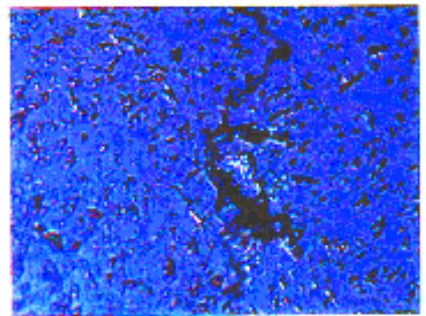
The carbide supplier had examined the parts and said that there was nothing wrong with them. We received the parts and sent them to an outside source. They polished the surface off and took pictures of the interior. The most visible features were internal cracks.



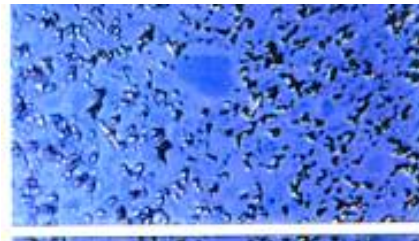
The crack in the lower picture runs through a pinhole. There were also pinholes without cracks.



The tips also had internal voids or holes



Finally the carbide grains were not evenly distributed in the cobalt matrix so there is a puddle of cobalt with no carbide in it.



I don't like the term "bad carbide" because no one can make carbide perfectly every time. It is a real problem for the carbide suppliers because so many carbide buyers are intensely focused on price and never measure performance to determine quality.

I do not know if these parts were within the supplier's specifications or not. However they did not do the job the customer wanted them to do.

The customer did not know that the tips he was getting had hidden cracks and holes.

We did some analysis inside and then sent them out because we wanted an independent analysis. An analysis such as this is expensive because of the time and equipment involved. If your carbide supplier can't or won't do this then we can probably help you for around a thousand dollars.

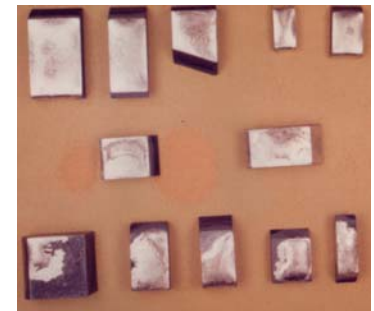
Identifying Bad Carbide

Edge chipping

In the past couple months we were told that you could tell about porosity in carbide by the amount and kind of edge chipping. The theory is that porosity in carbide can be like holes in Swiss cheese. It is all though the tip but it also shows up on the edges. Some chipping is from bad molds or poor handling and this looks different. The porosity edge chipping looks round, like parts of bubbles. We do not know if this is true but we got it from a good source and it seems to make some sense.

Bad Flow

The top row is how pretinned tips should look. The bottom row is bad. The alloy did not stick to the carbide and the carbide won't stick to the saw. This does not necessarily mean that it is bad carbide. It could just be bad pretinning.



Salt Bath Treating

There is a method of treating carbide that soaks the carbide in molten salts just below the sintering temperature. There is a lot of question about how good this is for the carbide. In any case we don't do it. All our processes are water based and much gentler to the carbide.

Consulting

If your company needs help solving a problem, setting up a new or improved line, coming into compliance with local or national regulations, or even just trying to figure out how to make the brazing department more cost effective, contact us.

In many cases, problems can be solved online or with just a phone call or two. More involved situations might require one or more visits to your facility. Whatever it is, we can work out a solution that can put more money in your pocket and better product going out the door.

Please leave as detailed a description of your problem or need as possible, along with the name and address of the company, contact person, phone number and email address. If you need to speak with someone personally, or if the situation is too complicated for email description, let us know. We will contact you at a time you indicate is convenient.

Once we get a clear picture of the problem, we can decide whether it requires an on site visit, what it will cost, and how soon you can expect positive results.

Easier Filter Changes

Our filter systems really do have a big, strong pump. If you are going to go many months between filter changes you will pack the canister so full that it will be hard to pull the filters out. If you buy extra housings you can put those on and let the full ones dry out. In a couple weeks it will be much easier get the filters out. Or just change the filters once a month.

Customer comments

Kathie Rundstrom, Paso Robles Carbide, CA "The air doesn't have that oily smell anymore"

Coolant filtering works



Unfiltered



Filtered

Scott Whiting, Scott's Sharpening Service in Arizona. Filtered coolant that had been used to grind about 95,000 saw teeth! (1583 saws.) "Amazed at how fast and efficient his system was"



CP 2002

Greg Sprague, Head Saw filer for Potter Lumber NY, "I don't have to clean my glasses as often"

Steve Van Doren of S&D Saw and Tool in Shamokin PA has gone out of his way to help us build better systems. Thanks to Steve we are now high pressure testing our systems as well as run testing before we ship them.

Filter systems From \$84 /month New lease program

Available from:
Peerless Saw Company
Jayrod Consulting & Sales, Ltd.
California Saw & Knife
Cal Saw Canada
Burton Saw And Supply
Munnell & Sherrill, Inc



CP 2002 in a multi-million dollar saw shop - Part of what makes this shop "White Shirt" clean and very profitable - **Cost Effective**, "ROI, Year or Less"

What We Sell

- Pretinning as a service on your carbide or we can order for you
- Contract brazing
- Tool tipping rod
- Coolant filtering systems
- Coolant test instruments
- Talonite® knife alloy
- Lubricium®
- Braze alloy

We license

- Surface treatments for carbide
- Braze treatments for ceramics
- Water reduction technology

We consult

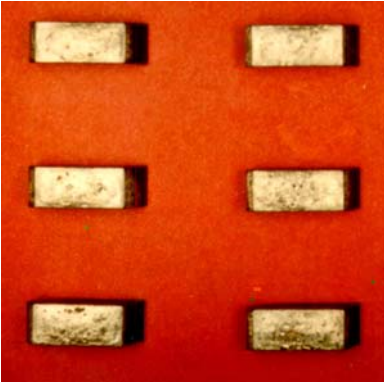
- Braze failure
- Tool failure
- Waste reduction
- Coolant management
- Water use reduction

Customer comments

Alistair Moore, Cal Saw Canada, "The grinds are smoother, our wheels stay cleaner, and the oil and grease on our machinery is less than it was."

Better, Faster Cutting In Hard, Tough Applications with

'High Impact' Braze Alloy



**Pretinned Tips with shock -
absorbing Manganese nodules**

How and why High Impact alloy works

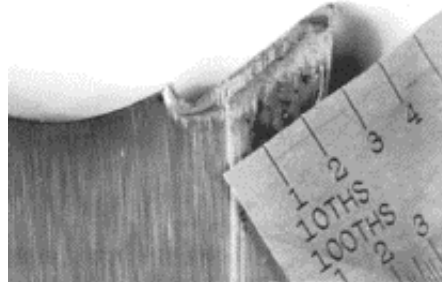
In the mid 1980's the Federal government started tightening up restrictions on Cadmium in braze alloy. Cadmium lowered the melting temperature and it is a very soft metal so it also provided cushioning for impact. The braze alloy between the carbide and the steel can act like shock absorbers on a car.

Unfortunately Cadmium is a very serious carcinogen. Cadmium has a low melting point so it would come out if the brazing was at all hot. In practice this means that a lot of cadmium fumes were generated.

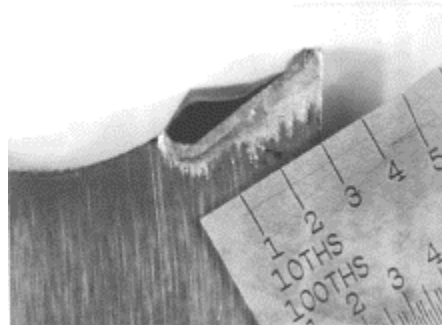
Most of the industry went to a cad-free alloy that was the same 50% silver alloy with no Cadmium. The problem was that there was immediately much more tip breakage and tip loss. Carbide Processors worked with Weyerhaeuser and Systi Matic to test the difference. In Impact tests it showed that the Cad free alloy was about 30% worse. Tips broke or came off about 30% easier with cad-free alloy.

We looked for a better soft alloy for several years without finding one. Then we found that manganese prevented breakage in jackhammer tips. It is not soft but it dampens vibrations. It is sort of like the difference between shock absorbers and McPherson strut suspensions. The both work but they do it in different ways.

High Impact Braze Alloy



Stops Tip Loss



Prevents Tip Breakage

30% better results for about a dollar per saw. High Impact pretinning adds about two cents to the cost of each pretinned tip

Report on tip breakage with 49% alloy with Manganese

In equivalent destructive tests the traditional Cadmium alloy (S50N) had zero failures. The new alloy (A49Mn) also had zero failures. The cadmium free alloys (A50N, A56T) failed from 25% to 100%.

The tips were identical tips brazed on the same plate by the same brazer. We did our best to run tests as scientifically as possible. However, as always happens in the

real world, things went their own way. We were originally going to test the same number of tips with every kind of solder.

When tips were brazed with other Cadmium free alloys they seemed to almost spring off the saw under relatively mild impact. When the same tips were brazed onto the same saw under identical conditions the tips could not be beaten off the saw.

Eight tips are not very many tips however the brazer was extremely confident in this new alloy. We mentioned to the brazer that we respected his judgment but that eight tips was not enough to really tell for sure. The brazer said that he liked the way it worked and he knew it was good. Then he bounced the saw up and down on the concrete floor to show that the carbide would not break. We had to admit that he had a point.

I am definitely not making any promises about bouncing saws on concrete but it was a very impressive demonstration and it sure showed the kind of difference this alloy can make.

Tests	Number broken / # of samples
A50N	2 / 8
S50N	0 / 8
A56 T	8 / 8
A49NM	0 / 8

S50N is the standard. 50% braze alloy with Cadmium. A 50N is the same 50% silver alloy without Cadmium. A56T is a 56% silver alloy without Cadmium but with tin added.

The initial analysis is that the A49NM is a very acceptable Cadmium free braze alloy. These numbers are more than supported by comments from the participants in

the tests and the people observing the test.

Once the parts are properly pretinned they are extremely easy to use. The brazer in the tests made the following comments:

1. It seemed to be more liquid than the standard solders.
2. It sort of felt like there was a cushion in the middle of the joint.
3. It seemed to slide in a bit differently.

Generally there was just a difference in feel but no problem converting to the new alloy.

Brazing High Impact Alloy

This alloy melts between 1260 - 1290 F. S50N with Cadmium melts at 1170 – 1270, A50N melts at 1220 - 1305 and A 56T melts at 1145-1205.

A good brazer will notice the difference and adjust to it. It does take a bit of adjustment. The alloy needs some heat to get the Manganese bumps fully melted. When you drop an ice cube into boiling water it takes it a bit to melt.

Brazers who helped us develop this alloy recommend a little slower heating cycle. Watch the heat. Do not let the tip get red. Put the heat into the alloy. Try to bring it up to temperature slowly and then hold it at temperature for a couple seconds. Use just enough heat to keep the temperature in the 1320 – 1340 range without heating it any hotter.

They Look Different

There is also a process called Liquefaction that applies to some metals. Liquefaction is the tendency of some materials to fuse together when heated. Manganese will fuse together until it melts and then it

will dissolve. When you heat this alloy the Manganese wants to lump together and these lumps will be the last part to melt.

A Smart Guy in Bermuda

This is a letter from a filer in Bermuda. He is Victor Da Silva. Vic does a very nice job of explaining simple steps that can be used in an operation of any size.

"I wonder if you could enlighten me in understanding cobalt leaching. I have just started to experiment with flood coolant for my manual carbide grinder (FB 367). This will only be a temporary measure as I am in the process of moving up to an automatic grinder in the new year. The FB 367 was not designed for flood coolant, although the factory sell accessories that allow you to run coolant. It can get messy, but already I can see the advantage of running coolant. Before, I was using a shop vac, that was enclosed in a cabinet, to capture some of the dust generated by grinding. As you know, it would be impossible to capture all, but some was better than nothing at all.

The vac was equipped with a pleated filter & drywall dust bag that helped capture most of the finer dust from being pushed back into the room. The coolant really knocks down the dust and allows for a much better finish.

But the term "cobalt leaching" seems to always to pop up when flood coolant is recommended or not recommended. While I understand what cobalt is (the binder used to stick the carbide chips together), what I don't understand is why I should be concerned about it in the flood coolant. And, of course, any

safety reason connected. I am fully aware that long term exposure to cobalt has been shown to cause cancer. I'm only 37yrs old and I plan to be in this business for a long time.

That reads "long term exposure". I really don't want to shorten my life if I can avoid it. Would you be able to take the time to explain the do's & don'ts, the dangers of cobalt leaching? I would be most grateful for any advice that you can offer. I would like to be able to take as many precautionary steps as soon as possible until I get the automatic machine. It will have an enclosure that will contain the mist.

Right now, even though I try to keep the coolant to as slow a trickle I can & use a t-shirt in back of the wheel to catch flying mist, coolant mist is still making it's way in to the air. I am running A/C in the shop, so any bad stuff is being re-circulated in the air. I do run a cotton t-shirt in front of the grill in addition to the regular filters and this does help. the t-shirt filter gets washed every night and the regular filters very 2-3 days. On heavy days, the t-shirt gets pretty dark, so I know when there's lots of stuff floating around.

I also use a full face respirator (with HEPA filters) as much as possible and only take it off when I have to answer the phone or deal with a customer."

More Information

We are not medical experts and we cannot give medical advice. We do have information from experts at www.carbideprocessors.com. This has complete copies of both the brazing book and the coolant book. You can also call us at (800) 346-8274 and we will be happy to mail it to you.

Specify our pretinning when you order carbide, please.



Please Call

We're glad you like our newsletter
We sure would like your business

In This Issue

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Cobalt remover
Identifying bad carbide
Vic Da Silva air quality
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Cermet for wear parts, routers, etc.
Braze alloy for fast, hard cutting
List of Filer organizations
New patent

Great Freebies

Feed Speed, chip calculator
Free coffee mug

Sales & bargains

1. Close out bargains on sawmill supplies from Inter Export
2. Pretinned carbide at a bargain
3. Source for new / used grinders

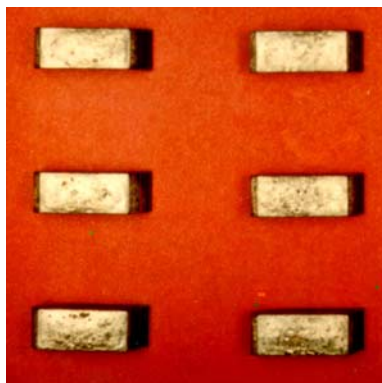
Carbide Now

Carbide when you need it -
overnight

We have a carbide inventory here for Peerless Saw Co. If you need carbide we can get it out for you on a rush basis. If it is a regular order for an established customer we will be happy to do what we can to get it out no extra charge. If it is a super rush for a new customer we will still do what we can including a special trip to UPS, FedEx, etc. for and

**Better, Faster Cutting In Hard,
Tough Applications with**

'High Impact' Braze Alloy



**Pretinned Tips with shock -
absorbing Manganese nodules**

**Need something
new to sell?- Call**

Cermet saw review

Heinz Nuemeier, Neumeier
Engineering Kent, WA
60 tooth 10" cermet tipped saws
He called to thank us for selling him a saw His comments: "What a beautiful blade, it leaves the most beautiful finished cut you can imagine. As smooth as glass. You folks should be very proud of what you are doing."



We have been granted a trademark for "World's Best Saws"

**We Really Don't Want To
Sell Saws**

We are selling cermet tipped saws because no one else would. We really want to get out of the business and just license the technology or just treat the tips. We have the patent and we would be very willing to make a deal with a saw manufacturer. We want to be very reasonable and license the process widely and inexpensively.

Northwest Research Institute, Inc.

Carbide Processors Inc.

Newsletter

3847 S. Union Ave.

Tacoma, WA 98409