



Tom Walz, Editor & Emily Erskine

Another point of view

Last month I mentioned that Steve Fogg of Buse Timber & Sales in Everett, WA let the filers buy what they wanted and that that was a good thing.

Randy Breedlove of Cascade Wood Products in White City, OR offered a different point of view. He said that if filers got to buy whatever they wanted that they could end up with a lot of stuff that they didn't need. Randy says that filers should have a good purchasing agent who will work to find the items they want at the best price possible.

Well both are correct and the fault is mine.

My original point was that it was wrong to buy cheap carbide just because it was cheap. A low price on tips disappears really fast if the filers have to sort good from bad or if they don't braze or if they break.

I have traveled long distances to sit in meetings with filers who were forced to use cheap material that weren't good enough because corporate purchasing bought entirely on price. I tried to teach the difference between good and bad carbide but corporate had strict instructions to cut cost. Corporate purchasing looked like heroes but the mill had more downtime.

Both Steve and Randy are talking about working with filers to get the best product at the best price.

The sad part of this is that both Steve and Randy are really good, have a lot of respect for the filers and come from good mills. The folks that need the message wouldn't understand it anyway.

Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter July, 2007

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

sales@carbideprocessors.com www.carbideprocessors.com

Simply Better Carbide

Our saw tips stay sharper longer



Sometimes you just need to switch to something new

Our advanced carbide grades stay sharper 2, 3, 5 even times as long as ordinary carbide. How long they stay sharp depends on what you mean by sharp. They run all day in a saw mill eliminating one, two or three saw changes. High production sawmills change saws every night anyway.

Smaller sawmills report up to ten times the life because they run the saws day after day until they get dull.

In two sided melamine they run three times as long because the customer could cut three full pallets of material instead of just one.

Of course they are harder to break

A lot of tip wear is actually micro - fracturing or breakage. Part of the reason they wear so long is that our advanced grades are much harder to break.

These are not Kennametal, KT 195 or anything else we have talked about.

We ran the very first tests many years ago with Kennametal KT195. We were warned that it was a steel cutting grade and not for wood. We made it work but it was a huge amount of trouble to grind and performance was unreliable. However it did prove the concept and taught us enough to develop great, reliable, easy to use grades of Cermet that we call Cermet 2.

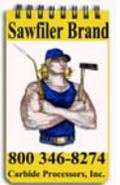
Our Cermet 2 grades are proprietary, exclusive to us and truly excellent.

Excellent Brazing Video

We have a new video on how to braze saw tips. First, Don Wallinger of West Coast Saws shows how with a torch. His technique is excellent and he has a beautifully clear, well organized way of explaining the process. Then Russell and Jesse Hartley at Anthony forest Products in Strong, Arkansas show a really slick brazing setup they built. We should have it online by the time you get this. We also offer VHS tapes and video disks for a few dollars. Call 800 346-8274 Emily or Jackie.

Cool Freebies

This is a handy little pocket notebook. It is 3" by 4 1/4" so it slips into a pocket easily. Call for one free. 800 346-8274



Need a 6X shirt? - If you have arms and shoulders like our sawfiler logo you need a big shirt. Call and we'll get you one. We also have a Sawfiler golf shirt as well as kids' stuff at <http://www.cafepress.com/sawfiler>



Why Super C is so good and so cheap

We didn't know how good it was going to be so we didn't set the price high enough. If we had known how good it was going to be we would have charged at least twice as much as ordinary carbide. As it is people get about twice the life of ordinary carbide for about the same price. **Try Super C** - Just give Jackie a call for a free quote and free candy. 800 346 8274



Enjoy your summer no matter how you do it.

Gumming Laser Cut Plate

“Grind ‘er back a hair”

Laser cut saw plate has a heat affected zone. The laser actually burns a series of holes really fast through the steel. At about 850 F (455 C) the carbon in steel segregates and becomes graphite. This is a diffusion controlled process so higher temperatures will produce graphitization in shorter times. The process accelerates at a rate of an order of magnitude (10 times) for each rise in temperature of 40 – 50 F.

Steve Hartshorn of Peerless recommends that you should grind back the plate 0.006” to 0.008”. This is past the ridges from the laser cutting.

Human hair ranges from really fine blonde at maybe 0.0007” to coarse black hair at 0.008” so the old guys who say that “you need to grind her back a hair were right”. Incidentally punched plate has its own edge problems.

Sawfilers in Florida?

Message from Emily

“Anybody in Florida want to chat?”

I spoke with Alan Taylor today (Southeast Sharpening in Florida); he wanted to thank you for your advice on his brazing difficulties. With your help he pretty much solved the problems. He also wanted me to thank you for all the information in the newsletter; he has been brazing for many years, but still learns new things for your articles and wanted to thank you for taking the time to write them. He also mentioned how nice it would be if he had a group of filers closer to him to talk to, I can’t manage that, but I will send him the link to Tim Cook’s discussion group.

ISKA & Western Sawfilers?

The idea has come up that it might make sense for the ISKA and the Western Saw Filers to meet together in Portland this

September. It would attract more people and more vendors and lower everyone’s costs.



Review of “Finite Element Analysis of Industrial Circular Sawblade”

(Editor’s note: This reads to me like a very favorable review of the paper. One of the real problems in our industry is the distance between science and practice. If you want to read the paper for yourself then we can send you a copy or Bob Ponton can.)

Charles B. Ponton, son of Bob Ponton of ICE wrote his master’s thesis on: “Finite Element Analysis of Industrial Circular Sawblade With Respect To Tensioning, Rotating, Cutting, And Expansion Slots”

Here is review by a saw filer, Mike West of Cascade Hardwoods.

“This was a well written paper and certainly contained a lot of information, formulas, calculations and the like that went right over my head. I did read the whole thing and found it quite interesting.

I would encourage sharing it with Len Valadez and Ryszard Szymani for some educated feedback. I was surprised that none of their work in determining saw frequencies and their effects was mentioned.

I was also surprised at the particular saw chosen for the study as it was an unfamiliar saw to me and don’t envision it being used in a trim saw application on the West Coast. The diameter and plate thickness are familiar but most of us that I know of would have 80 to 120 teeth in that saw.

I also do not see tensioning that saw very much for the application. A fairly stiff saw, leveled properly, shouldn’t need much tension except maybe at extremely high speeds. I would like to see this study done on something like our 19”, .075 plate gang saws to see where the tension stresses are the greatest and what effect different rolling patterns have.

I kind of take exception to the broad brush the author used to describe the optimum place to roll tension and the number of rolls necessary. As someone that has probably benched thousands of round saws from a brand new, out of the box condition to a gotta throw this one

away condition I can say that no two saws will require the same roll in the same spot to achieve a nice evenly tensioned condition.

I have received saws from manufacturers that might have thought this was the case. Where they put up one saw perfectly and then rolled the other 99 saws in exactly the same place and boxed them up. That’s a lot of undoing to do once they reach the Filing Room.

Also, as the author mentions, there could be several companion studies to track a saw from new to very used to see the effects of continued use and approximate shelf life.

I think to condense this material to a magazine article would be an interesting feat but I think that to hit on a few of the steps taken to get there and then concentrating on the summary and the results would make for a fine article.

Then links or whatever to the entire paper for those that wish to wade through the calculations and study the diagrams. I also think this would make a very good presentation at one of Ryszard’s workshops.

There were an awful lot of references to the ICE* 105-1824-233 that seemed to get redundant after a short while.”

Ameritherm Induction

Really great customer service

Tom Giglia, President & Dan Phelan, Service Manager

We bought some induction equipment and we went with Ameritherm in spite of others being cheaper. We had a problem on July 2. Ameritherm was closed for vacation that week. Lawrence called and left a message anyway. Within a day Lawrence had spoken to Tom Giglia, president of Ameritherm, who solved the problem even though he was on vacation.

Ameritherm delivers better tech support while they are on vacation than a lot of folks do while they are working.

Super "C" Carbide Grade

Tougher than C1 - Better wear than C3

What Makes Super C Tips Truly Superior

1. Superior Abrasion Resistance - Abrasion or straight wear is countered by smaller, better grain size.
- 2 & 3. Superior Adhesion and Diffusion Resistance (corrosion and chemical attack) Super C grade of carbide has an extremely fine structure so there is very little binder presented to the material being cut. This, combined with the special metallurgical formulation the Super C binder (hint - it's not just plain Cobalt) creates an extremely wear and corrosion material for use in wood, plastic or non-ferrous metals.
4. Superior Fatigue Resistance

And People Really Like Them - Call Today To Try Them - Most Sizes Readily Available

Super C	Hardness (HRA)	T.R.S. (psi)
	92.2 - 92.4	530,000 +

Typical C2 values	Hardness (HRA)	T.R.S. (psi)
C2	92.1	334,000
C2	91.8	334,000
C2	91.5	377,000
C2	90.4	435,000

Typical C Values	Hardness	T.R.S. (psi)
C1	89 - 92.4	350,000 - 360,000
C2	91.2 - 92.9	250,000 - 400,000
C3	91.4 - 93.6	270,000 - 350,000
C4	89.6 - 93	260,000 - 450,000

Sawmill Grade Tips

- Transverse rupture strength well above 500,000 psi.
- Rockwell A hardness above 92
- Alloy binder for corrosion resistance
- Grain structure to inhibit both crack initiation and crack propagation
- Micro grain or mixed grain for superior wear

**Carbide Processors, Inc.
800 346-8274**



**Cermet II®
8 days
instead of 5
in MDF**

Three weeks and three full loads of double side melamine laminate instead of 1 week and 1 load with carbide

1. 5 blades with standard C-4 carbide cutting 45 lb. single and double sided vinyl-laminated particle board
* Cermet II - 15,088 meters / old grade - 6706 meters for **225% as much run life**

2. KM-16 industrial saw cutting 101.6 mm x 152.4 mm (4" x 6") Green hardwoods, oak, hickory, maple and walnut using 11 blades with standard C-4 carbide
* Cermet II / 462 hrs / old grade - 40 hrs
1,155% as much run life

3. 406 mm (16") 100 teeth cutting countertops
* Cermet II - 4 weeks / old grade - 1 week (4 times) **400% as much run life**

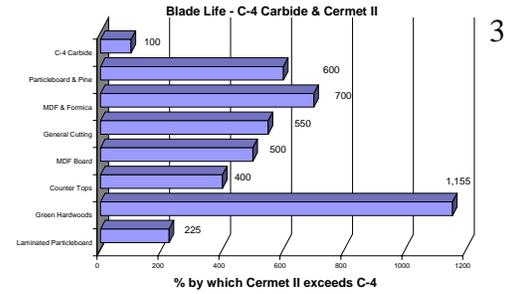
4. 406 mm (16") 80 teeth cutting MDF Board
* Cermet II - 10 days / old grade - 2 days (5 times) **500% as much run life**

5. 305 mm (12") 100 teeth TCG Miter cutting oak, Compressed Fiber Board, Plastic
* Cermet II - 154 hrs / old grade - 28 hrs (5.5 times) **550% as much run life**

6. 305 mm (12") 60 teeth cutting MDF, High Pressure Laminate (Formica)
* Cermet II - 56 hrs / old grade - 8 hrs (7 times) **700% as much run life**

7. G 1060A on Chop Saw cutting Particle Board and Pine Dowel Rods
* Cermet II - 48 hrs / old grade - 8 hrs (6 times) **600% as much run life**

Use Cermet 2 instead of carbide and make your life much easier



Cermet II® Successes

Several times the life in a window and door plant.

3 times the life in Corian.

8 days instead of 5 in MDF and we have an even better grade coming.

Twice the life in beetle killed Lodge Pole pine.

Benefits You Get

- * Grinds like regular carbide
- * Gives a better edge than carbide
- * Stays sharper longer than carbide
- * Great increase in fracture toughness.
- * More corrosion-resistant
- * Better at high temperatures
- * Cuts faster
- * Cuts faster & longer yet is tougher
- * Longer runs and less downtime.

Report from Marvin Windows

On the saw that we tried. How many times we sharpen a blade before we order new or have retipped we are not sure. Most blades get damaged by hitting something so we have the carbides retipped a lot. How often do regular blades have to be sharpened? We normally have our carbide tipped blades sharpened every week.

The new Cement II blade normally last twice as long before it gets damaged. The best so far is four weeks and one and a half million cuts before we changed it out which is four times longer.

Hope this helps and keep up the good work on those tips.

Nathan Hull, Grinderman

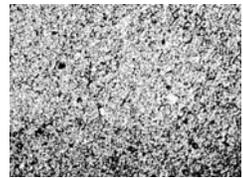
Marvin Wood Products

Purified Flux

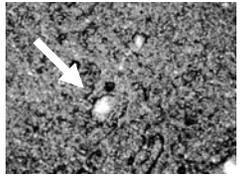
30% To 100% Better Braze Joints
(50x magnification)



Purified flux
Smooth &
consistent



Standard flux
Large grains of
foreign material



You can see and feel the difference immediately.

Purified flux is black flux that has had extra processing steps. These processing steps take the black article out and leave the flux a rich, creamy brown color. If you take a little of each flux and rub it between your fingers you can feel that Purified Flux is not only smoother but the particles are smaller and there are no extra large particles.

Flux is made to prevent oxygen from getting to the parts as they are heated. Steel and especially tungsten carbide oxidize at room temperature. The hotter they get the more they oxidize. Above 1,000 F tungsten carbide oxidizes extremely rapidly and forms an unbrazable surface. Purified flux is good for more time at higher temperatures, up to 1,700 F.

The original idea with flux was that it was to be applied on top of the braze area. However the critical part of saw and tool brazing is what goes on inside the braze joint. Ordinary flux is inexpensively made and has up to 10% odd size particles and non-active minerals in it. These odd size particles and non-active minerals get lodged in the braze area and can seriously effect the strength of the braze joint.

Purified flux is cleaner, smoother, creamier and much more effective.

Case (6 jars @ 5#) \$ 464.31
Single jar – 5# \$ 87.39

Braze Alloys (Silver Solders)

The right braze alloy can make a huge difference in performance

Braze Alloy Impact & Bond Strength Tests	
High Impact	100%
S50N - 50% Silver with Cadmium	100%
A50N - 50% Silver - Cadmium free	75%
A56T - 56% Silver with Tin	0%
S50N - 50% Silver with Cadmium	100%
A50N - 50% Silver - Cadmium free	64%
A50N with copper spheres added	67%

Stop tip Loss - Prevent Carbide Breakage

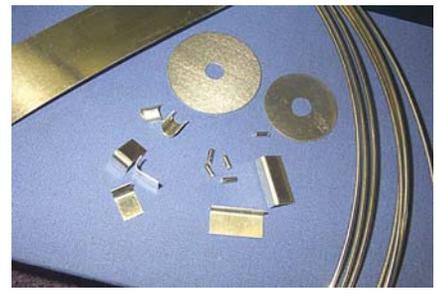
Saw tips are brazed onto a steel saw using braze alloy. When a tungsten carbide saw tip breaks it is usually bad carbide, the wrong grade of carbide, the wrong braze alloy or a combination of these.

The brazing process forms a three part composite. The success of the composite depends on the tungsten carbide, the steel, the braze alloy and the way it is all put together. The braze alloy has to do three things. 1. It has to keep the tip on the saw. 2. It has to cushion the tip because the tip suffers a lot of impact stress when the saw cuts. 3. It has to compensate for the difference in expansion between steel and tungsten carbide as they are heated and cooled during brazing.

Buy Our Books

Buy online or call 800 346-8274

1. Carbide Saw Specification Manual
<http://www.cafepress.com/sawspecs.80466877>
2. Carbide Saw Manual - Lowell freeborn
<http://www.cafepress.com/freebornmanual.80464996>
3. Managing Coolants from Machining and Grinding Operations
<http://www.cafepress.com/managecoolants.80458178>
4. Building Superior Brazed Tools
<http://www.cafepress.com/superiortools.93943435>
5. Chisels on a Wheel by Jim Effner
<http://www.cafepress.com/chisels.90813670>
6. Braze Failure Analysis
<http://www.cafepress.com/brazefailure.79434854>



We sell braze alloys (also called silver solders, high temperature silver solders, or braze filler metals.)

We supply the finest information in the world on the selection and use of braze alloys for carbide brazing.



The Finest, Most Consistent Braze Alloys for Tungsten Carbide

- 26 Different braze Alloys
- All AWS approved
- All inspected to parts per million
- All alloys exceed AWS specifications
- Cadmium free
- With Cadmium
- Hi Impact – developed for Weyerhaeuser
- Ultra Hi Strength – High Temp.
- Low Silver – Very High Strength
- Low Temp. with high strength
- Wire – all diameters
- Ribbon - all sizes
- Sandwich alloy ribbon
- Brazing preforms

Why Quality Makes a Difference

(American Welding Society AWS 5.8) Braze alloy can be within AWS specifications but it can vary in brazing temperature by as much as twenty degrees. This means that you can have cold joints and tip one end or zinc loss and more broken tungsten carbide tips at the other end.

Our braze alloy is accurate and measured within parts per million. It is typically four times better than it has to be or more according to government certified analysis. It brazes the same way every time.

Filtering Straight Oil Coolants



We now have a filter system that filters straight oil coolants. Above is our CP 2020 which filters tight oil coolant very well. It is also available as a wall mount unit.



Here is our CP 2002, which has been an extremely good unit on water based coolants for about eight years.

We have tried it on straight oil with very poor results. It filtered for maybe an hour before it plugged up.

Oil is much thicker than water. The filters were good enough to filter the oil for awhile but, as soon as they started to a load up with dirt, the oil was too thick to get through.



Here are the two units side by side.

A filter is a series of holes that separates particles from liquid.

Oil is thicker than water so it is harder to filter out small particles.

In addition oil transfers the pressure from the pump directly to the filter and is much more likely to collapse a filter element.

The secret is a high-tech filter. This is stainless steel inside and outside to handle the pressure. It is smaller than our water filters and has a pleated surface to provide sensational filter surface area at the high pressures oil creates.



We recommend monthly filter changes but many go much longer than that.

Great Filter Units

For Straight oil, Synthetic and Water-based coolants.

Really popular – We're selling a bunch of them



Great prices, pay for themselves readily, cleaner shops, less labor and longer diamond wheel life with better, faster grinds.

Now accepting Visa & MasterCard

Call Us at 800 346-8274 or
Equipment Ltd at 800-533-2006

Coolant filter Life

We recommend a filter change after one month in use on a single machine which is about 160 hours of use. In our tests we have seen them go 21 days of 20 hour shifts, which is 420 hours. Many folks get 2 or 3 months out of the filters which is 320 to 480 machine hours.

The rating is based on the amount of sludge generated by the machine in an hour. If you run a machine 40 hours and filter one hour then you remove all the sludge from the 40 hours of running.

If you are running 11 machines then you are getting 440 hours life out of the filters in a week.

Two things can happen. 1. If filters are run too long they can load up and releases over and over so they don't do any good past a certain point. It looks like they are working, however. This is like pouring fifty gallons of water in a five gallon bucket. It works because when you are though the 50 gallon drum is empty and the bucket is full. You just ignore the water on the ground. 2. After a long enough time there will be a lot of sub-micron particles in the coolant and this can give it a gray color.

Sawfiler Logo Merchandise

If you are proud of being a Sawfiler (and you darned well should be) then show the world. You can buy this online at <http://www.cafepress.com/sawfiler> or order through us.



Get One Free - Your best deal is to get stuff free. If you are a customer just call up and ask Emily or Jacque at 800 346-8274

This got started at a Sawfiler meeting where they were talking about changing the name. One argument was that 'saw filer' was outdated considering that good filers did a lot more than file saws. I figure a name is what a person makes it. We know and really respect a whole lot of filers. We hired an artist who took 'Thor' from the movie Adventures in Babysitting and adapted him. He rescued the pretty babysitter and the kids. He was a big, good-looking, highly capable, kind hero. He reminded us of a Sawfiler. Most filers seem to agree with us on this.

					
Value T- Shirt \$8.99	White T- Shirt \$13.99	Golf Shirt \$16.99	Trucker Hat \$10.99	Ringer T Shirt \$14.99	Jr Ringer T Shirt \$18.99
					
Large Mug \$11.99	BBQ Apron \$14.99	Wall Clock \$10.99	Stein \$13.99	Women's Tank Top \$17.50	Teddy Bear \$14.99
					
Black T - Shirt \$28.49	Fitted T- Shirt \$15.99	Baseball Jersey \$16.99	Sleeveless T \$14.99	Grey T - Shirt \$14.99	Organic Cotton T \$16.99
					
Long Sleeve T \$18.99	Hooded Sweatshirt \$24.99	Sweatshirt \$20.99	Kids Hoodie \$28.49	Kids Sweatshirt \$14.99	Kids Baseball jersey \$13.99
					
Infant Creeper \$9.99	Toddler T -Shirt \$8.99	Kids T - Shirt \$13.99	Mug \$10.99	Calendar \$6.99	Magnet \$3.69

3 Women, Ducks & Heaven



Three women die together in an accident and go to Heaven. When they get there, St Peter says, "We only have one rule here in Heaven: don't step on the ducks."

They enter Heaven, and sure enough, there are ducks all over the place. It is almost impossible not to step on a duck, and although they try their best to avoid them, the first woman accidentally steps on one.

Along comes St Peter with the ugliest man she ever saw. St Peter chains them together and says, "Your punishment for stepping on a duck is to spend eternity chained to this ugly man."

The next day, the second woman steps accidentally on a duck, and along comes St Peter, who doesn't miss a thing, and with him is another extremely ugly man. He chains them together with the same admonishment as for the first woman.

The third woman has observed all this and not wanting to be chained for all eternity to an ugly man, is very, VERY careful where she steps. She manages to go months without stepping on any ducks, but one day St Peter comes up to her with the most handsome man she has ever laid eyes on. He is tall, tanned, slim and muscular.

St Peter chains them together without saying a word.

The woman, thinking that this is great, remarks, "I wonder what I did to deserve being chained to you for all of eternity?"

The guy says, "I don't know about you, but I stepped on a duck."



The 3 Bears

A far more accurate account of the events of that fateful morning

Baby bear goes downstairs, sits in his small chair at the table, and he looks into his small bowl. It is empty. "Who's been eating my porridge?" he squeaks.

Daddy Bear arrives at the big table and sits in his big chair. He looks into his big bowl and it is also empty. "Who's been eating my porridge?" he roars.

Mummy Bear puts her head through the serving hatch from the kitchen and yells, "For God's sake, how many times do we have to go through this with you idiots?"

It was Mummy Bear who got up first.

It was Mummy Bear who woke everyone in the house.

It was Mummy Bear who made the coffee.

It was Mummy Bear who unloaded the dishwasher from last night and put everything away.

It was Mummy Bear who went out in the cold early morning air to fetch the Newspaper and croissants.

It was Mummy Bear who set the table.

It was Mummy Bear who put the bloody cats out, cleaned the litter boxes, gave the cats their food, and refilled their water.

And now that you've decided to drag your sorry bear- asses downstairs and Grace Mummy Bear with your grumpy presence, listen carefully, because I'm only going to say this once....

I HAVEN'T MADE THE PORRIDGE YET!!!!

New Grinding Course

Jeffrey A. Badger, Ph.D.

512-934-1857

badgerjeffrey@hotmail.com

www.TheGrindingDoc.com

Following the success of the recent High Intensity Grinding Course, I am offering the course again, this October 30th, 31st & November 1st at the Radisson Hotel in Downtown Chicago.

The course is for those who already have some grinding experience / knowledge, but want to get an in-depth understanding of grinding from the bottom up. It will cover both conventional- and super-abrasives, and include everything from cooling, dressing, thermal damage, burr and burn to cycle-optimization, cycle-time reduction and cost-savings.

Attendees will come out with an excellent understanding of grinding from top to bottom, and also learn tools to help them analyze a process, enabling them to make serious progress in process improvements and cost-savings. I am also allowing an optional fourth day for those who want to discuss with me one-on-one particular issues they are facing in the plant.

The cost is \$1500 if registered before September 1st; \$1600 after September 1st, with significant discounts for companies sending more than one attendee.

The Truth about Jackie

From: Dave Garrett
Warm Springs Forest
Products



I must say something is not right here and I think I know what it is, Carbide Processors is a front for a counterfeiting ring and you use your costumers to launder crisp clean five dollar bills and then you try and bribe them with candy and smiley faces I'm on to ya!

All laughs aside I think your company provides a great service to the Industry and I read all your news letters and will do business with you in the future.

Carbide Processors, Inc.
Northwest Research Institute, Inc.
3847 S. Union Ave.
Tacoma, WA. 98409



Not only pretty faces but also great customer service

Here are Jackie and Emily, who are always perky and always happy to help customers. Their job is to help people find carbide, silver solder, filter systems and everything else we sell. 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.



You'll really like Cermet II Tips

Call & sell scrap or just call her and make \$5, (1st 20 calls. 800 346-874-



Do you want \$3,008.50?

We are paying \$5.50 per pound for scrap carbide. We wrote a check in January for \$3,008.50 to a filer for scrap carbide. He called originally and he knew he had some. He had no idea he had that much carbide or that it was worth that much money.

We are also able to buy scrap Stellite© 50 pound min. up to \$ 6.00 per pound depending on grade



This is good pretinning. It is ours and it is what you should be buying. Demand it (well, ask for it, anyway) wherever you buy carbide. If they won't ship to us we'll get it for you direct and save you time and money.

Would You Mind Buying Something, Please?

We are a little outfit. We can't afford to have salespeople go out. This newsletter is our main sales tool.

If you use carbide then you really should try our Super C and Cermet 2 grades of advanced materials. They really are at least twice as good as anything else available.

Our pretinning is the best in the world and we are fast.

More and more we get new customers because we can deliver carbide that works when you need it. We are not perfect but we seem to be much better than everyone else.

We Sell the Very Best Heck Yes, the Prices Are Good

- The highest quality supplies for brazed tool makers and brazed tool users.
- The Best Of 40 Carbide Suppliers, 17 Silver Suppliers And Over 200 Suppliers Total.
- Surprisingly Low Prices
- We Are Very Good At Finding Hard-To-Find Items.
- Truly Superior Products All Our Own

Whether you buy or not we are always ready to help you solve a problem.
 800 346-8274