



### President's Letter

#### Superfilers

**Scott Erickson Head Filer Interfor Pacific**

**How Thin Can You Go? P. 2**

#### Corrections

Ted Potter, Potter lumber pointed out that he doesn't cut radiata pine. His mill cuts hardwoods local to his New York location. However, now that we said he did in the newsletter folks are asking him about it. He has a really good comeback where he asks them in return why they don't cut it and if they just leave it standing.

#### Walter Grinders – Additional information

In the last issue I wrote that Walter had discontinued its entire line of Woodtronic grinders and that they had announced that they would offer support for two years. Ed Sinkora at Walter (540) 710-2408 called and was good enough to offer additional information. See P. 3

Dear Tom,

**Please publish a revised statement (highlighted as such) saying:**

**"Walter will continue technical support and parts availability of Woodtronic machines at least through 2015. Please continue to contact Walter Grinders as usual. In some situations technical support and parts will be provided from the Walter main facility in Germany."**

Thanks,  
Ed Sinkora  
Marketing Manager

# Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter January, 2007

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

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

## Straight Oil Filtration Unit

We did it and it is very, very good



CP 2020 for oil full unit \$2423.00

Wall Mount \$1060.00

You can keep your straight oil coolant clean for weeks or maybe longer for as little \$1060. See P.

## Better than Nicut

We have Cermet II grade that is better than Nicut. It uses much of the same technology that Dr. Rudy developed plus it uses advanced manufacturing techniques that were just not available to Dr. Rudy. The most important thing is that customers like it as well or better than Nicut and they sure like it better than anything else they use.

## Cutting Frozen Lumber

Get Impact a resistance and long life  
see P. 6



**We have really great stuff, How do we get you to try it? Just call and tell us, please 800 346-8274**

## Save Big Money on Carbide Buy the good stuff.

Our super C grade typically stays sharp twice as long or longer at about the same price as ordinary carbide. Our Cermet II can last up to ten times as long as ordinary carbide and is only about three times the price.

There is a huge savings in downtime because you can run longer and feed faster with better results. You need less grinding and much less tip replacement. You also need less hammering.

### Take Aim at Operating Costs



### Just Once try the good stuff

I was talking to Cliff Gordon of Cal Saw. Cliff was telling a story about a new customer. He had been calling on these folks for years and they finally bought a trial order. This was a big deal because this company had been buying the cheapest round things they could buy and calling them saws. Once they got really good saws they were amazed at the difference. Cliff ended up by saying he wished more folks would keep records and then compare the good stuff with the cheap stuff.

We are working with Cliff and his plate with our tips are making some sensational saw blades. Cliff Gordon California Saw & Knife, Monmouth, OR 97361 Cell- (503)580-3253

# How Thin Can You Go?

Scott Erickson Head Filer Interfor Pacific

Good morning,

I don't mind if you use my question in your news letter. I'm the head filer at Interfor Pacific in Port Angeles Wa. We are installing a Opti mill double arbor vertical gang. Thanks for the answers.

-----Original Message-----

From: Scott Erickson  
 Wednesday, December 06, 2006 6:59 AM  
 To: Sales@carbideprocessors.com  
 Subject: How thin can you go

Good afternoon, I was wondering if you can tell me if there is a limit on how thin of a plate gang saw you can run carbide on. I've been told that if you run to thin of a plate saw that the carbide tips will break out because there is not enough bonding surface. I'm assuming there is no minimum plate thickness and the reason for the tips breaking out was because of over heating while tipping. Could you let me know if there is a thickness limit?  
 Thanks

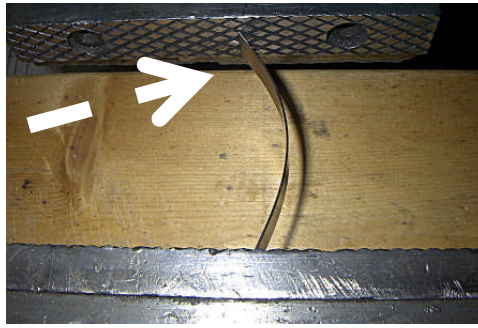
## Great question.

State of the art seems to be about .060" kerf on a 12" saw blade with a blade change every sixteen hours.



Carbide butt brazed to steel shown resting on a dime.

The thinnest we have gone with carbide is 0.025". We know a filer in a mill who runs .053" kerf..



This is a piece of carbide .5" by .025" butt brazed to a matching piece of steel. I put it in a vise and tightened it a bit to get a bend and test for strength. You can see by the bend how much pressure is on it. I think it would have taken more bending but I don't know how much more. This was just a quick demo

I called Steve Hartshorn at Peerless Saw Co. He says that they do regularly sell edger saw plate that is .060" thick but those sales are maybe 2% of all edger plate sales. Steve Bergerson of Western Saw sells .047" plate for use in a 12" gang edger. Super Thin saws advertises saw blades thinner than a dime of course these as small diameter saws for ripping window blind slats and similar.

The brazing works very well if done properly and there is no tip loss or ripped shoulders. This is particularly true if the blades are annealed after brazing.

The big problem seems to be saw plate distortion. Stellite® and our Talonite® both have a higher lubricity than ordinary carbide. However our cermet II is much slicker than ordinary carbide and slides through the cut much easier.

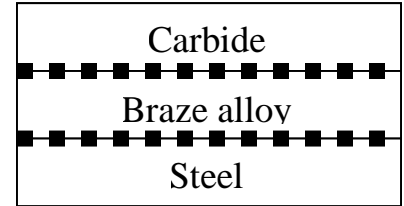
If plate condition is the reason for saw changes then our cermet can take a mill from a change every four hours to every eight or sixteen hours.

If the tip comes off it is because one of the surfaces was not properly prepared or the wrong braze alloy was used. A good braze joint creates a chemical bond and an intermetallic compound. A bad braze creates three distinct layers.

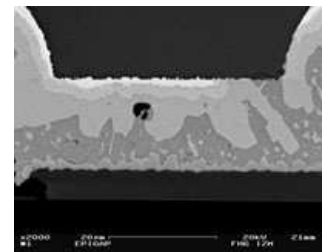
Think of plywood with and without glue.



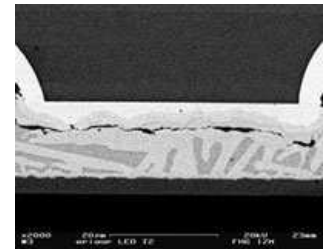
Bad surfaces (Three distinct layers)



Good surfaces (Three interlocked layers)



Microphotographs; bad



Microphotographs; Good

A good braze creates a bond stronger than the materials being joined so tips do not come off.

Braze alloys differ greatly. If you use the wrong braze alloy you can rip the alloy in half. The right alloy will, again, give you a joint stronger than either material.

If everything is done properly then the saw tip has been braze treated so that it wets and bonds well. In addition the plate will have been gummed past the heat affected zone from the laser cutting and it will have been properly cleaned. Finally the right braze alloy and flux can make a huge difference.

# Walter Grinders – Additional information

This is one of those occasions where I was right but not very accurate. They are going to support their warranty, which is two years, so I said they would offer support for two years. As you can see by the letter there is quite a bit more to it than that.

**Dear Tom,  
Please publish a revised statement (highlighted as such) saying:**

**"Walter will continue technical support and parts availability of Woodtronic machines at least through 2015. Please continue to contact Walter Grinders as usual. In some situations technical support and parts will be provided from the Walter main facility in Germany."**

Thanks,  
Ed Sinkora  
Marketing Manager  
United Grinding  
Blohm - EWAG - Jung - Maegerle -  
Mikrosa - Schaudt - Studer - Walter  
5160 Lad Land Drive, Fredericksburg,  
VA 22407-8702  
Phone: (540) 710-2408, Fax: (540) 898-  
6819, Cell: (540) 834-7413  
edward.sinkora@grinding.com

P.S. Visit us at [www.grinding.com](http://www.grinding.com)

**Original Announcement**  
"Tübingen, Germany  
**WALTER tightens product portfolio**

WALTER MASCHINENBAU GmbH, the market leader of CNC tool grinding and measuring machines, has chosen to discontinue its Woodtronic saw grinding line. Effective September 29, 2006 WALTER and its affiliates around the world (including Walter Grinders, Inc. in Fredericksburg, VA) will stop marketing the Woodtronic. However, we will continue to support existing users.

The support of existing Woodtronic customers with warranty, service, spare and supply parts as well as application support of all delivered WALTER-

machines will be continued by WALTER MASCHINENBAU GmbH and Walter Grinders, Inc.

For service issues and technology support, please continue to contact your local WALTER partner. For North America, contact Walter Grinders, Inc. in Fredericksburg, VA.

WALTER will concentrate on the core competence of tool grinding and erosion technology with the Helitronic product line as well as on the measuring technology of the Helicheck product line. This focus will allow for faster and more customer focused development in the existing product range. Additionally and with equal importance, the continued support and cooperation with the Swiss sister company EWAG AG is seen as a critical part of our future and growth.

Best regards,  
WALTER MASCHINENBAU GmbH  
Heinz Poklekowski Willi Motzer"

## **Corrections, Mistakes, First Amendment. Etc.**

I work with the best information I have and usually do pretty well, at least judging by the calls I get both pro and con. I have received calls from salespeople thanking me for helping them sell machines.

In the case of Walter all I had was the reference to warranties. The most conservative estimate was that they would honor the two year warranties.

It was really nice of Ed Sinkora to send me the message clarifying the situation.

Under the First amendment I have considerable rights as to what I can publish. I can even publish things that are outright wrong like the supermarket tabloids do. (Elvis was not abducted by space aliens to create a super race that would take over the galaxy by singing.)

However I believe that every right has its concomitant responsibility. This means I try really hard to get it right. It also means that I am pretty happy when someone calls pleasantly and offers a suggestion.

## **O.K. That Was Pretty Serious. This Isn't**



Remember the lesson of the cat and the bald eagle. Spend enough time thinking before you start a project.



Invite appropriate coworkers into the thinking process as well.



Get management approval



Assess the competition



Then go into production. Above is the new circular handsaw. Soon to be in hardware stores everywhere.

# Filtering Straight Oil Coolants



CP 2020 for oil full unit \$2423.00  
Wall Mount \$1060.00

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.

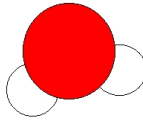
Oil is much thicker than water. The filters were good enough to filter the oil for awhile but, as soon as they started to a load up with dirt, the oil was to thick to get though.



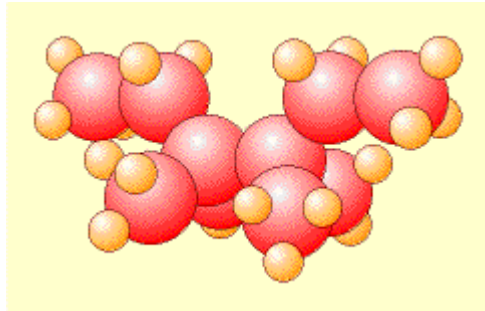
Here are the two units side by side.

A filter is a series of holes that separates particles from liquid. The more difference there is between the solid particle and the liquid the easier it is to filter.

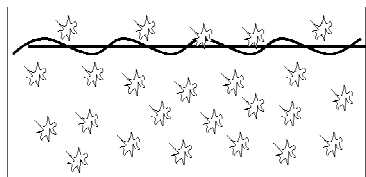
Water is a very simple molecule consisting of one oxygen atom and two hydrogen atoms that looks something like this.



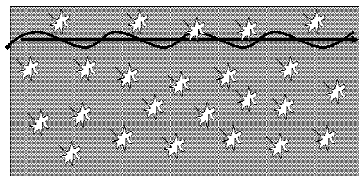
This is a molecule of 10-40 oil. It is much larger.



Anyway oil is lot thicker than water and thus a lot harder to push through holes.



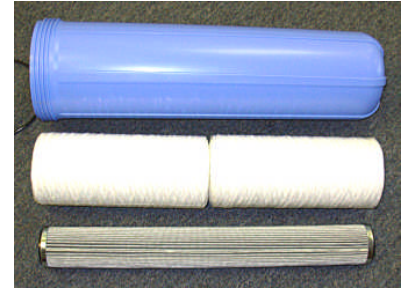
Dirt in Water



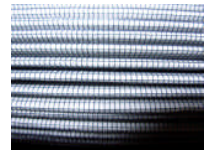
Dirt in Oil



This is our wound cotton filter that does beautiful job on filtering water based coolants. It keeps coolants clean for a month or more.



This is our standard housing (top) with a water filter (middle) and an oil filter (bottom).



This is a close up of the oil filter. It has stainless steel, perforated inner core with a mesh wire outer layer to handle the tremendous pressure filtering oil generates. It is also pleated to give edge filtering and to greatly increase the surface area for long, effective life.

The important thing is that it works and works very well.

To buy these, or for more information, contact

**Rob Rzasa**

Equipment Ltd.

Hickory, NC 28603

800-533-2006

[rob@equipmentltd.com](mailto:rob@equipmentltd.com)

We can help you directly but Rob did the research and knows a lot more about how they actually work in shops and mills.

# Straight Oil Cutting Fluids

## Straight Oils - 100% Petroleum Oil

Straight oils, so called because they do not contain water, are basically petroleum or mineral oils. They may have additives designed to improve specific properties.

Generally additives are not required for the easiest tasks such as light duty machining of ferrous and nonferrous metals. For more severe applications, straight oils may contain wetting agents (typically up to 20% fatty oils) and extreme pressure (EP) additives such as sulfur, chlorine, or phosphorus compounds.

These additives improve the oil's wettability; that is, the ability of the oil to coat the cutting tool, work piece and metal fines. They also enhance lubrication, improve the oil's ability to handle large amounts of metal fines, and help guard against microscopic welding in heavy duty machining.

For extreme conditions, additives (primarily with chlorine and sulfurized fatty oils) may exceed 20%. These additives strongly enhance the antiwelding properties of the product.

### Advantages.

The major advantage of straight oils is the excellent lubricity or "cushioning" effect they provide between the work piece and cutting tool.

**This is particularly useful for low speed, low clearance operations requiring high quality surface finishes.**

Although their cost is high, they provide the longest tool life for a number of applications. Highly compounded straight oils are still preferred for severe cutting operations such as crush grinding, severe broaching and tapping, deep hole drilling, and for the more difficult to cut metals such as certain stainless steels and superalloys. They are also the fluid

of choice for most honing operations due to their high lubricating qualities. Straight oils offer good rust protection, extended sump life, easy maintenance, and are less likely to cause problems if misused. They also resist rancidity, since bacteria cannot thrive unless water contaminates the oil.

### Disadvantages

Disadvantages of straight oils include poor heat dissipating properties and increased fire risk.

They may also create a mist or smoke that results in an unsafe work environment for the machine operator, particularly when machines have inadequate shielding or when shops have poor ventilation systems.

Straight oils are usually limited to low temperature, low speed operations. The oily film left on the work piece makes cleaning more difficult, often requiring the use of cleaning solvents.

Straight oil products of different viscosities are available for each duty class. Viscosity can be thought of as a lubricant factor, the higher the oil's viscosity, the greater its lubricity.

Highly viscous fluids tend to cling to the work piece and tool. This causes increased cutting fluid loss by dragout and necessitates lengthier, more costly cleanup procedures.

It can be more efficient to choose low viscosity oil that has been compounded to provide the same lubricity as a highly viscous one.

## An Excellent Straight Oil Coolant

### Grindz-all for all coolant uses

We started selling Grindz-all because we had complaints about the smell of Rustlick as well as the price of Coollube 220.

**Customer acceptance has been very good.**

**GRINDZ-ALL** is a Universal Full Synthetic Coolant.

It can be used throughout the shop in any Machining or Grinding Operation. It's formulated for grinding both ferrous & non ferrous materials and is recommended when Grinding Carbide.

This is a mixture of Canola oil and ultra refined natural petroleum oils. Canola is most commonly used as a cooking oil. These petroleum oils are most commonly used in high temperature and high pressure applications such as grinding, compressors, vacuum pumps and similar.

- Excellent Operator Acceptance
- Prevents Cobalt Leaching When Carbide Grinding
- Exceptional Rancidity Control
- Excellent Rust Protection
- Reduces Wheel Wear
- Forms Stable Dilution In Hard Or Soft Water
- Excellent Tramp Oil Rejection
- No Sticky Or Gummy Film Build-up On Machine
- Does Not Foam
- Drops Carbide Fines
- Contains EP Additive For Machining Operations

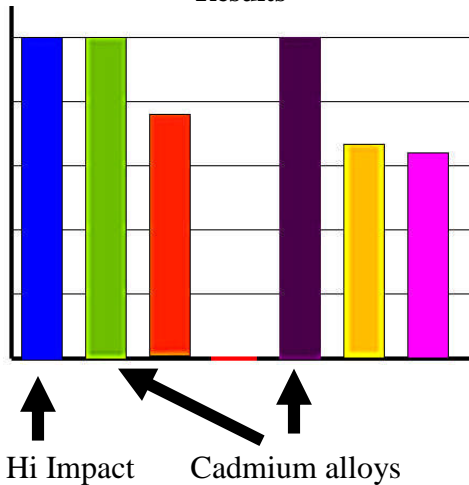
|                                |          |
|--------------------------------|----------|
| Grindz-all metal working fluid |          |
| 5 gal. Pail                    | \$89.99  |
| 17 gal Drum                    | \$285.60 |
| 30 gal Drum                    | \$445.50 |
| 55 gal.                        | \$761.75 |

### Rustlick Carbide PowerGrind - Synthetic Grinding fluid

We also sell Rustlick coolant, which is an excellent product. We make more money on it than Grindz-all but folks seem to like Grindz-all better.

# Hi Impact Alloy For Frozen Lumber & Hard Cutting

Weyerhaeuser / Systi Matic Test Results



Rest are various Cad free alloys

## History

Ten years ago the standard braze alloy was a 50% silver with Cadmium. Over the years the government tightened the regulations on Cadmium and levied some big fines on people using Cadmium. The use of silver solders without Cadmium resulted in increased tip loss and tip breakage because the 50% Cadmium free solder did not provide the impact protection. We did tests with Weyerhaeuser about ten years ago on the two alloys. The Cadmium free alloy was not as good as the Cadmium alloy but it worked pretty well and it was safer so it became the standard. Worker safety and avoiding government fines were considered important enough to put up with increased breakage and tip loss.

Don Anderson at Weyerhaeuser contacted Keith Dietrich at Systi Matic. Systi Matic laser cut and brazed some saw sections. Weyerhaeuser then ran impact tests. In the impact tests, the force was delivered by a sixteen-ounce arm traveling at eleven feet per second.

**Report on tip breakage with 49% alloy with Manganese**

The test results on this alloy were spectacular. In equivalent destructive tests the traditional Cadmium alloy had zero failures. The new alloy also had zero failures. The Cadmium free alloys had failure rates from 25% to 100%.

| Tests         | # goods | % good |
|---------------|---------|--------|
| std. Cad free | 6 / 8   | 75%    |
| 50% w Cad     | 8 / 8   | 100%   |
| 56% w tin     | 0 / 8   | zero % |
| Hi Impact     | 8 / 8   | 100%   |

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

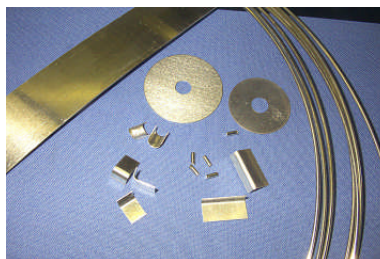
1. It seemed to be more liquid than the standard solders.
2. It sort of felt like there was a cushion in the middle of the joint.
3. It seemed to slide in a bit differently.

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

## Brazing High Impact Alloy

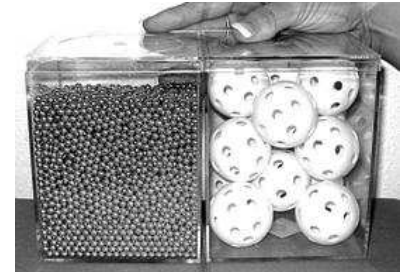
This alloy melts between 1260 - 1290 F. S50N with Cadmium melts at 1170 - 1270, A50N melts at 1220 - 1305 and A 56T melts at 1145-1205.

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.



# Why Our Super C Grade Works so Well

One reason is grain size. Our super c has a sub-micron grain size. This compares to ordinary carbide about like BB's compare to golf balls. As an example compare 0.5 microns for a sub-micron grade with 5 microns for a coarse grade. (A BB is 0.177" and a gold ball is 1.68")



The BB's pack a lot closer together simply because they are smaller.

These are balls in plastic boxes. If you look at the corners you can see why the sub-micron grains take and hold a tighter edge. Remember the spaces between the grains are filled with a relatively soft metal binder that is susceptible to corrosion. You need some metal binder or the carbide part would be too brittle.

- Transverse Rupture Strength above 525,000 psi.
- Rockwell A hardness well above 92.2
- Alloy binder for corrosion resistance
- Grain structure to inhibit both crack initiation and crack propagation

This makes these new grades 60% tougher than a typical C-1 and harder than many C-4's.

## “Super C”

| Hardness (HRA) | T.R.S. (psi) |
|----------------|--------------|
| 92 +           | 525,000 +    |

## 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 |

# Filtering Oil Compared to Water Based Coolants

Filter units now available for oil coolants and water based coolants.



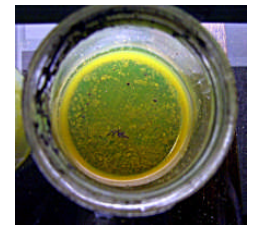
## CP 2020 for oil \$2,423

Water is a lot easier to filter than oil because it is thinner but it is more important to filter oil. Because oil is so much thicker it is harder to see all the particles to count them. Also oil tends to hold the really small particles better than water does. However **filtering oil removes about 99% of all particles.**

| Particle count  | Parts per 100 cc. | number   | water  | water    | oil |
|-----------------|-------------------|----------|--------|----------|-----|
|                 | dirty             | filtered | unused | filtered |     |
| <1              | 0                 | 17,209   | 0      |          |     |
| 1               | 140,317           | 25,575   | 11     |          |     |
| 2               | 14,382,515        | 21,432   | 1,049  |          |     |
| 3               | 15,364,737        | 9,720    | 1,935  |          |     |
| 4               | 19,644,411        | 4,223    | 3,367  |          |     |
| 5               | 13,751,087        | 2,550    | 3,618  | 665,467  |     |
| 6               | 9,120,620         | 1,673    | 1,181  | 16,407   |     |
| 7               | 1,894,282         | 558      | 372    | 3,610    |     |
| 8               | 631,427           | 239      | 142    | 3,938    |     |
| 9               | 420,952           | 80       | 55     | 2,297    |     |
| 10              | 280,634           | 478      | 66     | 984      |     |
| 11              | 0                 | 319      | 22     | 656      |     |
| 12              | 140,317           | 0        | 0      | 656      |     |
| 13              | 70,159            | 159      | 22     | 328      |     |
| 14              | 70,159            | 0        | 0      | 656      |     |
| 15              | 140,317           | 80       | 11     |          |     |
| 16              | 70,159            | 0        | 29     |          |     |
| 17              | 65,774            | 32       | 5      |          |     |
| 18              | 85,506            | 112      |        |          |     |
| 19              | 26,309            | 80       |        |          |     |
| 20              |                   | 48       |        |          |     |
| 21              |                   | 16       |        |          |     |
| Totals          | 76,299,682        | 84,583   | 11,885 | 694,999  |     |
| Percent removed |                   |          | 99.98% | 99.09%   |     |



This bottle was scooped full from the bottom of an unfiltered sump. The cake is all the solids we filtered out of just one bottle.



Dirty oil also has tramp oil floating in it (left bottle) and can grow bacteria (specks in right bottle) which breaks down the oil, can smell bad and is often considered a health hazard.

**Not only a pretty face but also great customer service**



Here is Emily, who is always perky and always happy to help customers. Emily's 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.

### **Really Cheap Carbide**

Emily says "Buy them now or forever hold your head in shame....."

Only \$0.10 each  
WB 7180 C3  
WB 7210 C2  
WA 7100 C3  
C1148 C3  
(.310 x .195 x .095)



V back tips with or without shim  
\$1.00 each

### **Samples on Approval**

If you are trapped in a sole source contract we can supply you samples of Hi Impact pretinning and our advanced grades of carbide on an approval basis. Maybe if you show purchasing just how good our stuff is they will let you buy it. We would also be happy to work through your current distributor.



BusinessWeek used this picture to illustrate an article on good design. If I put it in here it just fits and I can go to lunch. Have a great new year. Tom

**In the Immortal words of Mike West  
"Remember it's Friday and there is a beer at the end of the rainbow."**



**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.

### **We Buy Scrap Carbide**



Above right is how you ship it. You use a cheap post office box and a couple wraps of duct tape. Price varies but figure \$200.00 per 2# coffee can for scrap & cheap shipping. We had one filer come buy with 554# of carbide that the mill didn't want. That is \$3,025.00 cash for him. He's a pretty smart man.  
**800-346-8274**

### **Now offering our books for sale online**

- \* Chisels on a wheel (reproduced)  
[www.cafepress.com/chisels](http://www.cafepress.com/chisels) \$49.95
- \* Building Superior Brazed Tools  
[www.cafepress.com/superiortools](http://www.cafepress.com/superiortools)  
\$65.00
- \* Managing Coolants from Machining and Grinding Operations  
[www.cafepress.com/managecoolants](http://www.cafepress.com/managecoolants)  
\$49.95
- \* Carbide Saw Manual  
[www.cafepress.com/freebornmanual](http://www.cafepress.com/freebornmanual)  
\$24.95
- \* Braze Failure Analysis  
[www.cafepress.com/brazefailure](http://www.cafepress.com/brazefailure)  
\$65.00
- \* Carbide Saw Specification Manual  
[www.cafepress.com/Sawspecc](http://www.cafepress.com/Sawspecc) \$24.95

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