

Carbide Processors, Inc.

Causes of Brazing Problems

This is a partial list:

- Cleanliness of the plate
- Cleanliness of the tip
- Flux clean and stirred
- Flux on the sides of the plate
- Lots of flux inside the joint
- Acetylene
- Oxygen
- Regulators
- Hoses
- Handles
- Handle controls
- Tips
- Tightness of joints
- Temperature of anvils
- Temperature of the shop
- New furnaces
- New fans
- New locations
- New doors
- New brazer
- Proper pretinning
- Right kind of solder
- Temperature of the tips
- Kind of flux
- Condition of flux
- Amount of flux used
- Flux on plate
- Flux on tips
- Brazing temperature
- Brazing time
- Color of braze joint
- Sound of braze joint
- Feel of braze joint
- Where is heat being applied
- How is heat being applied
- Does everybody have the same problems
- Does the problem occur at a certain time of day
- Does the problem occur with a certain kind of plate
- Does the tip manufacturer have the same problem
- Does anyone else have the problem

(Continued on page 4)

Telling Temperature by Color

Temperature Degrees Fahrenheit

Dazzling White	2800°F
White	2600°F
Light Yellow	2200°F
Yellow	2000°F
Orange	1800°F
Light Cherry	1600°F
Cherry Red	1400°F
Dark Cherry	1300°F
Blood Red	1200°F
Dark Red	1000°F
Blue-high end of range	950°F
Blue-low end of range	650°F

You can tell the temperature of steel by the color changes. This will also work with the color of other materials. This chart shows colors and temperatures which can serve as a guide to determine proper brazing temperatures.

Reader Contributions

The following folks have been good enough to call and give us some advice.

- George Morgan** VP,
Carbide Alloys-Clemson, SC
- Russell Bodington**
Burns Inc.-Fall River, MA
- Browder Huston**
Huston Saw Repair,-North Point, AL
- Brian & Mark Wallinger**
West Coast Saws-Tacoma, WA
- Pat**
Sharp All Company-Tucson AZ
- Joe Butler**
Sandvik
- Gary Kirchoff**
Contour Saws-Des Plaines, IL
- Dick Linnon**
The Sharp Tool Co.-Hudson, MA.
- John Osborne**
Carbide Specialties-Covina, CA
- Richard Seib**
Edgetek-Evansville, IN

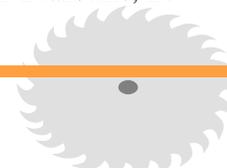


Plate Cleaning

The best way we have of explaining cleanliness to brazers came from a customer. He said just tell them it is like painting a car. You have to get to clean, bare metal. Nobody who was serious about doing a good paint job would just go out and start spraying. You make sure all the old paint is off. You make sure the surface is really clean. You make sure that the surface stays clean while you are painting.

In brazing you have to have clean carbide and clean steel and keep them clean.

How to braze good saws.

1. Clean steel and clean carbide
2. Rough steel and rough carbide

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What is Pretreatment

Tungsten carbide is made of a mixture of tungsten, carbon, cobalt or nickel and maybe other things such as chrome, tantalum or titanium.

These are all mixed together as a powder with wax. Then they are pressed into shape. The shape is heated and the wax runs off. Then the part is heated at high temperatures in special atmospheres until it gets hard.

The tungsten and carbon form tungsten carbide grains. The cobalt or nickel acts as a binder to hold the whole thing together. The tantalum, titanium and chrome add different strength characteristics and corrosion resistance properties.

When you are done you have a piece of very hard material. It is designed to be non-reactive. The surface is very hard, very smooth and very resistant to chemical attack so that it will stay sharp as long as possible under use. The surface may also have free carbon, oxides, oil, dirt and such things as releasing agents on it.

Pretreating first uses a couple different methods to clean the surface. Then it etches the surface. Etching is actually the wrong word because scientifically it does not truly etch the surface. Pretreating actually makes a clean surface that provides a good surface for braze alloy attachment.

Wettability

The first thing you get is good wettability. This is a term to describe how well the alloy wants to flow over the surface. If you spit on a hot grill the spit will ball up and run around. Braze alloy will do that on certain tungsten carbide surfaces.

The old manuals talk about “puddling” solder. This means that you heat up the part and then wiped the solder rod around on it until you had solder all over. This is

sort of like spitting on the grill and wiping it around until the grill is covered with spit.

Puddling was the old way. There is a more scientific way. Now you take a very small piece of braze alloy and see how far it will spread on its own. We have run experiments where the braze alloy spread out so far that it got thin enough to see through. I guess this was just showing off because we never found any practical use for that process.

Wettability is important because it shows whether the braze alloy wants to stick to the surface or not.

Cleanliness

With a good pretreatment you get an exceptionally clean surface. This is important for the same reason you clean a car before you try painting it. You can put paint over almost anything. Getting it to stick is a different matter.

Etching

It's not technically etching but it does leave the metal rough. It's like sanding a car before you paint it. It is sort of like the checkering on a fine gun that gives you a better grip. It's not that pretty under a microscope but the idea is that a rough surface grips better than a smooth surface.

Priming

A good pretreatment leaves the surface so that it tends to stay clean. You can do this two ways. You can add a material such as cobalt or you can just leave the surface rough tungsten carbide. One way is like protecting the surface of carbide with a primer coat. The other way is like sandpaper. It just doesn't break down so it doesn't need to be protected.

Bond Strength

The major purpose in all this is to give superior bond strength. You want each and every tip to stay on each and every time. Our process leaves a surface with

the tungsten carbide grains exposed. The braze alloy flows around those grains and cools and locks onto the grains like 10,000 anchors.

Impact Resistance

You want the tips to stay on the saw and you want them to take as much use as possible without breaking. There are two processes. One uses a high temperature salt bath. It heats the parts to 2200°F. Then it plunges them into hot cyanide salts at 1100°F. We have been told that a too rapid cooling can cause thermal stress that leaves the parts more easily broken. We use a room temperature process with very careful, slow heating and cooling.

Appearance

There are two processes. Ours and theirs. Theirs leaves a much shinier surface than ours does. It is also a pretty, silvery-gray color because that is what the cobalt-iron mixture they put on the surface looks like. Our surface is dark and rough and looks like a really good dark matte primer coat by comparison.

That is pretreatment. It should be easy and cheap. It is like having somebody clean and prime your car before you paint it. It is about that important too.

Us vs. Them

We think that our process is better. I could go on for weeks about why. The truth is that the other process is really very good. It was the industry standard for 20 or 30 years as far as I know. We used the other guys for about 15 years and it was very successful. It can still be successful for you. We just wanted something better and we worked really hard until we found it. It works differently and it looks different. It also has a lot of real advantages and we'll give you a free trial.

What is Pretinning

Pretinning is putting the braze alloy on the carbide before it gets put on the

saw. That's it. Simple, isn't it?

You can pretty well do it yourself and lots of folks do. You can do it with a torch and a rod of solder and you'll do a good job. If your labor is cheap and you're only doing a few then that is probably the best way to do it.

We do it with 25 people including four research people. We use six state of the art, computerized, positive feedback, precision atmosphere, controlled conveyor ovens and seven special ovens that are sort of the stock cars of the oven world. We start with standard ovens and then really boost performance.

What we're doing is brazing for people who are running all out. If you think that it is really important to have your people doing things that make you the most money then we should do your pretinning. If you really want to make the finest product in the world then we should do your pretinning.

Doing your own pretinning is like mounting your own tires. Whether it is worth it or not just depends on how you count. If you buy your tires and then mount them yourself then you can do your own pretinning.

Pretinning Gives You Precision

We buy the very finest alloy. We cut it within .001" (1/1,000 inch) using digital-electronic wire feed controllers that measure every piece.

This exact amount of braze alloy means that each joint can be exactly the same thickness. Bond strength and impact resistance both depend on braze joint thickness. Too thick a joint and the tip comes off. If the joint is too thin then the tip breaks.

Pretinned Tips Stay on Better

We treat each and every part so the surface is completely clean. Then we make sure it is rough. Then we make sure

it stays clean and rough until the braze alloy has a chance to bond to it. We also prepare the surface chemically so there is real chemical bonding in addition to the physical bonding. We ran tests and our customers ran tests and our tips just stay on a lot better.

Pretinned Tips Don't Break as Easily

We took untinned tips and pretinned tips. We laid them on their sides and then dropped a weight on them. We measured how far the weight would have to fall before the tips broke. Tips we had pretinned were a lot harder to break.

Pretinning Saves You Money - Maybe

Whether pretinning saves you money or not depends on how you count your labor. If you figure your labor is cheap and the quality is good enough then you should do them yourselves.

If you have trouble hiring really good labor or if you really want to get the best and highest use out of your employees then have us do the pretinning. We have seen some really good people do pretinning. They did a good job and made the company some money. They make their company a lot more money by grinding or hammering or running the office or selling.

If you have any doubts about our quality or service then put your current pretinner in charge of working with us. Based on past experience they are well worth promoting and they will really keep us in line and on the stick.

Counterfeit Carbide

We ran an article about counterfeit carbide and pretinning in our last issue. Dick Linnon of the Sharp Tool Co., was good enough to contact us. Dick would like to know immediately about any complaints of counterfeit

carbide. The Sharp Tool Co., is absolutely honest and aboveboard in all its dealings. They also work very hard to sell you only excellent carbide. We haven't heard anything but good about The Sharp Tool Co., so it is really nice of Dick to offer to do this. His number is: 508-568-9292.

Plating Carbide

Gary Kirchoff of Contour Saws in Des Plaines, IL called about plating carbide. Carbide is being plated extremely successfully for use in metal machining as well as other areas. We are beginning some experiments on plating carbides. We are not ready to sell them and we are really not ready to have customers test them. We want to be extremely careful not to oversell what we have. We are getting there however.

Late Update. We just got the plating samples in today. Tremendous success. More in the next newsletter.

Bandsaw Users

My sales people tell me that we have some folks on our newsletter list who just use bandsaws. They like the newsletter and want to keep getting it. The problem is that they don't buy anything from us.

What I'd like to do is keep sending you folks the newsletter anyway. I'd also like to encourage you to send us a big old blank check regularly or maybe just send us a box of cash if that's easier.



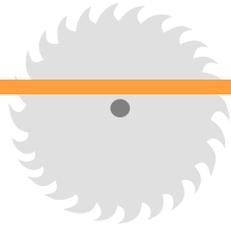


Plate Cleaning

(Continued from Front page)

3. Good solder and keep it good. No contamination
4. Enough heat but not too much
3. Not to thick a joint
4. But thick enough
5. Good fillets

Cleaning the saw notch before brazing.

Warning: The following information offers cleaning methods based on the use of hazardous chemicals. Please contact your chemical supplier and find out how to safely use these products.

A lot of times the saw tip will come loose from the saw body because the notch was not properly prepared. A dirty notch can leave oil and grease as well as grinding dust and general dirt. Anything (**repeat anything**) left in the notch will cause a weaker braze joint. It dilutes and contaminates the braze alloy. It prevents chemical and physical bonding between the braze alloy and the steel or carbide.

The most thorough method I have heard of was given to me by a customer who never has a tip loss problem.

1. Grind the notch smooth, flat and square.
2. Finish smoothing the notch with a hand file while making sure to maintain a flat and square surface.
3. Wipe the notch with a clean cloth. Clean means no oil, no dirt, no grease and no dust just for a start
4. Polish the notch with a wheel for final finishing while still maintaining a flat, square notch. This final wheel will be a fine grit. It will smooth out the big marks from grinding and leave a rough surface for brazing.
5. Chemically clean the plate using a solution such as Oakite dip.

The essential thing is to provide a clean flat, smooth, surface so that the braze alloy can chemically and physically bond to the steel. Grinding the notch will remove heat scale. Hand filing will remove the grinding marks and leave a surface with lots of little grind marks for physical joining. Wiping with a clean cloth will

remove a lot of the film and oil which will make the polishing go a lot better. The final dip will clean the surface. It is essential to remove oil and grease for a lot of reasons.

An oily base metal will repel the flux. This will leave bare spots that will oxidize under heat and create voids. Oil and grease will also carbonize when heated and form a film that prevents solder from flowing over the carbonized areas. The carbon will contaminate and weaken the braze alloy. The oils and grease can vaporize and cause bubbles in the braze joint.

There are a variety of chemical preparations available. Oakite #3 is a product that was recommended to us. It is effective on oxides and scale as well as oil and grease. Oakite is in New Jersey at (908)464-6900.

A clean saw plate is critical to effective brazing. There are people who report good results with just a "gum and go" method. In other words the plates are notched and used with no special cleaning. There are other people who feel that additional cleaning is needed. One of the simplest procedures is to use a room temperature dip tank.

The solution we found was a water based solution of :
Master BXX
(Sodium Hydroxide)
distributed by Pacific Chemical
Div. of Pacific International Ltd.
Kirkland, WA 206-827-8701

This caustic solution should work faster and maybe better if warm or hot.

After soaking, the plates are dried and sandblasted where possible. It is important that the plates be used pretty close to immediately. If they are allowed to sit they can be re-dirtied by the grease and oil in shop air.

We also checked other sources for advice on metal cleaning and the results are as follows.

Machinery's Handbook 22nd Edition

"In order to obtain a sound joint the surfaces in and adjacent to the joint must be free from dirt, oil and oxides or other foreign matter at the time of brazing. Cleaning may be achieved by chemical or mechanical means. Some of the mechanical means employed are filing, grinding, scratch brushing and machining. The chemical means include the use of Trisodium Phosphate, Carbon Tetrachloride, and Trichloroethylene for removing oils and greases.

Soldering Stainless Steel: Stainless steel is somewhat more difficult to solder than other common metals. This is true because of a tightly adhering oxide film on the surface of the metal and because of its low thermal conductivity. The surface of the stainless steel must be thoroughly cleaned. This can be done by abrasion or by clean white pickling with acid.

Muriatic (Hydrochloric) acid saturated with Zinc or combinations of this mixture and 25% additional Muriatic acid or 10% additional Acetic acid, or 10 to 20% additional water solution of Orthophosphoric acid may all be used as fluxes for soldering stainless steel."

The Electroplater's Handbook

"This recommends a 50/50 mixture of Benzene and Carbon Tetrachloride. This removes mineral grease and is followed by a caustic solution to remove animal greases. A recommended solution is one pound of Sodium Hydroxide per 2 1/2 gallons of water used hot.

A good caustic cleaning solution with abrasive action is:

- 2 ounces Sodium Hydroxide
- 10 ounces Sodium Carbonate
- 2 ounces Sodium Triphosphate
- 1 ounce Sodium Silicate
- 1 gallon water"

Metal Finishing

Guidebook Directory

"Degrease with a vapor degreaser or clean in a solvent emulsion such as a detergent containing naphtha. Then use an acid pickle to prepare the metal."

The Brazing Book

Handy & Harman

"The surface must be clean of oil, grease, rust, scale, oxides and just plain dirt. If they are on the surface they will form a barrier between the braze material and the base metal surface. Oil will repel the flux and leave bare spots that will oxidize during brazing causing voids. Other kinds of oil and grease can carbonize forming a carbon surface over which solder will not flow. Braze material will not bond to a rusty or otherwise oxidized surface."

Henley's Formulas for Home and Workshop

edited by Gardner D. Hiscox, ME

"The parts to be joined must be free from oxide and thoroughly clean; this can be secured by filing, scouring, scraping or pickling with acids. The edges must fit exactly, and be heated to the melting point of the solder."

Causes of Brazing Problems

(Continued from Front page)

It is a lot easier to improve 5 things by 10% than it is to improve one thing by 50%. If you improve five things by 10% then you end up with a 61% improvement.

This list is really incomplete. Send me anything to add to it and I will give you credit and a new pocket knife.

Browder Huston

Browder Huston builds tough saws. He uses plymetal or trimetal shims. He says that after he puts a tip in he can hit it six times with a ball peen hammer without breaking the tip.

I asked Browder how he removes the old shim when he brazes a new tip in. He says he just hits it with a wire brush and it comes right.

Sandvik Advice

Joe Butler from Sandvik was good enough to call near the end of January.

I asked him for brazing advice and he had a couple good points to bring up. He had run across a couple brazing problems lately.

One involved parts that were covered with oil. It seems the customer received the parts and then stored them in a chest. The chest was in an area where they were grinding using oil and other fluids. The mist from the grinding eventually worked its way onto the parts. You could actually feel the oil on the carbide.

In another case the brazer was using a torch to burn the oil out of the notches on the plate.

There was a third case where the customer was sandblasting to get oil out of the notch. Clean parts braze well. Dirty parts cause trouble. Oil on steel or carbide causes problems a couple ways: 1.) It contaminates the braze alloy and makes it less effective; 2.) It forms gasses

and cause bubbles in the braze alloy; 3.) It burns and creates free carbon and carbon compounds. Carbon is terrible for brazing. That's why so many people use graphite blocks for brazing.

When you burn carbide or steel with a torch to clean it you do two things. You burn the steel and create metal oxides. This is like painting over rust. You also burn the oil and create ash and other compounds from the burnt oil. This is like painting over rust that is also dirty.



Guessology

George Morgan of Carbide alloys wrote us the other day asking for some more facts about our latest research. In his fax George referred to our "Guessology". I like the word. It is very accurate and very descriptive.

The classic version of the scientific method is hypothesis followed by research and then you get confirmation, revision or rejection. This means that someone comes up with a guess as to what has happened or what will happen. Then experiments are run and the data is analyzed. The analysis of the data tells you one of three things. You learn that you are right (confirmation), partially right (you revise the theory) or you are wrong and you reject the theory.

This is the classical description. The term guessology is much more clever and much more descriptive. Thanks, George.

Ultra Smooth Grinding

Essentially carbide grinding finishes effect the cutting about the way a sharper edge on a knife effects the cutting. The sharper and smoother the edge is the better it cuts. This should mean cleaner cuts with less force.

We do have a customer who is using wheels up to 600 grit. He is doing well selling the ultra smooth grind. Their shop is about 12 years old. They have moved up from doing anything they can find to

doing only high end work. They make more money for the time and it is harder for someone to compete with high quality than it is low prices because it is harder to match high quality.

The only drawback I have heard is that the ultra smooth grinding can heat up the carbide to the point where it either cracks during grinding or it has microscopic cracks that will make it more likely to break during use.

It is a big investment but I have seen it really pay off for people if you can reach the markets and the customers where they really need a good cut. Portable sawmills wouldn't do it. Most primary wood mills wouldn't do it. Picture frame shops should appreciate it.

Cooling Saws Update

Mark at West Coast saws says that he's used copper plates maybe 3/8 of an inch thick to draw the heat out of the plate when brazing thin plate - This was in reply to John Osborne's comments about using ice.

Cryogenics

Cryogenics is a science that deals with super cold. In our industry it uses liquid gases to chill saws, tools and other metals. It is sort of like heat treating but using cold instead of hot.

We've looked at this process for years. The process definitely does work some times in some applications. There is no question that it has real value. However, no one seems to be able to predict when it will work and how well it will work.

We haven't gotten involved because we don't want to get into an uncertain process. If you were interested you could contact the 300 Below company at 217-423-3070.

Increase Diamond Wheel Life

How long a diamond wheel lasts depends on what you're grinding. Soft materials such as cobalt platings tend to clog up diamond wheels. This means more frequent dressing and

shorter diamond wheel life. Diamond wheels that are plugged with soft material can also run hotter and can generate enough heat to cause heat stress in the tungsten carbide.

We learned this from Mark and Brian Wallinger at West Coast Saws. We have a tremendous amount of respect for them as manufacturers and as businessmen. They also have Jack Holm counting the money and he is really good at costing.

We reported these results on diamond wheel life to George Morgan and that's when he responded with the term "guessology". We are sure that West Coast Saws knows what they are doing. However all that really counts is what happens in your shop or plant.

We do have our new ECP process that creates wonderfully strong braze joints without using a high cobalt surface. This should increase diamond wheel life over what you get from using a cobalt plated surface.

If you would like to run your own experiments we would be more than happy to help you in any way we can.

Abrasives Directory

Abrasives magazine has its annual directory out. If you use diamond wheels and don't get the magazine you might contact them at PO Box 639 Grandville, MI 49468
Tel. 616 530-8090,
FAX 616 530-2444

Sharpening Problems

Two customers are having sharpening problems. One is a blade manufacturer. One is a saw shop. The saw shop is seeing it with a variety of blades from major companies. Problems: 1.) Wheels not cutting - the saw shop talks about the diamond wheel not grabbing or biting but tending to run up and off the tooth. 2.) Both places - excessive chipping during grinding. 3.) Both places - can't get the carbide sharp enough. 4.) Saw shop - blades now run about 1 and 1/2 hours that used to run 10 or 12 hours.

Both these companies are extremely good. The problem doesn't seem to be related to one particular carbide manufacturer because some of the effected saws come from people who make their own carbide. Both companies have done exhaustive equipment checks and equipment rebuilds.



Save Money with ECP

If you are good enough to have us pre-treat your tips you do not need to spend the money and time to have them pretreated. We will give you free pretreatment on any order of 10,000 parts or larger. We are working on pretreating smaller orders but we do not have the right small batch equipment yet.

This is our new ECP treatment. It offers tremendous braze strength. It is low temperature so that there is no thermal stress to cause part breakage after. It leaves a surface that is almost pure tungsten carbide so that diamond wheel life is greater.

Pretreat Really Big Carbide

We can pretreat really big pieces of carbide such as STB's. Our process is low temperature and only effects the very outer surface of the carbide so there is no problem with cracking during processing or during later brazing.

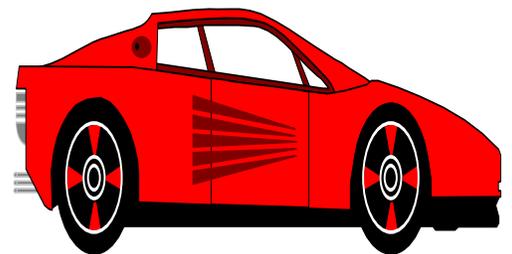
This also makes this process excellent for odd shapes and shapes in really critical applications such as military and nuclear uses.

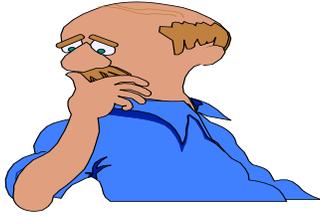
A Terrible Salesman

Joel, the salesman, and I were working late last week. I was getting caught up on my reading when I ran across an article about the new Dodge Prowler. This is the really cool sports car that looks like it is out of the thirties.

Joel and I were curious so we called the local Chrysler dealer. We got a salesman who started to tell us about how this car wouldn't need much service and how it would hold its value for resale.

I told him that this was just a toy we were dreaming about. He kept on telling me how practical the car would be. Then he told me that it didn't really matter what the list price was that they were really going for a big mark up over the list price because the car was going to be hot.





Why Women Really Run American Business

Every smart executive knows who really runs their company. Here it is Pam, Jean and Kristin. If you want anything done, you call them. I had seen this a lot with other companies and never knew why.

Then I saw an article in my morning paper. Men lose their minds. Men start out with bigger brains than women because men are bigger. At age 18 they start losing their brains and they lose them faster than women do. The parts they lose are related to judgment and attention span.

My theory is that men get desperate as they get dumber. They are driven to starting their own businesses as they get older and can't find a job. They still have enough brains to realize that women are smarter than men so they hire women.

Technology for Sale

We have a new ECP process that we would like to sell. This process selectively treats the surface of tungsten carbide and other ceramics.

What we would really like is partnerships to develop new uses for this process. We are open as to how this would work.

Management Advice

How to lead people. The US Army has a system for leading people. If you are about to lead men into battle and you need to tell your people how it will go and what to expect then you use the following five points.

1. Situation
2. Mission
3. Execution
4. Administration and Logistics
5. Command and Signal

In other words:

1. Here's where we are and what we're up against
2. Here's what we're trying to do
3. Here's how we're going to do it
4. Here's what we have to work with and how we'll use it
5. Who is in command and how and when do we talk to each other

The Guy in the Field is Right

The guy doing the work usually knows what they are doing. As part of the testing of the new ECP process we went and talked to customers. One customer, West Coast Saws which is owned by Brian and Mark Wallinger, told us that cobalt gummed up diamond wheels and shortened diamond wheel life.

We had some people question this so we dug a little further. We found two PhD's who agreed with Mark and Brian.

Sintex says that their nickel matrix carbides generally causes "somewhat less wear on diamond wheels than the cobalt-bonded carbides."

Dr. Teruyoshi Tanase of Mitsubishi Materials, Japan came by to visit us and I asked him about this matter. He approached the problem from the point of grinding cobalt matrix carbide for machining inserts. He described cobalt deformation and carbide crystal fracture for us. He feels that the wheels tend to load with a mixture of cobalt and fractured carbide.

Mark and Brian do not have PhD's as far as I know. They did grow up in the saw industry. They worked for their Dad making saws when they were kids.

They work really hard to make excellent saws and tools.

Over the years we have found that the guy in the field usually knows what he is talking about. He may not have the language and the education to use the right words but he is still smart and concerned.

Mickey Mouse Club

For some reason it seemed to be really important to try and remember all the days of the Mickey Mouse club. We had to call the library but here they are.

Monday	- Fun with Music Day
Tuesday	- Guest Star Day
Wednesday	- Anything Can Happen Day
Thursday	- Circus Day
Friday	- Talent Roundup Day

Squirrels and Customer Service...Tragedy at Home

I was getting ready for work the other day. An essential part of getting ready for work is getting a handful of nuts to throw to the squirrels.

It was darker than usual when I opened the patio door. I threw the handful of nuts out and just as they were in mid air I saw the poor squirrel sitting there.

I hit the squirrel in the face with a peanut. It really confused him. Poor baby. I suspect he'll get over it. Squirrels are very resilient where nuts are concerned. It did remind me of some of the things we've tried to do to improve customer service.

One of our classics involved packaging.
(Continued on page 9)

Squirrels and Customer Service...Tragedy at Home

(continued from page 7)

Years ago we had a customer get a broken box of tips in his UPS shipment. He called and asked if there was anything we could do to keep that from happening again.

We were really eager to please so we went all out. We decided that heavy duty shrink wrap was the answer. We got a shrink wrap so tough that we could throw the box against the concrete wall from 20 feet and the wrap held. The box broke but the wrap held the tips together.

We spent the money to put the equipment in and then started shrink wrapping everything. A couple weeks later we got a call from the customer asking us why we did the shrink wrap. He said it was really hard to get off and caused a lot of extra work. I told him why we had done it.

He said he appreciated the thought but UPS only broke maybe one box a year and he was really thinking about something like maybe extra peanuts.

We now work very hard to ask questions and make sure we are really doing something the customer wants done.

Expert Help - Free, Cheap and at a Fair Price.

If you are having carbide problems and need help there are several things you can do.

First, contact your carbide supplier. A good supplier ought to be able to give you help and advice. Several of them have their own labs and can do an analysis for you. We are always willing to do what we can to help. If you don't get much help from your current supplier then you might try another carbide supplier who can give more help.

The problem is that all this has to be paid for somehow. Carbide suppliers should work with their current customers. They are generally happy to work with prospective customers. However they cannot afford to do a lot of free analysis without being paid somehow. Scientific analysis is expensive to extremely expensive. If we know we have cobalt in a solution we can run a test for it for about \$60.00. If we have a metal but we don't know what it is we have to run a series of tests at \$60.00 each until we find it. There can be dozens or hundreds or hundreds of thousands of possible chemical combinations we have to test for.

For example, The Handbook of Chemistry and Physics lists about 15,000 commonly found compounds based on carbon.

It costs us between \$300 and \$500 to get the right photo using a scanning electron microscope. We usually have to take a lot of wrong photos and do a lot of looking around before we get what we need. It will cost another \$500 to \$1,000 to get the finished report.

If you want a really thorough independent analysis we can have it done for you at a fair price.

The problems we usually get are problems that come up during use of the carbide. This involves solder, heat, feeds and speeds as well as grades and shapes. Chris Comer of Eagle International Carbide talks about solving a problem by telling the customer to increase both feeds and speeds. There never was anything wrong with the carbide.

Mark Wallinger of West Coast Saws has gone out in the middle of the night on a customer complaint. The customer had the saws on backwards. Rich Budke of Systi Matic Co. Inc., has had the same thing happen to him. He adds that it is surprising how well his saws do cut even when run backwards.

If you have a carbide problem then talk to your supplier. If that doesn't help then call another supplier. If you want scientific analysis or another referral then go ahead and call us.

Fairness Policy

This newsletter is a tool for the readers. We try and cover what might be useful. We make every effort to be fair to everyone.

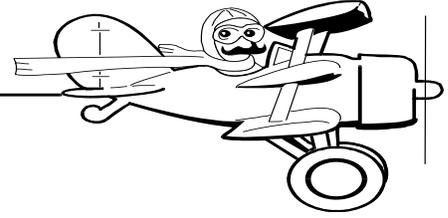
For example, in the back is a list of sources for saw tips. We think this listing is fair. If we are missing someone, we will add them as soon as we know about them.

If we say something that someone doesn't like we will do several things. We will print a retraction and an apology if we are wrong. Even if we are sure we are right, we will still print a reply. Here's how we decide what to print. First, we print advice from customers. Call and tell us something we don't know (not hard to do) and we'll put it in the newsletter, give you credit and probably send you a gift too. Second, we try to answer customer requests. Third, we print things we think might be interesting. Fourth, we put in fillers to make the spaces come out even.

We are really slow to print criticism and gossip. We had a man call mid-February. He was having some problems and wanted to know if we had heard of anyone else having problems. The man said that he hadn't talked to the supplier. Joel said he knew the company that made the equipment and they were fine folks. Joel told the man to call the supplier and talk to them. The man called the supplier, got things straightened out and then called us back to tell us.

We could have run a big gossip story but it would not have been fair or accurate or very interesting.

The Classifieds



To Place Your Free Classified Ad Call Us at (800) 346-8274 or Fax us at (800) 707-5802

Charles G.G. Schmidt & Co

Manufacturers and distributors of quality carbide and S-alloy tipped knives and cutters, corrugated back moulder heads and knife stock. Planer and jointer knives, tenoner tooling and grinding wheels. Over 700 standard items for all types of woodworking machines.

Call 800-SCHMIDT (724-6438) for your free catalog!

Stellite™

Sales of preform stellite and carbide saw tips, filing room supplies, service of round saws from 8" to 108", and service of band saws.

Call **Brecto's Saw Shop (800) 324-5023** and ask for Mark.

Exotic Alloys

Aerospace Alloys in Vancouver, Washington is a source for duplex stainless steels, titanium, and better than a dozen other specialty alloys in sheet, bar and shapes and fittings. They also offer a full line of related services. Ph 800 878-3675 or FAX 800 878-9709

Scrap Bought

We specialize in the recycling of **TUNGSTEN CARBIDE SCRAP** and pay the highest prices for your hard scrap, sludge and powders. Call **CARBIDE RECYCLING CO. (800) 526-3505** or FAX (810) 474-6152 for current prices and shipping inf.

CASH!!

Tungsten Carbide-saw tips with or without brazing, sharpening sludge, and inserts. We pick up Pacific Northwest only. Barry at **Acme Trading, Portland, OR (800)547-6732** or (503)227-5501.

Tools, Supply & Service

Desert Carbide, manufacturer of solid carbide tools, drills, reamers, burrs, mills, inserts, threaders & groovers for machining industry. We will ship nationwide!

Contact Steve Cagle at 1-800-Inserts.

North American Products Corporation: We offer a complete line of carbide tipped cutting tools to both the woodworking and metalworking industry. North American also has 13 service centers strategically located throughout the United States to completely recondition our customer's cutting tools. This service also includes free pick-up and delivery within a

geographic location. For additional information or a free catalog call or write to:
North American Products 1180 Wernsing Rd., Jasper, IN 47546 (800) 634-TOOL.

Cascade/Southern Saw Co. will stock carbide tips and diamond wheels in our Hot Springs, AR location. Our customers will benefit with faster deliveries and less freight cost.
Call (503) 241-1982.

For all of your Crobalt and Tantung needs call John Osborne at **Carbide Specialties. (818) 915-3911.**

AA Carbide Inc. Largest selection of saw blades, router bits, shaper cutters in the Intermountain West. Complete service-custom manufacturing and sharpening sales of woodworking equipment. Call George Laws (801)486-4881.

United Saw & Supply Company can supply new saw blades cut to 84" diameter for cutting non ferrous metals. Send us your requests, we will quote price and delivery for you to resell. (901) 784-6886

Lemon & Snoap Company Inc. Custom and standard carbide tools to meet all of your woodworking needs. Complete repair and service facility available. Please contact us at (616) 532-3696 for all your tooling requirements.

Special Products! Bi-metal and Special Alloy Band Saw Blades. Unbeatable prices, with guaranteed factory welds. Check our prices and quality. The best combination. **United Saw & Supply Co.** (901)784-6886. Resale inquiries welcome.

Continental Division is offering T1 HSS molder knives to compliment their excellent quality M2 molder, joiner and planer knives. The T1 knives differ from the M2 in that special heat resistant elements give the knives superior resistance to thermal erosion of the cutting edge, resulting in longer runs between sharpening and increased "grindability." **For Distributor information call (602) 269-1078**

Saw Shop Service

Peterson Saw Service is offering various items for sale. Please see complete description in equipment for sale or call 517-348-5957

Hammering, sharpening and welding of band saws, slasher saws, carbide saws, board saws, chipper and planer knives. For all your cutting tool needs call

Endull Saws. (207) 990-5660.

METALSAW from PLUS TEN! Precision carbide tipped cold sawing of stainless, nickel alloy & tool steel plates!
Call Luigi Bonacini at (707)745-4625.

RAPCO INDUSTRIES, INC. Carbide Tipped Saw Chains! The Worlds Best. Outlasts other chain 10 times! Call (503)255-6355.

Herco Inc., Manufacturer of the world's finest Carbide and Diamond cutting tools for the woodworking industry. Saw blades and router bits in stock ready for shipment. Custom Carbide tooling shipped in two weeks, Diamond in 3 - 4 weeks. Call or fax for a quote.
Phone (614) 498-5181 or Fax (614) 498-5454.

BYRD TOOL CORP. Manufactures quality tooling for the woodworking industry. Molder and shaper heads, brazed tip cutter heads, and insert heads, along with inserts and knives. Call (800) 441-2973 for more information and a free catalog. Made in the USA!

Sharpening, repair & sales of wide band saws from 4" to 8" wide 17' to 31' long. Carbide saws up to 36" diameter. Custom manufacturing of carbide saws and groover saws. Many other cutting tools serviced. Over 60 years of experience between two master filers. For more information call:

McGinnis Saw Service, Inc. (602) 883-3723
6720 W Bilby Dr. Tucson, AZ 85746.

Manufacturing and Balancing of CNC router bits. A CNC bit is only as good as its balance. Improve tool life and cut. Reduce spindle damage. **Great Lakes Carbide Tool Mfg. Inc.** (800)873-4528.

Diamond Wheels

Diamond and CBN grinding wheels for saw sharpening, knife and profile grinders. Private labeling available.
(503)683-0801 Fax (503)342-2715.

Ultra Precision Grinding

YKC Technologies (702) 689-2111. Precision carbide cutting and grinding to + or - .00005" if needed.

Saw Tips

ICE Super Specials: Indexable Carbide inserts resharpened: Only \$1.90 each! Carbide saw tips, and much more! Call now for the best prices and service **International Carbide & Engineering, Inc.** (800)424-3311.

Carbide Saw Tips. **Multi Metals**, specializing in the Woodworking Industry since 1955, has a new toll free Fax number: (800) 527-TIPS.
Customer Service: (502) 587-5660.

Saw Tips - Special

Inventory clearance! Carbide saw tips, first quality, braze treated. WA 7130 C2 grade 3 cents each!! - save 60%! WF 7140 C2 grade 14 cents each!! WF 7150 C2 grade 148 cents each!! Call **Eagle International. (800)633-8068.**

Saw Blades

Saw blades. **Huston Saw** specializing in the sawmill and pallet industry offers competitive pricing on *top quality carbide tipped saw blades* up to 30"! Call or fax for a quote.
Phone 205-339-7843 Fax 205-339-7834

Shipping Services

If you truly believe that the transportation services you are currently receiving cannot be improved and the rates you have cannot be lower, it isn't necessary to call. If on the other hand, you are interested in service improvement and cost savings for your company, please call **Forte' Transportation Logistics Corp. at (206)874-9922** and ask for Kim or Bruce

Need Trucking at highly competitive rates? Flatbeds and vans available. Serving North America. Licensed & insured.
Call us at **Fox Dispatch** (800)421-9393

Miscellaneous

Saw sharpening machine specialty!
Hanna Enterprises has used equipment, rebuilt machinery, repair and parts equipment for saw sharpening machinery for carbide grinders. Contact Dave Goding for more information.
Hanna Enterprises
900 Parker Dr. Florence, SC 29501
(803)665-5788
Expert pad transfer printing and super prices. We'll print your blades! Any quantity, 1 to 1,000 plus, give us a call. We'll give you a price you

can't refuse. **Northwest Assembly & Machining.**
(206) 471-0508.

Custom milling, cutting, drilling, assembly and staining. No job too big or small. Call **Five Star Industries** at (618) 542-5421 for quotes, ask for Mark.

CONFUSED????

Try the Woodworkers Calculator.

This slide rule chart calculator can answer your questions regarding feed speed, chiploads, rim speeds, horsepower, knife marks per inch and cutter mark depth. Send \$10.95 check or money order to: S-3, Inc., PO Box 257
Fox River Grove, IL 60021.
Fax (708)304-4823 5/94.

Sawmill Supply

Sawmill supplies! **Burton Saw & Supply** (503)683-3337. We stock most filing and planer room supplies. We have a large inventory of Armstrong parts, grinding wheels, files, knives and equipment for carbide, stellite and steel.

Lumber, Specialty Wood

Craftwood Northern White Cedar, Butternut, Cherry, Tamarack and other species. 1/8 - 1/4 - 3/8 - 1/2 - 3/4 inch thickness. Planed 2 sides, ripped 2 edges. Send for free catalog and free sample of cedar. 100% guarantee. Cedar is an excellent pine substitute. Phone (207)425-2911.
Hartford Woodworks,
Box 41-E, Blaine, ME 04734

Van Der Stad Sawmill Co. 25 Paradise Road Oak Ridge, NJ 07438 (201)697-3101. Custom moldings, rough cut lumber, survey stakes, pallets, kiln dried hardwood. EST 1940 your eastern source for quality and service.

New Equipment

Stop filing mica by using the "No File" Mica Finishing Router Bit PAT # 4,669,923. Consistent, super smooth edges with no sharp corners. Dealer/Distributor inquiries welcome.
Bob's Saw Sharpening. (305)463-2689 Fax (305)463-8731. If It Cuts, We Sell It, If It Doesn't, We'll Sharpen It!

Considering Lasers? Lumber Line can supply all your laser needs, including top-quality new and rebuilt lasers and all-brand repair at the industry's best prices. **Lumber Line Laser Repair** in Yacolt, WA give us a call at (206)686-3077.

Hardwood Wanted

Wanted: Hardwood pallet cants. 4"x6", payment upon delivery! John Wojciechowski, **Mole Lake Wood Industries, Inc.** Crandon, WI

(715)478-5380.

Dealer's Wanted

Manufacturer of NO GRAB™ Carbide tipped saws for cutting aluminum extrusions, tubing, rods, and sheet (.040 or less -.375 or more) using the same blade. The unique NO GRAB™ design ensures durability, burr free cuts for longer tool life. **Bob's Saw Sharpening** (305)463-2689.

Carbide for Sale

International Knife and Saw, Inc., has Seco by Carboloy for sale. 335.19 1204T Wt. 030R LH & RH I25 m. Please contact Sarah at 800-334-3057 Fax 803-665-5315

Lists We Run

We run some lists in the back of this magazine. We think that these lists might be of interest to our readers. We do not have any relationship with these people and we are not paid to run these lists. We do it as a reader service.

We may or may not do business with these people. However we do not include any names that we would not recommend. The fact that we list these names does not mean that we are claiming any sort of endorsement or relationship from them to us. We just think these folks produce excellent quality and give the kind of service you might want.

New/Used Equipment for Sale

General Saw Corporation

For Sale: 1987 Beta Top + Pace Saw Grinder
Call Roman at 800-772-3691

Peterson Saw Service is selling the following:

FOR SALE: Wright Dual Automatic Side Grinder. Heavy Duty. Good Condition. \$5,000.00 Firm. Call them a call at 517-348-5957.

Capital Equipment Sales

Has metal forming, metal cutting, plastics and equipment for sale.

Horizontal Machining Centers

Mazak H-20, 31.5" Pallets, 43.3"x35.4"x29.5", fanuc 6M-B, One Degree Indexing, 1982, VERY NICE, \$159,000.

Maho MC-50, 16" Pallets, Full 4th, 20"x16"x20", 45 ATC, Phillips 432 CNC, Probe, 1986, \$59,500.

Vertical Machining Centers

Mazak VQC 20/40 A, 1983, Maz. M-2 CNC 25"x20"x18", 20 ATC, CAT#40, \$45,000.

Mazak SV-25 E, C-Frame, 102"x32"x29.5", 25HP, 40 ATC, 1988, M-2 CNC, \$265,000.

Lathes

Okuma LC-20-2ST, OSP-3000, 4 axis, 8" Chuck, Twin 8 Station Turrets, 1982, M-2 CNC, \$49,000.

Okuma LC-40-1S, OSP-5000wIGF, 15" Chuck, 48" Turning length, 1984, \$110,000.
Takhsawa #TS-25, 1983, Fanuc 6T-B, 10" Chuck, 51" Centers, 25HP, Chip conveyor, \$49,500.

Boring Mills

6" Gray Floor Type, 1968, 10'x31' Travels, 9'x12' Sliding Rotary, Floor Plates, DRO, \$225,000.

5" Gray Floor Type, 72" Vert. 23' Horiz. Travels, DRO, Floor Plates, Retracting Column, 1955, Power Drawbar, \$79,500.
5 1/8" Kuraki KBT-13DXA, 118"x78"x54", Fanuc 15-M CNC, .001 indexing, 40 ATC, 1992, \$575,000 **LOADED.**

Frank Bacon Machinery Sales

EDM Machines & Power Supplies
1-800-394-4280

Directories

Surplus Record
312-372-9077

Rand Machinery Exchange
212-226-5356

Locator
301-585-9498

Used Equipment Directory
800-526-6052

TMS Machinery Sales
1-800-888-4244

Surplus Center
1-800-488-3407

Mohawk Machinery, Inc.
513-771-1952

American Science & Surplus
708-982-0870

INDUSTRY MAGAZINES

We would like to spotlight industry magazines. We have had a really positive experience dealing with them.

Forest Products Equipment
Contact: Ron Weatherford
Executive South Office Park
US 1 South Suite 1
Swainsboro, GA 30401
800-982-5926

Wood Technology
Contact: Jan Curio, Classifieds
600 Harrison Street

San Francisco, CA 94107
415-905-2200 x274

Logging & Sawmilling Journal

Contact: Perry Rosehill
622 West 22nd Street
North Vancouver, BC Canada V7L 4L2
604-328-7941

Southern Lumberman

Contact: Lori, Classifieds
Greysmith Publishing Inc.
128 Holiday Court Suite 116
Franklin, TN 37068-1629
800-229-9797

Mill Products

Contact: Kevin Cook
Baum International Media
1625 Ingleton Avenue
Burnaby BC Canada V5C 4L8
604-298-3004

Modern Woodworking

Contact: Dana Brooks
167 E Hwy. 72
Collierville, TN 38017
901-853-7470

Product Design & Equipment

Contact: Cynthia
310-424-4445

New Equipment Digest

Contact: Teri Dieterich
216-696-7000

Timber Processing

Contact: Tim Shaddick
4779 Collingwood
Vancouver, BC V6S 2B3
604-681-1108

Canadian Wood Products

Contact: Tim Shaddick
1404 700 West Penmder Street
Vancouver, BC V6C 1G8
604-681-7207

The Logger and Lumberman

Contact: Sonya Kirkland
6257 North Main Street
Wadley, GA 30477
912-252-5237

American Lumber & Pallet

Contact Wade Nowlin
416 South Main
Fayetteville, TN 37334 615-433-1010

Forestry Chronicle

Contact: Kathleen MacRobbie
Communications Reflections Inc.
RR #3 Hwy. 6 North
Mount Forest, ON N0G 2L0
519-334-3973

Independent Directories

Contact: Jim Newton
4245 Pandora Street
Burnaby, BC Canada V5C 2R4
604-299-1162

Carbide Suppliers

Carbide Alloys
800-334-1165

Carmet Co
800-845-6969

Cascade Southern
503-241-1982

Eagle International
800-633-8068

ICE
800-424-3311

IKS Service, Inc.
205-684-4124

Kennametal Ltd.
604-474-1225

Metal Carbides
216-788-6541

Multi-Metals
502-589-3781

Peerless
614-836-5790

Sandvik Hard Metals
800-343-0636

Sharp Tool Co
800-221-5452

Systi Matic Co
206-823-8200

Sintex Corp
503-357-9510
Teledyne Firth Sterling
615-641-4355

Other Materials

Crobalt, Tantung
Carbide Specialties
818-915-3911

Stellite™

Deloro
800-267-2886

Brecto's Saw & Supply
800-324-5023

Recyclers

Carbide Recycling
800-526-3505
Macro
604-941-9611

Barry Gordon
800-547-6732

Referrals

Omega Co
800-872-9436

Associations

International Saw & Knife
317-659-1297

Newsletter Publications
The Intermountain Log
703 Lakeside Ave
Cour d'Alene, IA 83814
208-667-4641

Wood Machining News
POB 476
Berkeley, CA 94701

501-943-5240

ORCA News
"Used Machine Tool Specialists"
4900 Highway 169 N suite 308
Minneapolis, MN 55428
612-535-1774

Mail List Removal

If you get this newsletter and don't want to get one please just call or fax us at the 800 numbers and we will be happy to remove you from our mailing list.

Please Note: This source list is compiled by the publishers of this newsletter as a service. If you have something you would like to see included in future issues, please forward your request or source info to us at Carbide Processors, Inc. At 800-346-8274 or Fax 800-707-5802.

Carbide Processors, Inc., Newsletter by Tom Walz January/February 1996. The Carbide Processors, Inc., Newsletter is published at 2733 South Ash Street, Tacoma, Washington 98409. Phone 800-346-8274 Fax 800-707-5802. © 1996 Carbide Processors. All Rights Reserved. Note: Guest articles do not necessarily reflect the views of the publishers. Information reported herein is compiled from sources believed to be accurate; however, the publishers do not assume responsibility for errors or omissions.

No Ads

This space was going to be about our willingness to sell display advertising in our newsletter.

We had some customers object to that policy. We got a call and a letter from two customers in particular. They were very polite and very well spoken. They were also definite that they thought we would be damaging our credibility and losing our fairness if we accepted display advertising. They were afraid that our content would be dictated by advertising.

They say that when one customer writes to you that 100 customers are thinking the same thing. We will not be running display ads until we get this issue resolved. Actually that probably means never.

Free Samples

Call Joel at (800) 346-8274

Solve Your Problems

Save Money on Materials

We are that good. If you try it then most of you will buy it now and forever. There is nothing better at any price.

Automatic Brazing Carbide Treatments
Carbide Surface Treatments For Any Use
Brazing Alloy
Brazing Pastes
Pretinning

There's a fine old American expression called putting your money where your mouth is.

We are advertising several things:

We do pretinning. Ours is the finest in the world.

We do pretreating . We have the new ECP technology which is doing wonderfully well.

Call and ask for Joel and we will do some samples free for you.

500 or 1,000 parts or whatever you think makes a good sample.

We'll do them free. It is the cheapest way we know to show you how good we are.

Carbide Processors, Incorporated

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Tacoma, Washington 98409

800-346-8274

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