



Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter February, 2011

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

sales@carbideprocessors.com www.carbideprocessors.com

Free Books

Carbide Saw Manual

by Lowell Freeborn

Carbide Saw Specification Manual

unknown

Braze Failure Analysis

By Tom Walz

Building Superior Brazed Tools

By Tom Walz

Coolant Management

By Tom Walz

You can have an email copy, no charge, if you wish. You can also buy them printed and bound from Café press. <http://www.carbideprocessors.com/categories/Carbide-Processors/CP-Books/>

- 1. Braze Failure Analysis in Carbide Tools** \$22.61 58 pages with 315 illustrations
- 2. Building Superior Brazed Tools 2008** \$30.31 229 pages - 422 illustrations and 77 chapters
- 3. Carbide Saw Manual** \$17.52 By Lowell Freeborn 56 pages
- 4. Carbide Saw Specification Manual** \$15.68 15 pages
- 5. Managing Coolants from Machining Operations** \$26.48 144 pages

Free

Screwdriver Set

This is a really handy little screwdriver set. I use mine mostly for tightening screws on eyeglasses and opening battery compartments in kids' toys. Retail \$4.00. Call and we'll send you one free.



Sell Your Old Carbide

You know you'll never use it



A really smart sawmill just sent us 800 pounds (\$6,000) of old, old carbide.

Most of it was in boxes from companies long gone. (Yes, I know the names are still in use. But the original companies been bought out and management has changed.) Anyway, it occurred to me that, if you have a partial box of carbide and the supplier has been out of business 10 years or more, you probably are not ever going to use that carbide. This mill was smart enough to go through its old carbide inventory and turn it into cash.

They just dumped boxes and bottles into a couple big, wooden crates and shipped to us. You can do the same thing. We will open the boxes, sort the carbide and weigh the carbide for you. Prices change daily so call Emily for the current prices 800-346-8274.

Carbide Tip Blow Out

WFC 7135	only \$0.15 ea.
WF 7160	only \$0.15 ea.
WGC 7170	only \$0.15 ea.
WGC 7110	only \$0.15 ea.
WEC 7150	only \$0.15 ea.
WXC 7180	only \$0.15 ea.

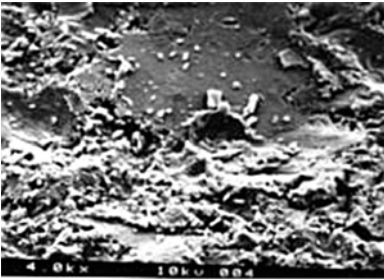
All prices while quantities last

Saw Tips That Work The Best Quality

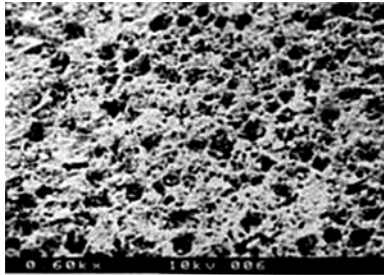
We are seeing customers who left us because of price and location coming back because of our quality.

We have been asked about our secrets. Here is one.

Untreated carbide at 4,000x



The soft looking patch in the top middle is an oxide layer. The squarish chunks and the 'leaf piles' are different kinds of oxide. Under the oxide layers is a layer of free carbon.



Here is carbide after our exclusive treatment. It is pure tungsten carbide with no free carbon and no oxides. The surface looks like a sponge. When braze alloy is applied it gets in the millions of little holes and forms an incredibly strong bond. (More = see "Bond Strength on p. 2)

Every Tip Stays on Every Time

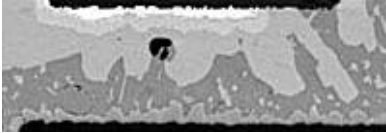
Call 800 346-8274

Bond strength

When you get pretinned carbide someplace else is it brazes like this.



You get three distinct layers. Top is the braze alloy and bottom is the carbide. The black line in the middle is an oxide / carbon layer between the two. This can work well most of the time.



With our process you get the braze alloy and the carbide solidly locked together. You can see how the braze alloy interpenetrates the carbide.

What We Are Doing To Help You

1. We have greatly increased our inventories.
2. We have not raised our prices any more than we had to because of suppliers' raises.
3. We have found new suppliers with better prices.
4. We have found new suppliers with better delivery times.
5. You can get custom parts with much lower tooling charges.
6. We buy in large quantities and resell in smaller quantities.
7. We are constantly searching for new suppliers.
8. We offer all shipping options. You can save money with USPS shipping; Maybe \$5 to \$20 a shipment. Call for details on priority mail and priority mail flat rate



Who's Awesome?

You're awesome
(and awesome dog knows.)

Medal of Honor



A young Army specialist, Salvatore A. Giunta, took a bullet to the chest, but was saved by the heavy plates of his body armor. Shaking off the punch from the round, he jumped up and pulled two wounded soldiers to safety, grabbed hand grenades and ran up the trail to where his squad mates had been patrolling.

There, he saw a chilling image: Two fighters hauling one of his American comrades into the forest. Specialist Giunta hurled his grenades and emptied the clip in his automatic rifle, forcing the enemy to drop the wounded soldier. Still taking fire, he provided cover and comfort to his mortally wounded teammate until help arrived.

"It was one of the worst days of my life, and when I revisit it, it kind of guts me a little bit more every time," the soldier, now a staff sergeant, said Friday.

For his valor during that October 2007 mission, the White House announced Friday that the 25-year-old sergeant, of Hiawatha, Iowa, would become the first living service member to receive the Medal of Honor, the military's most prestigious award, for action during any war since Vietnam.

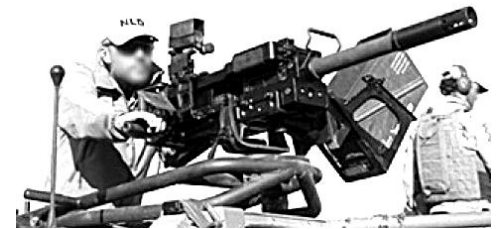
"President Obama said 'thank you' for what I did," Sergeant Giunta said in an interview from his current post in Vicenza, Italy, after getting a call from the president. "My heart was pounding out of my chest, so much that my ears almost stopped hearing. I had my wife by my side. She was holding my hand. When she heard me say, 'Mr. President,' she gave me a squeeze."

"I entered the Army when I was 18, and I'm 25 now. I became a man in the Army," he said. "That night I learned a lot — and after that night I learned even more. This respect that people are giving to me? This was one moment. In my battalion, I am mediocre at best. This shows how great the rest of them are."

Note: I have read several interviews with Staff Sergeant Giunta and he is invariably modest and always considers the medal given to him to represent a medal for all the troops.

Personally I don't think we are recognizing enough of these incredible men and women. I can't give out medals but I can buy them lunch. We are out here in Tacoma with a huge joint Army / Air Force base. (Joint Base Lewis/McChord). If you get out this way let me know and we'll go down to Hooters and buy lunch for some of them.

40 mm (1.56") Automatic Weapon



This weapon shoots a shell this size. It can be solid, incendiary, armor piercing or a whole variety of other bad news.

Recreation



A few sandbags, a case of beer and you stare at the desert through a TV with no picture tube.

Formulas

Free Calculators for all these and more online at
<http://www.carbideprocessors.com/pages/Saw-Blades.html>

Bandsaws

Length of blade = 2 x distance between wheel centers + the diameter of one wheel x 3.14

(Note: You only use half the wheel so taking the whole diameter of one wheel is the same as half of two wheels.)

Circular saws

Tooth Pitch in inches = $\frac{\text{diameter of the saw} \times 3.14}{\text{Number of teeth}}$

Number of teeth = $\frac{\text{diameter of the saw} \times 3.14}{\text{Tooth Pitch in inches}}$

Bite per tooth in inches = $\frac{\text{feed speed in feet per minute} \times 12}{\text{Number of teeth} \times \text{shaft speed measured as rpm}}$

Feed speed as feet per minute (fpm) = $\frac{\text{Bite per tooth in inches} \times \text{Number of teeth} \times \text{shaft speed measured as rpm}}{12}$

Circular Saws and Band saws

Bite per tooth in inches = $\frac{\text{Feedspeed} \times \text{Tooth pitch (inch)}}{\text{Blade (or rim) speed (sfpm)}}$

Bite per tooth in inches = $\frac{\text{Gullet Feed Index} \times \text{Gullet area in square inches}}{\text{Depth of cut in inches}}$

Bite per tooth in inches = $\frac{\text{Distance measured on the board}}{\text{Number of bites in the measured distance}}$

Blade or rim speed (surface feet per minute) = $\frac{3.14 \times \text{saw diameter} \times \text{shaft speed (rpm)}}{12}$

Chip Load = $\frac{\text{Feed Speed (fpm)} \times 12}{\text{No. of Teeth} \times \text{rpm}}$ (Note: Feed Speed must be converted to inches. (90 x 12))

Depth of cut in inches = $\frac{\text{Gullet Feed Index} \times \text{Gullet area in square inches}}{\text{Bite per tooth in inches}}$

Feed speed as feet per minute (fpm) = $\frac{\text{Blade (or rim) speed (sfpm)} \times \text{Bite per tooth}}{\text{Tooth pitch in inches}}$

Feed speed (fpm) = $\frac{\text{Gullet Feed Index} \times \text{Gullet area sq. in.} \times \text{Blade (or rim) speed (sfpm)}}{\text{Depth of cut in inches} \times \text{Tooth pitch (inch)}}$

Feed Speed = $\frac{\text{Rpm} \times \text{no. of teeth} \times \text{chip load}}{12 \text{ (inches per foot)}}$

Feed Speed (Maximum) = $\frac{\text{Max Gullet Feed Index} \times \text{Gullet area sq.in.} \times \text{Blade or rim speed (sfpm)}}{\text{Depth of cut in inches} \times \text{Tooth pitch (inch)}}$

Feed Speed (Minimum) = $\frac{\text{Side Clearance (inch)} \times \text{Blade or rim speed (sfpm)}}{\text{Tooth pitch (inch)}}$

Gullet Feed Index = $\frac{\text{Bite per tooth in inches} \times \text{Depth of cut in inches}}{\text{Gullet area in square inches}}$

Gullet Feed Index = $\frac{\text{Depth of cut in inches} \times \text{Feed speed (fpm)} \times \text{Tooth pitch (inch)}}{\text{Gullet area in square inches} \times \text{Blade or rim speed (sfpm)}}$

Kerf (theoretical) = Thickness of saw plate + 2 x Side Clearance in inches

Side Clearance (Minimum) (inch) = $\frac{\text{Feed speed (fpm)} \times \text{Tooth pitch (in.)}}{\text{Blade or rim speed (sfpm)}}$

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 resistant 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**

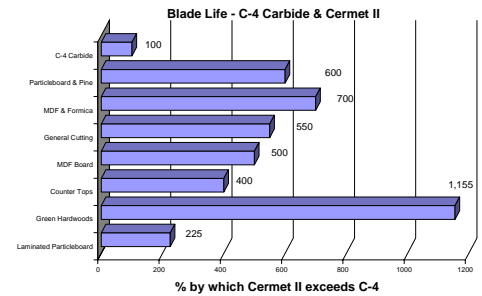
4. 406 mm (16") 80 teeth cutting MDF Board
* Cermet II - 10 days / old grade - 2 days (5 times) **500% as much run life**

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

**Summer is Coming
Time for fishing**



We Buy Carbide Sludge, Maybe

The value in carbide sludge lies in the tungsten content. If your sludge is 50% tungsten by weight or higher then it is very saleable. It has to have 10% iron or less and it has to be tested.

If you are interested in selling your sludge send us a sample that is about one point and we will test it for \$40.

Dry is always good since no one wants to pay to ship or process water. It doesn't have to be bone dry and it doesn't have to be free of oil and grease.

If the initial test comes back good then you can send us drums of sludge. We then take the drum and insert a special, then steel rod into the sludge. This Rod is called a "thief" and it takes samples at intervals all the way down to the bottom. We then test those samples and determine what your sludge is worth.

It takes a little work and a \$40 investment but sludge can be worth as much as \$7.50 a pound depending on the tungsten content.

Before you do this, you might want to stop and estimate just how much of your sludge is tungsten. (That's tungsten and not tungsten carbide. As a rule of thumb, figure that tungsten carbide is about 2/3 tungsten by weight.) If you think your sludge might be 50% tungsten then it is probably worth investing the \$40.

A Talking Pig

This is a true story, proving how fascinating the mind of a six year old is. They think so logically.

A teacher was reading the story of the Three Little Pigs to her class. She came to the part of the story where first pig was trying to gather the building materials for his home. She read, 'And so the pig went up to the man with the wheelbarrow full of straw and said: 'Pardon me sir, but may I have some of that straw to build my house?'

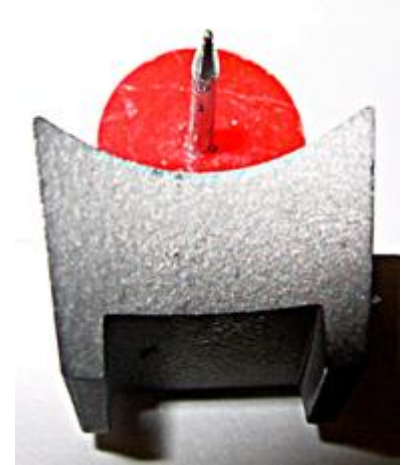
The teacher paused then asked the class: 'And what do you think the man said?'

One little boy raised his hand and said very matter-of-factly ...'I think the man would have said - 'Well, I'll be f---ed!! A talking pig!'

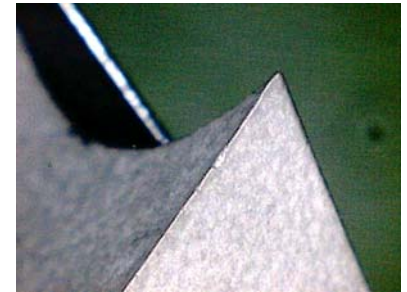
The teacher had to leave the room

Pinpoint Brand Kodiak Tips

Exclusively From Carbide Processors



This is a picture of the points on our new pinpoint Brand Kodiak tip next to a pushpin. You can see that the points on our new Kodiak tips really are pinpoint sharp.



Here is another picture of the same tip take at 30x magnification. You can see that not only are the points pinpoint sharp but that the edges are clean and sharp as well.

Besides the extremely good edges and pinpoint sharpness these tips are made extremely well. The chemistry is very precise and sintering is very tightly controlled. This means that you get a dance, hard, homogenous saw tip for really good wear and fracture resistance.



Beautiful Custom Carbide

You can get both standard and custom carbide from us.

This is a custom shape that really turned out well. We got the job after a big international outfit dropped out because they couldn't do it.



This is the part. There are two things that make it really tricky; one is the notch and the other is the point. These have to be created in the "green state" where the carbide is softer than sidewalk chalk.



Here is the point next to a paperclip for size comparison.



Here is the point next to the lead from a mechanical pencil.

You can easily see that it is a really nice, sharp point. These tips were being individually ground to make them suitable for use.

With carbide tips such as these they can be used with no further grinding.

Top 10 Reasons to Use Our Carbide



1. World's largest inventory

We buy from many different manufacturers and suppliers which gives us (and you) access to their inventories. One call to us and we do all the work.

2. Whatever you want

We are more than happy to get you whatever you wish no matter how odd or strange.



3. Beautiful custom work

People repeatedly tell us how beautiful our custom parts are.

4. The tightest, most complete quality specification

We got really tired of bad tips so we wrote a set of specifications that has become industry standard. Call, email or go online and we will be happy to send you a copy.

5. The very best quality

Because we are the fussiest we get the very best quality. Some carbide suppliers try to send people to others because we are too fussy. We have never had a customer tell us we were too fussy. They like getting good tips every time.

6. The only truly honest counts

We spent \$11,000 dollars on an automated tip counter to count every tip exactly. Our counter is so good that the technology is used to count narcotic pills in pharmacies where missing pills is a crime. We are the only one with this

kind of equipment. We also have two weigh counting scales but they aren't as accurate.

7. Our exclusive Super C® grade

This is tougher than C-1 and wears much longer than C-4. It is a great sawmill, rough application use.

8. Our Exclusive Cermet 2® grades

We have several Cermet 2® grades. They are excellent for man made materials. They have the strength of a C-3 and last 5 to 10 times as long as C-4 grades. **They braze and grind just like C-4 grades.** No special wheels required. #

9. Perfect for automated brazing systems

Tips sized to minus zero and plus 2 thousandths of an inch. (-0.002" / +0.002"). Our pretinning leaves a smooth even curve that is identical on every tip.



10. Every tip wets every time

Perfect brazing and bonding

11. 100% Satisfaction guarantee.

The only no hassles, 100% satisfaction guarantee. If you don't like our tips we will replace them or refund your money.

12. Easy, easy, easy and easy

When you call a nice lady answers the phone within three rings and helps you with whatever you wish just like that. Sometimes, when we are really busy, an old man answers but he'll get you to a nice lady pretty fast.

13. The best service in the industry

We said ten but we always work really hard to give you exactly what you want, when you want it and then give you a little more besides.

New 789 Chevy

Thought you might enjoy looking at this unusual Chevy. It's a 1957, 1958 & 1959 Chevy, all Rolled Into One! This car was built by N2A motors (No Two Alike). Unbelievable! The company is planning a production run of about 100 vehicles. It sits on a Corvette C6 chassis, front styled like a 57 Chevy, side like a 58, rear like a 59. Hence the designation "789."



It looks good here but it really looks great in full color online.



Golf Contest

From Monte Murphy – Murphy Saw Stevie Wonder and Tiger Woods are in a restaurant having dinner. Woods looks at Stevie Wonder and says, "How's the singing career going?" Stevie Wonder replies, "Not too bad. How's the golf?" Woods replies, "Not too bad, I've had some problems with my swing, but I think I've got that going right now."

Stevie says, "I always find that when my swing goes wrong, I need to stop playing for a while and not think about it. Then, the next time I play, it seems to be all right." Tiger says, "You play golf?" Wonder says, "Oh, yes, I've been playing for years."

Woods says, "But you're blind! How can you play golf if you can't see?" Wonder replies, "I get my caddy to stand in the middle of the fairway and call to me. I listen for the sound of his voice and play the ball toward him. Then, when I get to where the ball lands, the caddy moves to the green or farther down the fairway and again I play the ball toward his voice." But how do you putt?" asks Woods. "Well," says Stevie,

"I get my caddy to lean down in front of the hole and call to me with his head on the ground, and I just play the ball toward his voice." Woods asks, "What's your handicap?" Stevie says, "Well, I'm a scratch golfer."

Woods, incredulous, says to Stevie, "We've got to play a round sometime." Wonder replies, "Well, people don't take me seriously, so I only play for money, and never play for less than \$10,000 a hole." Woods thinks about it and says, "OK, I'm for that, when would you like to play?"

Stevie says, "Pick a night."

There Is A Moral Here!

From John Schultz –Superthin Saws

A C-130 was lumbering along when a cocky F-16 flashed by. The jet jockey decided to show off.

The fighter jock told the C-130 pilot, 'Watch this!' and promptly went into a barrel roll followed by a steep climb. He then finished with a sonic boom as he broke the sound barrier. The F-16 pilot then asked the C-130 pilot what he thought of that?

The C-130 pilot said, 'That was impressive, but watch this!' The C-130 droned along for about 5 minutes and then the C-130 pilot came back on and said, 'What did you think of that?'

Puzzled, the F-16 pilot asked, 'What the heck did you do?'

The C-130 pilot chuckled. 'I stood up, stretched my legs, walked to the back, went to the bathroom, then got a cup of coffee and a cinnamon bun.'

Two Old Guys

Gerry and Ken, two elderly friends, met in the park every day to feed the pigeons, watch the possums and discuss world problems. One day Ken didn't show up. Gerry didn't think much about it and figured maybe he had a cold or something. But after Ken hadn't shown up for a week or so, Gerry really got worried. However, since the only time they ever got together was at the

park, Gerry didn't know where Ken lived, so he was unable to find out what had happened to him.

A month passed, and Gerry figured he had seen the last of Ken, but one day, Gerry approached the park and -- lo and behold! -- there sat Ken! Gerry was very excited and happy to see him and told him so, then he said, 'For crying out loud Ken, what in the world happened to you?'

Ken replied, 'I have been in jail.' 'Jail?' cried Gerry. 'What in the world for?' 'Well,' Ken said, 'you know Jenny, that cute little blonde waitress at the coffee shop where I sometimes go?' 'Yeah,' said Gerry, 'I remember her. What about her?' 'Well, one day she filed rape charges against me; and, at 89 years of age, I was so proud that when I got into court, I pleaded 'guilty' and the judge gave me 30 days!'

'You only got 30 days for rape?' 'Nah... for perjury.'

Friendly Chili

This is a recipe for a friendly chili that everyone likes. Little kids like it and I have won contests with it.

3 # ground chuck (I use hamburger)
2 - 3 med yellow onions
1 bell pepper green - diced
2 cloves garlic
1/2 tsp oregano
1/4 tsp. Cumin seed
1 tbsp salt
1 tsp pepper
2 sm cans tomato paste
2 tsp chili powder
2 15-17 oz. cans pinto beans

Brown the beef with onions and garlic. Use a potato masher or similar to break it up into smaller chunks.

When it is brown dump it into a pot and add the rest. Use a good pot – when I use the stainless steel stock pot it burns on the bottom. When I use a good pot with a copper bottom it works well. It will burn if you don't stir it occasionally.

Add some water – maybe a pint to a quart and let it simmer maybe an hour

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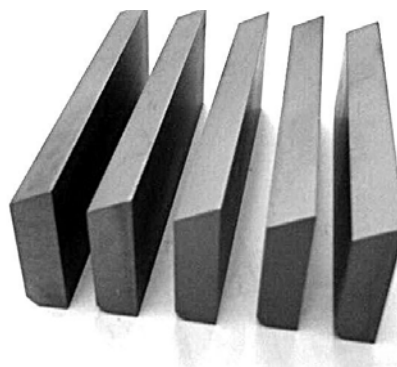
ADDRESS SERVICE REQUESTED

We Buy Carbide Sludge, Maybe

See page 5 (the one with the article about bikini fishing) for more details.

Best Carbide We Have Ever Seen

We have a new carbide supplier and it is the best carbide we have seen since we started in 1981. The saw tips are great and the strob bars and other special parts are truly excellent.



Besides excellent quality the prices are really good. You really should try these. Call Emily (800) 346-8274

\$6,000 or old carbide? Which do you want?



If you have Cascade Southern, Camco, SystiMatic, IKS Acton or carbide from any other supplier who is long out of business, why not admit you'll never use it and turn that scrap into cash? (P.1)

We Buy Scrap Carbide & the prices are really good. They are about at a record high. Prices change daily so Call Emily at 800 346-8274

Carbide Tip Blow Out

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WXC 7180	only \$0.15 ea.

All prices while quantities last



Hole Punch

Half Punch