Carbide Processors, Inc.

Northwest Research Institute, Inc.

Newsletter May, 2011

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How Can We Help You?

If you have something you would like to sell to the industry please let us know. We are doing a little promo in this issue for Dan Lines about his saw filing hammers. If you would like us to do something similar for you please contact us.

This is the Carbide Processors newsletter. The purpose is to get you to buy Carbide Processors' products; our carbide, braze alloy, pretinning or filter systems.

We don't think anyone would read it if it was all ads, so we have technical articles that we think might be helpful as well as some of the better jokes we've gotten.

In the past we've written about Mike West and the services he offers for band saws.

So, once again, if you have something that you think would be of interest to the industry please let us know.

Johan Holm & Other Friends

I mentioned Johan Holm in the last issue because he had given me some excellent information that helped me figure out carbide pricing.

Apparently a lot of people are curious as to what I'm doing with Johan Holm. To which I replied that that is pretty much Johan's business.

Over the last 30 years I have met a lot of fine people who provided me with excellent information and I think it's only right to acknowledge them when they do that.

A Price Increase, Unfortunately

We have reached the point where we are losing money on our pretinning on many of the sizes we do. We have a price increase going into effect on May 15, 2011. We will notify every customer individually with the new prices. The last time we adjusted our prices silver was at $25 a Troy ounce and today it is at $48 a Troy ounce and climbing.

We Spent $30,000 to Help You

We hate price increases and hate having to do it. In order to protect you from further price increases for a while we spent $30,000 on a silver hedge for the next four months. We are guaranteed to be able to buy silver at the current price for the next four months so we can tell you that we won't have to raise our prices for that long. Hopefully, within four months the federal government will have done something to restore confidence in the US dollar and to bring inflation down.

Induction Brazing, Carbide & Steel Response Rates

Got a call from an old friend who was having problems with a saw blade. The steel shoulders on the saw blade were ripping off as soon as the customer used them. In one case the steel fractured in shipment.

They had closed a plant and consolidated operations in a new plant. He was in charge of the new plant including equipment that had been shipped there from other plants.

The problem they were having was that the induction coils were set to heat the steel more than the carbide. This meant that they had a heat affected zone way too far back into the steel. (P.2)

Small Quantities Of Braze Alloy Available

We buy a lot of braze alloy in large quantities so we get a pretty good price. We are always happy to cut off a chunk for you and save you some money

Purified Flux

We sell White Flux, Black Flux and Purified Flux. The purified flux has an extra processing step. About half the people who try purified flux really like it. The other half says they can't see any difference. So it is probably worth trying.

Sale tips

WGC 7170 C1 $0.15
WFC 7135 C1 $0.15
WF 7160 Cermet II $0.15
Call for complete list

Saw Filer T-Shirts, Hats & More You can buy them at Cafepress or you can call Emily at 800-346-8274.

If you place an order, she might even get you one free. We even have onesies which are kind of a sleeping bag for newborn babies, so that you can start your child or grandchild off right in life. Those are definitely free because we just love kids.

Induction Brazing cont.
Ideally the heat affected zone on the steel should be no more than a quarter inch or so. This means that you should not see any discoloration of the steel, after brazing more than a quarter inch onto the steel as measured from the back of the saw tip. The way they were doing it the whole shoulder was discolored.

You really need to direct the heat into the carbide, from the carbide into the braze alloy and then into the steel.

Induction heating works by generating a magnetic field in the induction coil. The induction field just sits there and the material does all the work. As a comparison, when you use an oxy – acetylene torch you are putting about 5,000 or 6,000°F temperature into the material. The torch does all the work. The torch generates the heat. With induction heating the coil generates a magnetic field but does
not generate any heat.

The heat comes from the material inside the coil. When you put a piece of steel inside and induction coil the molecules in the steel are excited by the magnetic field and excited molecules are hot molecules. So the heat is actually generated by the way the steel, or other material, responds to the magnetic field.

Steel is just about all iron and most steels respond extremely well to a magnetic field. Tungsten carbide is maybe five or 10% cobalt. It is the cobalt binder in the tungsten carbide response to the magnetic field.

If you have two parts, one steel and one carbide, of equal mass the steel is going to respond much better to the magnetic field than the carbide will.

Figure the steel is about 90% iron and the carbide is 10% cobalt. So the steel will have somewhere around 9 times the material to respond to the magnetic field that the carbide will. This is one of the reasons that the steel heats up so much faster than the carbide.

This whole area of induction heating and magnetism is incredibly complex. There are a huge number of factors that can affect how a given material responds to a magnetic field. When I have explained above is an extremely simplified version but it is, nevertheless, extremely important to remember when using an induction brazing operation to braze carbide to steel.

We did a video on this and it's pretty good. It definitely shows the steel heating up a lot sooner and getting a lot hotter than the carbide.

http://www.youtube.com/watch?v=sw1IWUljdfU

How Are Your Hammers?

Saw Leveling Hammers
List Price

Size in pounds	Cross Face & Twist Face	Combination	Doghead
1 lb	$132	$140	$150
1.5 & 2	$147	$155	$166
2.5, 3 & 3.5	$168	$175	$186
4 & 4.5	$179	$187	$198
5 & 5.5	$198.	$215	$228
6 & 6.5	$220	$251	$266
7 & 7.5	$259	$290	$312
8 & 8.5	$274	$312	$325
9, 9.5 & 10	$301	$343	$359

Larger Sizes Available Upon Request

Face Regrinding (without removing handle) $45.00
New Handles $15.00

You deal with us at 800 346-8274 or deal with Dan directly.
Dan Lines
Roseburg Saw & Tool
PO box 165
Winchester, OR 97495
541 661-3904

PHONE REPAIR
Lawrence, Kansas,
December 12, 2008.
A Kansas farm wife called the local phone company to report that her telephone failed to ring when her friends called. And, on the few occasions when it did ring, her dog always moaned right before the phone rang.

The telephone repairman proceeded to the scene, curious to see this psychic dog or senile lady. He climbed a pole, hooked in his test set, and dialed the subscriber's house.

The phone didn't ring right away, but then the dog moaned and the telephone began to ring.

Climbing down from the pole, the telephone repairman found:
1. The dog was tied to the telephone system's ground wire with a steel chain and collar.
2. The wire connection to the ground rod was loose.
3. The dog was receiving 90 volts of signaling current when the number was called.
4. After a couple of jolts, the dog would start moaning and then urinate.
5. The wet ground would complete the circuit causing the phone to ring.

All of which demonstrates that some problems actually CAN be fixed by pissing and moaning. So keep right on trying!

Thank You for Your Time

Once You Read This, You Will Understand!

It had been some time since Jack had seen the old man. College, girls, career, and life itself got in the way. One day his mother called to tell him, "Mr. Belser died last night. The funeral is Wednesday." Memories flashed through his mind like an old newsreel as he sat quietly remembering his childhood days.

"Oh, sorry, Mom. Yes, I heard you... It's been so long since I thought of him. I'm sorry, but I honestly thought he died years ago," Jack said.

"Well, he didn't forget you. Every time I saw him he'd ask how you were doing. He'd reminisce about the many days you spent over 'his side of the fence' as he put it," Mom told him.

"I loved that old house he lived in," Jack said. "He's the one who taught me carpentry," he said. "I wouldn't be in this business if it weren't for him. He spent a lot of time teaching me things he thought were important...Mom, I'll be there for the funeral," Jack said.

The night before he had to return home, Jack and his Mom stopped by to see the old house next door one more time.

"What's wrong, Jack?" his Mom asked.

"The box is gone," he said

"There was a small gold box that he kept locked on top of his desk. I must have asked him a thousand times what was inside. All he'd ever tell me was 'the thing I value most,'" Jack said.

"Now I'll never know what was so valuable to him," Jack said. "I better get some sleep. I have an early flight home, Mom."

Then the box came to jack in the mail. Inside the package was the box and a note. "Upon my death, please forward this box and its contents to Jack Bennett. It's the thing I valued most in my life." inside he found a beautiful gold pocket watch. He found these words engraved in the watch case. "Jack, Thanks for your time! -Harold Belser." "The thing he valued most was...my time"

Jack held the watch for a few minutes, then called his office and cleared his appointments for the next two days. "I need some time to spend with my son," he said.

"Life is not measured by the number of breaths we take but by the moments that take our breath away,"

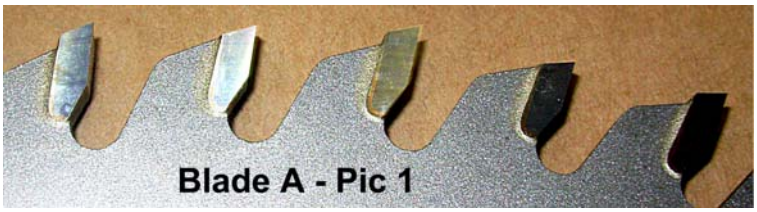
Think about this. You may not realize it, but it's 100% true.

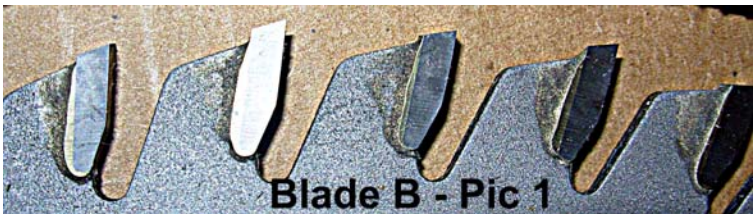
1. At least 15 people in this world love you in some way.
2 A smile from you can bring happiness to anyone, even if they don't like you.
3 Every night, SOMEONE thinks about you before they go to sleep.
4. You mean the world to someone..
5. If not for you, someone may not be living.
6. You are special and unique.
7. When you think you have no chance of getting what you want, you probably won't get it, but if you trust God to do what's best, and wait on His time, sooner or later, you will get it or something better.
8. When you make the biggest mistake ever, something good can still come from it.
9. When you think the world has turned its back on you, take a look: you most likely turned your back on the world.
10. Someone that you don't even know exists loves you.
11. Always remember the compliments you received. Forget about the rude remarks.
12. Always tell someone how you feel about them; you will feel much better when they
13. If you have a great friend, take the time to let them know that they are great.

Summer Is Coming

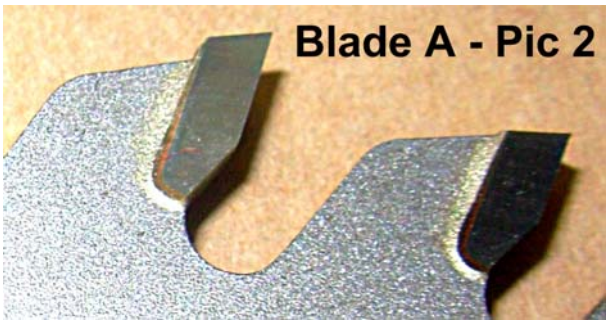
Make sure your lifejackets, fire extinguisher and other boat accessories are in good shape before you head out

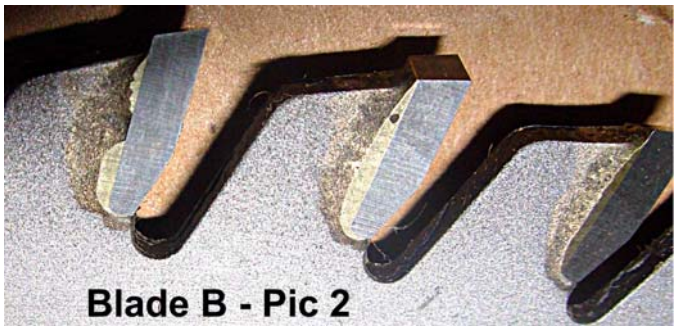
Brazing Quality Standards for Saw Blades



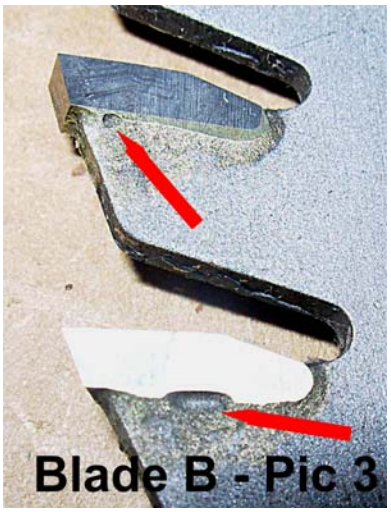


If you look at Blade A – Pic 1 and Blade B – Pic 1 you will see a definite difference in appearance. Blade A looks a lot cleaner and more consistent but I believe a great deal of that appearance is due to more sandblasting than Blade B.





If you look at Blade A – Pic 2 and Blade B – Pic 2 you will see some very significant differences. On blade A the two braze joints are practically identical and there is very little braze alloy behind the carbide. In the picture labeled Blade B – Pic 2 you can see where there is a big gap in the braze alloy behind the tip on the left-hand tip. You can also see a hole in the braze alloy at the top of the middle tip.



The usual cause for the problem in the left-hand tip is a lack of cleanliness. If there is any oil or grease on the saw plate than the heat of brazing will turn that into carbon. The braze alloy will not flow over carbon but will flow around it instead. The major reason to be concerned with this sort of thing on a saw blade is that it indicates a lack of cleanliness which may extend to the area between the saw tip and the saw body. This means there may be areas between the saw tip and the saw body where there are gaps and thus weaker joints.

The hole in the middle tip looks round in Blade B – Pic 2. Perfectly round holes usually turn out to be part of a sphere. This is generally caused by a gas bubble, usually zinc. Zinc is putting braze alloy partly as a temperature suppressant. It has a very low boiling point and fumes well below its boiling point much as water steams before it boils. This means it is easy to generate zinc bubbles in the braze alloy.

If you look at Blade B – Pic 3 you can see that this hole is not perfectly round but I think that's a condition of where it is. I think I am still going to go with a zinc bubble on this one.

By comparing Blade A – Pic 2 and Blade B – Pic 2 you can see it there is a huge difference in the amount of braze alloy behind the tips. A little bit of braze alloy behind the saw tip is good because it adds additional strength to the braze joint. However it should only be a little bit.

Braze alloy serves at least two functions here. The braze alloy holds the tip in place. The braze alloy also provide stress relief for the differences in expansion between the steel and the carbide in brazing. As part of the stress relief, or it can be considered as a separate function, a layer of braze alloy between the carbide and the tip greatly reduces impact breakage. The thinner the braze joint, down to 0.0005 inches, the stronger the braze joint is. The thicker the braze joint, the more impact protection you have. Generally you see figures of about 0.003” to about 0.005”. You may see a specification for a thicker braze joint, particularly if you're using larger parts. In any case there is definitely too much braze alloy behind the tips and Blade B – Pic 2 and the brazing on the two tips is definitely different.

Conclusion: Both saws may be perfectly good saws however Saw Blade A was obviously made with more care and more precision.

Free Chart

We did this chart based on some truly excellent work by David Farris and Equipment Limited.

We have a version that measures 11" x 17" and it is laminated.

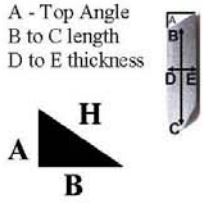
If you want one or more copies of the full-size chart just let us know and we will mail them to you free.

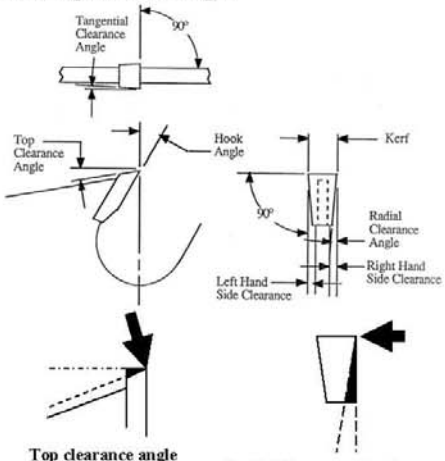
800-346-8274 or sales@carbideprocessors.com

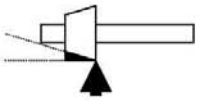
Top, Tangential and Radial angles

The arrows point to the angles

A - Top Angle
B to C length
D to E thickness







Tangential clearance angle
You measure down the side of the tip H and the difference between front and back is A

Top clearance angle
measure down the top of the tip H and the difference between front and back is A

Radial Clearance Angle
You measure down the side of the tip H and the difference between front and back is A

For Setting Up a Machine

Chart to Determine Tangential or Radial Angle in Degrees by Means of a Side Dial Indicator

Length or thickness of carbide tip:		Degrees wanted								
Decimals	Fractions	1/2°	1°	1-1/2°	2°	2-1/2°	3°	3-1/2°	4°	4-1/2°	5°
.0625"	1/16"	0.5	1.1	1.6	2.2	2.7	3.3	3.8	4.4	4.9	5.6
.07812"	5/64"	0.7	1.4	2	2.7	3.4	4.1	4.8	5.5	6.1	6.8
.09375"	3/32"	0.8	1.6	2.5	3.3	4.1	4.9	5.7	6.6	7.4	8.2
0.109375"	7/64"	1	1.9	2.9	3.8	4.8	5.7	6.7	7.6	8.6	9.6
.125"	1/8"	1.1	2.2	3.3	4.4	5.5	6.6	7.6	8.7	9.8	10.9
.15625"	5/32"	1.2	2.4	3.6	4.8	5.9	7.1	8.3	9.5	10.7	11.9
.1875"	3/16"	1.6	3.3	4.9	6.5	8.2	9.8	11.5	13.1	14.8	16.4
.21875"	7/32"	1.9	3.8	5.7	7.6	9.6	11.5	13.4	15.3	17.2	19.1
.250"	1/4"	2.2	4.4	6.5	8.7	10.9	13.1	15.3	17.5	19.7	21.9
.28125"	9/32"	2.5	4.9	7.4	9.8	12.3	14.7	17.2	19.7	22.1	24.6
.3125"	5/16"	2.7	5.5	8.2	10.9	13.6	16.4	19.1	21.9	24.6	27.3
.34375"	11/32"	3	6	9	12	15	18	21	24	27.1	30.1
.375"	3/8"	3.3	6.5	9.8	13.1	16.4	19.7	22.9	26.2	29.5	32.8
.4375"	7/16"	3.8	7.6	11.5	15.3	19.1	22.9	26.8	30.6	34.4	38.3
.500"	1/2"	4.4	8.7	13.1	17.5	21.8	26.2	30.6	35	39.4	43.7

Values in 1 / 1000 "

Example: A radial clearance of 2° is requested, the tip being 3/8' (.375") long. At the value 3/8 (.375) move accross until under the 2° column, the value of 13.1 Is shown, The side dial indicator therefore has to measure a drop of 0.0131" from the top to the bottom of the tip.

From **Equipment Ltd.**
441 19th St. SE (PO Box 3508) Hickory NC 28603 USA
Phone (704) 328-8104 1.800.533.2006 (outside NC) Fax 704.322.4928

David Farris Method
(David uses a scientific calculator. We did the chart on the right because not everyone has a scientific calculator.)

Take a side clearance measuring gage with a pointed anvil. Drag the point from high to low on both tangential and radial edges of the tooth making sure to run in a straight line. Write all the values down and do the following calculations that require a scientific calculator.

Example:
If you measure 0.006" radial variation from top to bottom and the tip is 0.375" tall then the radial angle will be ATAN (0.006"/0.375") or 0.916°

If you measure 0.003" side clearance from face to back of tooth and the tip is .125" thick then the tangential angle is ATAN(0.003"/0.125") or 1.375° (ATAN stands for Arc Tangent or Inverse Tangent from Trigonometry.)

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Length in inches refers to the distance measured such as tip length or tip thickness
Difference in inches is the meaasurement of the taper
Example: If a 1/4" long tip (.250) is 0.004" wider at the top than the bottom on one side then that angle is 0.9°

	Difference in inches																				
Length	0.0005	0.001	0.0015	0.002	0.0025	0.003	0.0035	0.004	0.0045	0.005	0.0055	0.006	0.0065	0.007	0.0075	0.008	0.0085	0.009	0.0095	0.01
inches																				
0.050	0.6°	1.1°	1.7°	2.3°	2.9°	3.4°	4°	4.6°	5.1°	5.7°	6.3°	6.8°	7.4°	8°	8.5°	9.1°	9.6°	10.2°	10.8°	11.3°
0.055	0.5°	1°	1.6°	2.1°	2.6°	3.1°	3.6°	4.2°	4.7°	5.2°	5.7°	6.2°	6.7°	7.3°	7.8°	8.3°	8.8°	9.3°	9.8°	10.3°
0.060	0.5°	1°	1.4°	1.9°	2.4°	2.9°	3.3°	3.8°	4.3°	4.8°	5.2°	5.7°	6.2°	6.7°	7.1°	7.6°	8.1°	8.5°	9°	9.5°
0.065	0.4°	0.9°	1.3°	1.8°	2.2°	2.6°	3.1°	3.5°	4°	4.4°	4.8°	5.3°	5.7°	6.1°	6.6°	7°	7.5°	7.9°	8.3°	8.7°
0.070	0.4°	0.8°	1.2°	1.6°	2°	2.5°	2.9°	3.3°	3.7°	4.1°	4.5°	4.9°	5.3°	5.7°	6.1°	6.5°	6.9°	7.3°	7.7°	8.1°
0.075	0.4°	0.8°	1.1°	1.5°	1.9°	2.3°	2.7°	3.1°	3.4°	3.8°	4.2°	4.6°	5°	5.3°	5.7°	6.1°	6.5°	6.8°	7.2°	7.6°
0.080	0.4°	0.7°	1.1°	1.4°	1.8°	2.1°	2.5°	2.9°	3.2°	3.6°	3.9°	4.3°	4.6°	5°	5.4°	5.7°	6.1°	6.4°	6.8°	7.1°
0.085	0.3°	0.7°	1°	1.3°	1.7°	2°	2.4°	2.7°	3°	3.4°	3.7°	4°	4.4°	4.7°	5°	5.4°	5.7°	6°	6.4°	6.7°
0.090	0.3°	0.6°	1°	1.3°	1.6°	1.9°	2.2°	2.5°	2.9°	3.2°	3.5°	3.8°	4.1°	4.4°	4.8°	5.1°	5.4°	5.7°	6°	6.3°
0.095	0.3°	0.6°	0.9°	1.2°	1.5°	1.8°	2.1°	2.4°	2.7°	3°	3.3°	3.6°	3.9°	4.2°	4.5°	4.8°	5.1°	5.4°	5.7°	6°
0.100	0.3°	0.6°	0.9°	1.1°	1.4°	1.7°	2°	2.3°	2.6°	2.9°	3.1°	3.4°	3.7°	4°	4.3°	4.6°	4.9°	5.1°	5.4°	5.7°
0.105	0.3°	0.5°	0.8°	1.1°	1.4°	1.6°	1.9°	2.2°	2.5°	2.7°	3°	3.3°	3.5°	3.8°	4.1°	4.4°	4.6°	4.9°	5.2°	5.4°
0.110	0.3°	0.5°	0.8°	1°	1.3°	1.6°	1.8°	2.1°	2.3°	2.6°	2.9°	3.1°	3.4°	3.6°	3.9°	4.2°	4.4°	4.7°	4.9°	5.2°
0.115	0.2°	0.5°	0.7°	1°	1.2°	1.5°	1.7°	2°	2.2°	2.5°	2.7°	3°	3.2°	3.5°	3.7°	4°	4.2°	4.5°	4.7°	5°
0.120	0.2°	0.5°	0.7°	1°	1.2°	1.4°	1.7°	1.9°	2.1°	2.4°	2.6°	2.9°	3.1°	3.3°	3.6°	3.8°	4.1°	4.3°	4.5°	4.8°
0.125	0.2°	0.5°	0.7°	0.9°	1.1°	1.4°	1.6°	1.8°	2.1°	2.3°	2.5°	2.7°	3°	3.2°	3.4°	3.7°	3.9°	4.1°	4.3°	4.6°
0.130	0.2°	0.4°	0.7°	0.9°	1.1°	1.3°	1.5°	1.8°	2°	2.2°	2.4°	2.6°	2.9°	3.1°	3.3°	3.5°	3.7°	4°	4.2°	4.4°
0.135	0.2°	0.4°	0.6°	0.8°	1.1°	1.3°	1.5°	1.7°	1.9°	2.1°	2.3°	2.5°	2.8°	3°	3.2°	3.4°	3.6°	3.8°	4°	4.2°
0.140	0.2°	0.4°	0.6°	0.8°	1°	1.2°	1.4°	1.6°	1.8°	2°	2.2°	2.5°	2.7°	2.9°	3.1°	3.3°	3.5°	3.7°	3.9°	4.1°
0.145	0.2°	0.4°	0.6°	0.8°	1°	1.2°	1.4°	1.6°	1.8°	2°	2.2°	2.4°	2.6°	2.8°	3°	3.2°	3.4°	3.6°	3.7°	3.9°
0.150	0.2°	0.4°	0.6°	0.8°	1°	1.1°	1.3°	1.5°	1.7°	1.9°	2.1°	2.3°	2.5°	2.7°	2.9°	3.1°	3.2°	3.4°	3.6°	3.8°
0.155	0.2°	0.4°	0.6°	0.7°	0.9°	1.1°	1.3°	1.5°	1.7°	1.8°	2°	2.2°	2.4°	2.6°	2.8°	3°	3.1°	3.3°	3.5°	3.7°
0.160	0.2°	0.4°	0.5°	0.7°	0.9°	1.1°	1.3°	1.4°	1.6°	1.8°	2°	2.1°	2.3°	2.5°	2.7°	2.9°	3°	3.2°	3.4°	3.6°
0.165	0.2°	0.3°	0.5°	0.7°	0.9°	1°	1.2°	1.4°	1.6°	1.7°	1.9°	2.1°	2.3°	2.4°	2.6°	2.8°	2.9°	3.1°	3.3°	3.5°
0.170	0.2°	0.3°	0.5°	0.7°	0.8°	1°	1.2°	1.3°	1.5°	1.7°	1.9°	2°	2.2°	2.4°	2.5°	2.7°	2.9°	3°	3.2°	3.4°
0.175	0.2°	0.3°	0.5°	0.7°	0.8°	1°	1.1°	1.3°	1.5°	1.6°	1.8°	2°	2.1°	2.3°	2.5°	2.6°	2.8°	2.9°	3.1°	3.3°
0.180	0.2°	0.3°	0.5°	0.6°	0.8°	1°	1.1°	1.3°	1.4°	1.6°	1.8°	1.9°	2.1°	2.2°	2.4°	2.5°	2.7°	2.9°	3°	3.2°
0.185	0.2°	0.3°	0.5°	0.6°	0.8°	0.9°	1.1°	1.2°	1.4°	1.5°	1.7°	1.9°	2°	2.2°	2.3°	2.5°	2.6°	2.8°	2.9°	3.1°
0.190	0.2°	0.3°	0.5°	0.6°	0.8°	0.9°	1.1°	1.2°	1.4°	1.5°	1.7°	1.8°	2°	2.1°	2.3°	2.4°	2.6°	2.7°	2.9°	3°
0.195	0.1°	0.3°	0.4°	0.6°	0.7°	0.9°	1°	1.2°	1.3°	1.5°	1.6°	1.8°	1.9°	2.1°	2.2°	2.3°	2.5°	2.6°	2.8°	2.9°
0.200	0.1°	0.3°	0.4°	0.6°	0.7°	0.9°	1°	1.1°	1.3°	1.4°	1.6°	1.7°	1.9°	2°	2.1°	2.3°	2.4°	2.6°	2.7°	2.9°
0.205	0.1°	0.3°	0.4°	0.6°	0.7°	0.8°	1°	1.1°	1.3°	1.4°	1.5°	1.7°	1.8°	2°	2.1°	2.2°	2.4°	2.5°	2.7°	2.8°
0.210	0.1°	0.3°	0.4°	0.5°	0.7°	0.8°	1°	1.1°	1.2°	1.4°	1.5°	1.6°	1.8°	1.9°	2°	2.2°	2.3°	2.5°	2.6°	2.7°
0.215	0.1°	0.3°	0.4°	0.5°	0.7°	0.8°	0.9°	1.1°	1.2°	1.3°	1.5°	1.6°	1.7°	1.9°	2°	2.1°	2.3°	2.4°	2.5°	2.7°
0.220	0.1°	0.3°	0.4°	0.5°	0.7°	0.8°	0.9°	1°	1.2°	1.3°	1.4°	1.6°	1.7°	1.8°	2°	2.1°	2.2°	2.3°	2.5°	2.6°
0.225	0.1°	0.3°	0.4°	0.5°	0.6°	0.8°	0.9°	1°	1.1°	1.3°	1.4°	1.5°	1.7°	1.8°	1.9°	2°	2.2°	2.3°	2.4°	2.5°
0.230	0.1°	0.2°	0.4°	0.5°	0.6°	0.7°	0.9°	1°	1.1°	1.2°	1.4°	1.5°	1.6°	1.7°	1.9°	2°	2.1°	2.2°	2.4°	2.5°
0.235	0.1°	0.2°	0.4°	0.5°	0.6°	0.7°	0.9°	1°	1.1°	1.2°	1.3°	1.5°	1.6°	1.7°	1.8°	1.9°	2.1°	2.2°	2.3°	2.4°
0.240	0.1°	0.2°	0.4°	0.5°	0.6°	0.7°	0.8°	1°	1.1°	1.2°	1.3°	1.4°	1.6°	1.7°	1.8°	1.9°	2°	2.1°	2.3°	2.4°
0.245	0.1°	0.2°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.8°	1.9°	2°	2.1°	2.2°	2.3°
0.250	0.1°	0.2°	0.3°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2.1°	2.2°	2.3°
0.255	0.1°	0.2°	0.3°	0.4°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.5°	1.6°	1.7°	1.8°	1.9°	2°	2.1°	2.2°
0.260	0.1°	0.2°	0.3°	0.4°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.7°	1.8°	1.9°	2°	2.1°	2.2°
0.265	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2.1°	2.2°
0.270	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2°	2.1°
0.275	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2°	2.1°
0.280	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2°
0.285	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2°
0.290	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°	2°
0.295	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.7°	1.8°	1.9°
0.300	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°
0.305	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.9°
0.310	0.1°	0.2°	0.3°	0.4°	0.5°	0.6°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°	1.8°
0.315	0.1°	0.2°	0.3°	0.4°	0.5°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.5°	1.6°	1.7°	1.8°
0.320	0.1°	0.2°	0.3°	0.4°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°
0.325	0.1°	0.2°	0.3°	0.4°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1.1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°	1.8°
0.330	0.1°	0.2°	0.3°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	1°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.6°	1.7°
0.335	0.1°	0.2°	0.3°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.9°	0.9°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.5°	1.6°	1.7°
0.340	0.1°	0.2°	0.3°	0.3°	0.4°	0.5°	0.6°	0.7°	0.8°	0.8°	0.9°	1°	1.1°	1.2°	1.3°	1.3°	1.4°	1.5°	1.6°	1.7°
0.345	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.7°	0.8°	0.9°	1°	1.1°	1.2°	1.2°	1.3°	1.4°	1.5°	1.6°	1.7°
0.350	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.6°	0.7°	0.7°	0.8°	0.9°	1°	1.1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.6°	1.6°
0.355	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.6°	0.6°	0.7°	0.8°	0.9°	1°	1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.5°	1.6°
0.360	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.6°	0.6°	0.7°	0.8°	0.9°	1°	1°	1.1°	1.2°	1.3°	1.4°	1.4°	1.5°	1.6°
0.365	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.5°	0.6°	0.7°	0.8°	0.9°	0.9°	1°	1.1°	1.2°	1.3°	1.3°	1.4°	1.5°	1.6°
0.370	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.5°	0.6°	0.7°	0.8°	0.9°	0.9°	1°	1.1°	1.2°	1.2°	1.3°	1.4°	1.5°	1.5°
0.375	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.5°	0.6°	0.7°	0.8°	0.8°	0.9°	1°	1.1°	1.1°	1.2°	1.3°	1.4°	1.5°	1.5°
0.380	0.1°	0.2°	0.2°	0.3°	0.4°	0.5°	0.5°	0.6°	0.7°	0.8°	0.8°	0.9°	1°	1.1°	1.1°	1.2°	1.3°	1.4°	1.4°	1.5°
0.385	0.1°	0.1°	0.2°	0.3°	0.4°	0.4°	0.5°	0.6°	0.7°	0.7°	0.8°	0.9°	1°	1°	1.1°	1.2°	1.3°	1.3°	1.4°	1.5°

The Rules Of Rural Ohio Are As Follows:

(The following is from Steve Hartshorn of Peerless Saw. He bought 2 acres out in the country so now he is an expert on rural living. I mostly ran this because it's funny and because it seems to apply pretty well to rural living throughout the US and Canada.)

1. Pull your droopy pants up. You look like an idiot.

2. Turn your cap right, your head isn't crooked.

3. Let's get this straight; it's called a 'dirt road.' I drive a pickup truck because I want to. No matter how slow you drive, you're going to get dust on your Lexus. Drive it or get out of the way.

4. They are cattle. They're live steaks. That's why they smell funny to you. But they smell like money to Ohio farmers. Get over it. Don't like it? I-70 goes east and west, I-75 goes north and south. Pick one.

5. So you have a $60,000 car. We're impressed. Grain farmers have $350,000 combines that they drive only 3 weeks a year.

6. So every person in rural Ohio waves. It's called being friendly. Try to understand the concept.

7. If that cell phone rings while an 8-point buck and 3 does are coming in, we WILL shoot it out of your hand. You better hope you don't have it up to your ear at the time.

8. Yeah, we eat taters, gravy, beans and cornbread. You really want sushi and caviar? It's available at Jim's bait shop...

9. The 'Opener' refers to the first day of deer season. It is a religious holiday held on the 15th of November.

10. We open doors for women. That applies to all women, regardless of age.

11. No, there's no 'vegetarian special' on the menu. Order steak. Or you can order the Chef's Salad and pick off the 2 pounds of ham & turkey.

12. When we fill out a table, there are three main dishes: meats, vegetables, and breads. We use three seasonings - salt, pepper, and ketchup.

13. You bring 'coke' into my house, it better be brown, wet and served over ice.

14. You bring 'Mary Jane' into my house, she better be homegrown, cute, knows how to shoot, drive a truck, and she better have long hair..

15. College and high school football / basketball are as important here as the Colts and the Pacers and more fun to watch.

16. Yeah, we have golf courses. But don't hit the water hazards -- it spooks the fish.

17. Colleges? We have them all. We have State Universities , Community Colleges, and Voc-techs. Folks come outta there with an education plus a love for God and country, and they still wave at everybody when they come for the holidays.

18.Turn down that blasted car stereo! That thumpity-thump crap ain't music, anyway. We don't want to hear it anymore than we want to see your boxers.

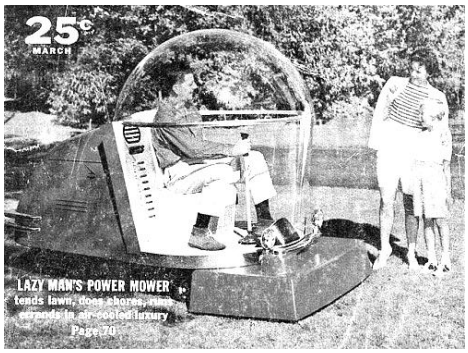
19. Four inches of snow isn't a blizzard - it's a flurry. Drive in it like you got some sense, and DON'T take all our bread, milk, and bleach from the grocery stores. This ain't Alaska . Worst case you may have to live a whole day with out croissants. The pickups with snowplows will have you out the next day.

20. By the way... if you want to talk to God in Ohio, it's a local call.

Summer is Coming

Go to a Ballgame

Build a Toy for the Kids



Mow the Lawn

Catch up on Your Napping

Spend Time with Your Loved Ones

Super "C" Carbide Grade

Tougher than C1 - Better wear than C3

What Makes Super C Tips Truly Superior

1. Superior Abrasion Resistance - Abrasion or straight wear is countered by smaller, better grain size.

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

4. Superior Fatigue Resistance

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

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

Typical C2 values

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

Typical C Values

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

Sawmill Grade Tips

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

Carbide Processors, Inc.
800 346-8274

Cermet II® 8 days instead of 5 in MDF

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

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

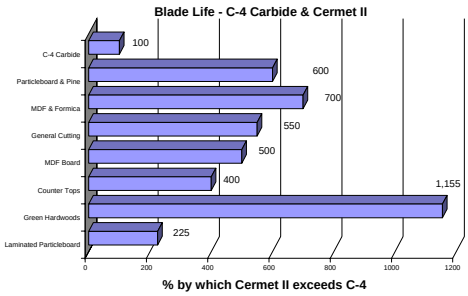
4. 406 mm (16") 80 teeth cutting MDF Board
* Cermet II - 10 days / old grade - 2 days (5 times) **500% as much run life**

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 resharpen 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 resharpened? We normally have our carbide tipped blades sharpened every week.

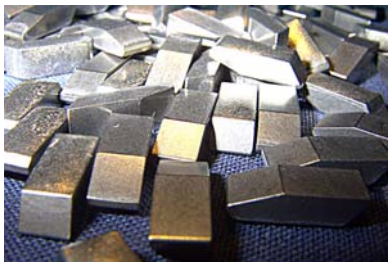
The new Cement II blade normally last twice as long before it gets damaged. The best so far is four weeks and one and a half million cuts before we changed it out which is four times longer.

Hope this helps and keep up the good work on those tips.
Nathan Hull, Grinderman
Marvin Wood Products

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

New Supplier: Great Carbide & Great Prices

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. The strob bars and other special parts are truly excellent.



We did a lot of work with the supplier a couple years ago to teach them what a good saw tip is in the saw tips they have been producing the last two years are excellent.

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

Inside

Brazing Quality Standards
Free Angle Chart

$6,000 or old carbide?

Which do you want?

We buy obsolete inventory of good carbide. We buy carbide scrap. We also maybe buy carbide sludge. We just paid $3 per pound for some grinding sludge. **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

Online Now

http://blog.carbideprocessors.com/
Great shots of tools with an inexpensive USB digital microscope