Carbide Processors, Inc.

Northwest Research Institute, Inc.
Newsletter March, 2007
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Why Canadian Wood Cutting Technology Is Ahead Of the US

We use Forintek in Vancouver, BC for development of our advanced grades. Over the years I have been working with them I have come to a sincere admiration for what they do and, as a US citizen, a bit of envy that there is nothing like that in the US.

Forintek is a consortium of the University of British Columbia, several Canadian provinces and about 300 private companies such as:. Abitibi-Consolidated Inc., Armstrong World Industries, Boise Cascade, COE Newnes/McGehee, Gorman Bros. Lumber Ltd., Johns Manville, Louisiana-Pacific Corporation, Pope & Talbot Ltd, Sawquip International Inc., Tembec Industries Inc., Tolko Industries Ltd., USNR and Weyerhaeuser Company Ltd.

The US has some very good wood technology programs but they seem to be very badly under- funded. While Forintek is carefully funded they seem to have enough funding and the drive to produce immediately useful results.

Immediately Useful Results

Forintek has been a huge help, in laboratory tests and in actual mill tests, proving the value of our advanced saw tip grades.

When I work with Darrell Young at Forintek I get insight into what might work, why something didn't work and what would be a good thing to develop from a sales standpoint.

Automatic Fire Suppression For straight oil grinders.

Based on NASCAR technology and only about $1,500 for a total unit See P. 3

Filtering Straight Oil Coolants

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

Free, Absolutely Free Coolant Safety Test

Filers like filter systems because they make for a cleaner shop and save a huge amount of work. You change two filters every month instead of emptying the sump. There is also a safety issue. Two of the big dangers are bacteria and cobalt. If you are concerned about safety we will send you a free test kit. 800 346-8274

Cermet II®

You like them, you really like them.

The Timber Processing magazine article has gotten the wood out on Cermet II® saw tips and the reorders are starting to come in. It sort of reminds us of Sally Field who said "Yu like me. You really like me"as she received her second academy award. Also we were watching Smokey and the Bandit.

Forintek Test results Eliminate a saw change.

We have to grades of Cermet II® running in a test at a Tolko sawmill in BC. Both grades are running twice as long as the standard which is a Camco / Kennametal K3030 that has been very popular in BC and the US.

CERMET II® Saw blades now available

Really great prices on STB blanks

Small Orders?

- You Bet
tips, plate, solder, flux

Forintek Cermet II® First Test Results

On Valentine's Day Darrell Wong called from Forintek to tell us that the saw mill tests on two of our Cermet II grade were going very well. These were mill tests in Northern British Columbia on beetle killed (hard) Lodgepole pine.

"The Cermet II® A & B grades that you sent me were cutting mountain pine beetle (MPB) killed lodge pole pine. Lodgepole pine is a softwood indigenous to the pacific north west, Alberta and other areas. MPB-killed wood tends to be dried at half or less of the moisture content of green wood".

As of February 14th both our grades of Cermet II had run twice as long as standard grades and were still doing very well. These grades have run 5 to 10 times as long as standard carbide for our customers. However this is the first fully scientific test done by a world renowned research institute.

Cermet II

We're not going to tell how we did it but you can see for yourself that it works.

Filtering Straight Oil Coolants

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

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

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

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

Here are the two units side by side.

A filter is a series of holes that separates particles from liquid.
Oil is thicker than water so it is harder to filter out small particles.
In addition oil transfers the pressure from the pump directly to the filter and is much more likely to collapse a filter element.

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

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

Automatic Fire Suppression

About $1,500 total unit

Developed for NASCAR
Excellent for straight oil grinders

A fire extinguisher for machine tools using oil-based metalworking fluids is available from Safecraft Inc. A typical installation provides 24 / 7 protection even during untended operation, and the extinguisher begins working automatically less than 1 second after a fire is detected. The detection temperature can be set from 135° to 500° F. The extinguisher can also be manually operated. Once a fire is out, a high concentration of the nontoxic extinguishing agent remains to prevent reflash.
http://www.safecraft.com/
dwarren@dwarren.algxmail.com

Klaus Jensen
Grasche Inc. USA

(800)472-7243

I Got a call from Klaus the other day. He just called to say hello which was nice of him. I like Klaus and have a great deal of respect for him as does most of the industry.

We're tied in with Peerless pretty heavily but we have to tell the truth that it is nice to see a situation like this where you have a good man with a good company.

Mike Lipke
Sawmill consultant

I read your article in Timber Processing recently. I do consulting in the wood products industry and have a particular interest in sawing practices and recovery improvements. My question is; "Are there many mills using the new Tungsten Carbide tips in the NW?" Can they be applied to saws with standard tipping machines similar to Stellite?

Thanks,
Mike Lipke - Turbo Wood Products
mikelipke@aol.com
(503) 780-2855

Dog Pack Kills Alligator in Florida

(More great (or terrible) humor from Mike West)

At times nature can be cruel, but there is also a raw beauty, and even a certain justice manifested within that cruelty.

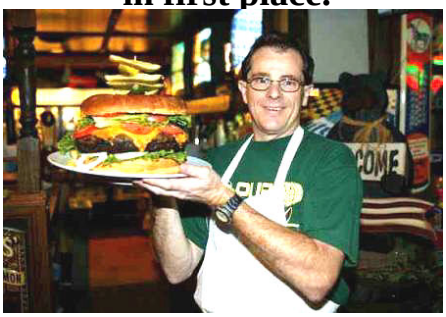
The alligator, one of the oldest and ultimate predators, normally considered the apex predator in its natural eco-system, can still fall victim to implemented teamwork strategy, made possible by the tight knit social structure and survival of the fittest pack mentality bred into canines over the last thousands of years by natural selection.

See the remarkable photograph attached, courtesy of Nature Magazine.

Note that the Alpha dog has a muzzle hold on the gator preventing it from breathing, while the remainder of the pack prevents the beast from rolling.

Beware! This is not for the squeamish!

Todd Jackson - Plum Creek, Columbia Falls says he is so far behind he thought he was in first place.



If you're coming by try to make it around lunch time. We know a place to get a great burger and we'll buy.

CERMET II© A & B

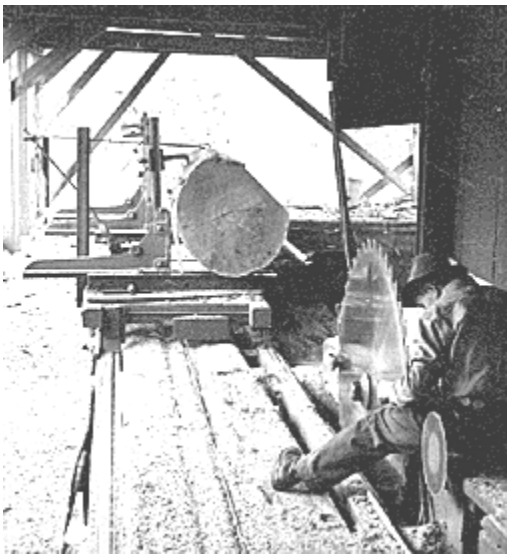
We passed a test (after only 11 years.)

Eleven years ago we started reading about advanced grades for steel cutting. We thought it would be a good idea to introduce these to wood cutting. First we had to figure out how to use them which resulted in a couple patents. Then we had to figure out which grades to use where. We had some great successes but the tips were hard to get, very hard to grind and very expensive.

In order to be successful we had to have advanced grades of carbide that could be used exactly like the grades being used now but that would give much better results.

Today, Valentine's Day, we just received preliminary results form Forintek, the premier wood research lab in the Americas, that two of our grades are at least twice as good as the standard grades.

We have been selling these successfully for over a year now but nothing gives us the credibility like these results.



Darrell Wong
Forintek

Darrell is working on projects for us and others to identify which grade of cutting material really works best on which materials and which applications.

Here is his official biography
Darrell Wong completed his Bachelors degree in Mechanical Engineering at the University of British Columbia (UBC) in 1991 and a Masters degree in 1996. He has over 10 years of experience in both primary and value-added wood processing. He has worked as a consultant for Thin Kerf Technologies, as Associate Director at the UBC Centre for Advanced Wood Processing and most recently, as a scientist at Forintek Canada Corp. Darrell has published papers on saw blade tracking, wood cutting, quality control and machine performance. In addition to his scientific research, Darrell also works regularly with industry conducting controlled tests of commercially available tool materials and analyzing manufacturing plants to improve efficiency; and he has recently begun teaching sawmilling courses at UBC. His previous UBC courses include wood machining and tooling, and industrial engineering.

Darrell is also a famous roller coaster rider. The night before his presentation in Las Vegas he was under a great deal of pressure. He had a lot of last minute data to incorporate in his speech. He got it done in time to ride the roller coaster on top of the 1100 foot Stratosphere tower at midnight.

Forintek

Forintek ensures companies are technologically competitive

General Information
Forintek Canada Corp. was established in 1979 as Canada's national wood products research institute. The institute's mission is to develop scientific and technical knowledge, applications and solutions that will enhance the ongoing competitiveness of its members and the Canadian wood products sector.

The staff of 200 is divided among the Vancouver head office/western research laboratory, the eastern laboratory in Quebec City and the fire research group at Carleton University in Ottawa. As part of the secondary manufacturing technology transfer programs funded by various agencies, there are also 40 Industry Advisors based in Alberta, BC, Manitoba, Saskatchewan, Ontario, Quebec, Nova Scotia and New Brunswick. Forintek's annual budget exceeds $27 million with $13.6 million invested in the partnership's national research program and a further $13.7 million being provided by member/non-member contracts. The 2005/06 revenue sources were 47.4% industry, 25% federal government and 27.6% provincial governments.

Strategic Directions
• Add value at the resource
• Enhance attributes of products and systems
• Improve manufacturing processes to maintain cost competitiveness
• Optimize use of wood to meet end-user expectations

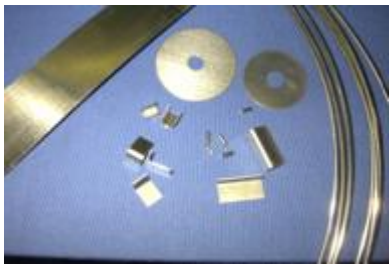
Research
Ensuring Canadian wood product manufacturers are technologically competitive and have access to markets around the world is vitally important in all parts of the country. Forintek has become a leader in research and development through its market-oriented strategy, and by identifying and responding to the short- and long-term needs of its industry and government members. Forintek's researchers work on developing and implementing the most advanced techniques to reduce production costs, improve productivity and to increase the quality and variety of wood products. These techniques and other research results are then transferred to industry in a number of different ways.

Research is carried out through the following technology leadership areas: resource assessment, lumber and composites manufacturing, drying and protection, building systems, and value-added products and manufacturing. The program scope ranges from assessing the impact of wood and tree quality on product value, through improving manufacturing processes and product improvement, to providing the necessary technical information to national and international codes and standards bodies that ensures Canadian wood product acceptance in markets throughout the world. Forintek research has always been conducted within the mandate of addressing the industry's primary concern - meeting customers' product demands.

Membership
Currently Forintek has a membership base that includes more than 315 manufacturing companies and industry suppliers, equal to 69% of Canada's primary wood products manufacturing sector production. These member companies produce lumber, plywood, oriented strandboard, particleboard, medium density fibreboard and value-added products. The Canadian Forest Service, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland and Labrador, and the Yukon Territory are also members of the Forintek partnership.

Among other things, member benefits include: privileged access to the results of the national research program, reduced rates for contracts, the use of software and other new technology developed by Forintek, and representation on planning committees to assist with setting program direction. www.forintek.ca

Choosing the Right Braze Alloy



Use an alloy that melts at a temperature at least 100 F below the point at which the two materials being brazed are effected. This definitely includes phase changes in steels leading to embrittlement.

The alloy must be able to wet the two materials or the material(s) must be treated to make it (them) wettable.

Mechanical Strength Of Braze Joints
If brazing is done reasonably well with joint thickness in the range of 0.003" to 0.005" then it is fairly safe to assume the following strengths.

Tensile strength: 30,000 psi.
Shearing strength: 15,000 psi.

With proper material preparation and good techniques strengths somewhere between double and triple these figures are possible.

Three Most Popular Choices For Brazing Carbide Saw Tips

56% Silver with Tin – Cadmium free
This is popular because it is low temp and seems to be easiest to use. It works very well in gentle applications such as cutting widow blind slats in clear wood It can also work well in applications with really big tips such as slasher tips Of the three alloys it has the weakest bond and least impact protection

50% Silver- cadmium free – (often referred to simply as 'Cad Free') middle for temperature range and performance. New standard since health regulations on cadmium got tightened so much

49% Silver with Manganese - Cadmium free It is a bit harder to use than the others because it requires more heat and has a sluggish flow. Pretinned tips have a rough surface The performance is exceptional good especially in impact situations with smaller tips. In Weyerhaeuser tests it showed about 40% better on tip loss and break age than the standard 50% Cadmium free and about 100% better than 56% with Tin on tip loss and breakage

5 AWS braze alloys for carbide
BAg Classifications ('B' for Brazing and 'Ag' from the chemical symbol for Silver)

Carbide tools old standard – Has Cadmium – 2nd best for strength
BAg-3 (50% Silver with cadmium) brazing filler metal is a modification of BAg-1 a, i.e., nickel is added. Because its nickel content improves wettability on tungsten carbide tool tips, the largest use is to braze carbide tool assemblies. Melting range and low fluidity make BAg-3 suitable for forming larger fillets or filling wide joint clearances. This filler metal contains cadmium. The special precautions of the warning label in 17.4 should be followed.

About like above buy flows less freely
BAg-4 (40% silver Cadmium free) brazing filler metal, like BAg-3, is used extensively for carbide tip brazing, but flows less freely than BAg-3. This filler metal does not contain cadmium.

Best for carbide tools
BAg-22 (49% silver with manganese – cadmium free) is a low-temperature, cadmium-free filler metal with improved brazing characteristics over BAg-3, particularly in brazing tungsten carbide tools.

Cad free but weaker joints than other alloys above BAg-24 (50% silver Cadmium free) brazing filter metal is low-melting, free-flowing, cadmium-free, and suitable for use in joining "300" series stainless steels (particularly food-handling equipment and hospital utensils), and small tungsten carbide inserts in cutting tools.

Cadmium free, Low Silver, lower cost – at best, moderate strength BAg-26 brazing filler metal is a low-silver, cadmium-free filler metal suitable for carbide and stainless steel brazing. The filler metal is characterized by its low brazing temperature, good wetting and flow, and moderate-strength joints when used with these base metals.

Alloys Ranked For Strength

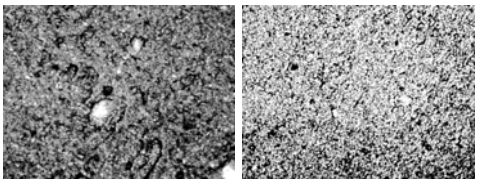
Braze alloys ranked by strength

AWS A5.8	Silver	Solidus (melt) °F	Liquidus (full flow) °F
Bag-22	49	1260	1290
BAg-3	50	1170	1270
BAg-4	40	1240	1435
BAg-24	50	1220	1305
BAg-26	25	1305	1475

Bag-22 (Our high Impact) is the strongest alloy and melts at 1290 (liquidus), much lower than most of the others and the lowest melting Cadmium free.

Purified Flux

30% To 100% Better Braze Joints



Left - Standard flux at 50x with large grains of foreign material. Right - Purified flux at 50x is smooth, even and consistent

You can see and feel the difference immediately.

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

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

The critical part of saw and tool brazing is what goes on inside the braze joint.

Ordinary flux is inexpensively made and has up to 10% odd size particles and non-active minerals in it. These odd size particles and non-active minerals get lodged in the braze area and can seriously effect the strength of the braze joint.

Safety Tip

When hauling wood keep checking the rearview mirror to make sure the guy on tops hasn't fallen off.

A Joke From Mike West

A man feared his wife was not hearing as well as she used to; she might need a hearing aid. Not quite sure how to approach her, he called the family Dr. to discuss the problem.

The Dr. told him there was a simple informal test the husband could do, to give the Dr. a better idea about her hearing loss. The Dr. said "Stand about 40 feet away from her and in a normal voice see if she hears you. If not, go to 30, then 20 feet and so on until you get a response."

That evening, his wife is in the kitchen cooking dinner, and he was in the den. He decides he's about 40 feet away. Let's see what happens.

In a normal tone he asks "Honey, what's for dinner?" No response.

He moves to within 30 feet. "Honey, what's for dinner?" Still no response.

Next he moves into the dining room where he's about 20 feet from his wife "Honey, what's for dinner?" Again, no response.

He walks to the kitchen door, about 10 feet, and asks "Honey, what's for dinner?" No response.

He walks into the kitchen and stands right behind her, "Honey, what's for dinner?"

"Earl, for the 5th time, CHICKEN!"

Really bad (great) puns

1. Two antennas met on a roof, fell in love and got married. The ceremony wasn't much, but the reception was excellent.

2. A jumper cable walks into a bar. The bartender says, "I'll serve you, but don't start anything."

3. Two peanuts walk into a bar, and one was a salted.

4. A dyslexic man walks into a bra.

5. A man walks into a bar with a slab of asphalt under his arm and says: "A beer please, and one for the road."

6. Two cannibals are eating a clown. One says to the other: "Does this taste funny to you?"

7. "Doc, I can't stop singing 'The Green, Green Grass of Home.'" "That sounds like Tom Jones Syndrome." "Is it common?" Well, "It's Not Unusual."

8. Two cows are standing next to each other in a field. Daisy says to Dolly, "I was artificially inseminated this morning." "I don't believe you," says Dolly. "It's true, no bull!" exclaims Daisy.

9. An invisible man marries an invisible woman. The kids were nothing to look at either.

10. Deja Moo: The feeling that you've heard this bull before.

11. I went to buy some camouflage trousers the other day but I couldn't find any.

12. A man woke up in a hospital after a serious accident. He shouted, "Doctor, doctor, I can't feel my legs!" The doctor replied, "I know you can't - I've cut off your arms!"

13. I went to a seafood disco last week...and pulled a mussel.

14. What do you call a fish with no eyes? A fsh.

15. Two fish swim into a concrete wall. The one turns to the other and says "Dam!".

16. Two Eskimos sitting in a kayak were chilly, so they lit a fire in the craft. Unsurprisingly it sank, proving once again that you can't have your kayak and heat it too.

17. A group of chess enthusiasts checked into a hotel and were standing in the lobby discussing their recent tournament victories. After about an hour, the manager came out of the office and asked them to disperse. "But why," they asked, as they moved off. "Because", he said, "I can't stand chess-nuts boasting in an open foyer."

18. A woman has twins and gives them up for adoption. One of them goes to a family in Egypt and is named "Ahmal." The other goes to a family in Spain; they name him "Juan." Years later, Juan sends a picture of himself to his birth mother. Upon receiving the picture, she tells her husband that she wishes she also had a picture of Ahmal. Her husband responds, "They're twins! If you've seen Juan, you've seen Ahmal."

19. Mahatma Gandhi, as you know, walked barefoot most of the time, which produced an impressive set of calluses on his feet. He also ate very little, which made him rather frail and with his odd diet, he suffered from bad breath. This made him ..(Oh, man, this is so bad, it's good)..... A super calloused fragile mystic hexed by halitosis.

This is Steve Bergerson of Western Saw giving me a free calendar because I ate Lutefisk (Cod soaked in lye) with him. It is a nice calendar but you should call and get one free.
Steve Bergerson 503 781-5013

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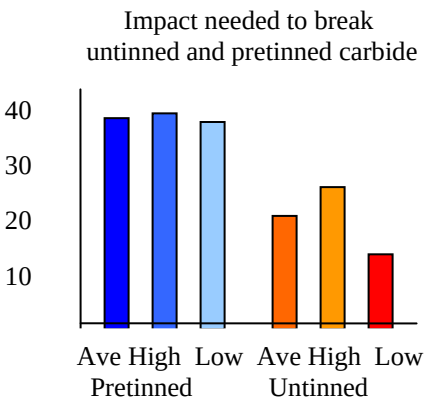
800 346-8274 sales@carbideprcessors.com

Why Carbide Processors Pretinned Tips Are the Best in the World

Carbide Processors tips stay on the saw better and are much harder to break than any other pretinned tips.

23 years and an awful lot of money in research have given us tools and techniques to do things no one else can. We routinely do things people say are impossible or that don't make any difference. However, when it is all said and done, **our pretinned carbide works better**.

Our Pretinning Stops Breakage



	Untinned	Pretinned
Average	17.63	33.13
High	22.11	34.17
Low	11.78	32.44

Our Pretinning Stops Tip Loss

Very Good

Bad & disguised

Bad

If the silver solder doesn't stick to the saw tip then the saw tip won't stay on the saw. Our special tools and techniques let us give you much better performance. Above left is our part. The braze alloy is smooth and covers very well. This part will stay on. Above right is a part our competition did. The braze alloy (light color) is blotchy and and only covers a small part of the carbide. This part kept coming off.

Consistent Quality for Consistently Excellent Results

Carbide Processors Tips Are The Easiest To Grind

You grind faster with less wheel usage and less dressing. There is no braze alloy on the edges to clog diamond wheels. We also clean the tips so well that you can actually see a reflection in them.

Alloy made to parts per million. (15 x better than AWS requires) We cut it within .001". Proprietary treatments to increase; wettability, cleanliness, etching, priming, bond strength, impact protection. The surface has a slightly rough, micropore finish for greater mechanical and chemical bonding. You can get a tensile as high as 100,000 psi. compared to 10,000 to 20,000 for others.

We pretin what we sell. We pretin what others sell. We can sometimes even fix what others sell.

Not just pretty faces but also great customer service

Here is Emily (right) and another of my daughters, Jacque. They are very, pleasant, hard working, bright ladies. Their job is to help you find carbide, silver solder, filter systems and everything else we sell. If we can't supply you but we know who can we will refer you. No matter what you want we will work hard to find it. 800 346-8274

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

Super C Tip

Sales continue to climb.

Tougher than C1 and much better wear than C4 – pallets, sawmills, tough cutting

Samples on Approval

If you are trapped in a sole source contract we can supply you samples of Hi Impact pretinning and our advanced grades of carbide on an approval basis.

Don't just it there like a rabbit with a pancake on your head. Call and buy something 800 346-8274

Do you want $3,008.50?

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

Now offering our books for sale online

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

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