

econoTalk


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Under the Microscope

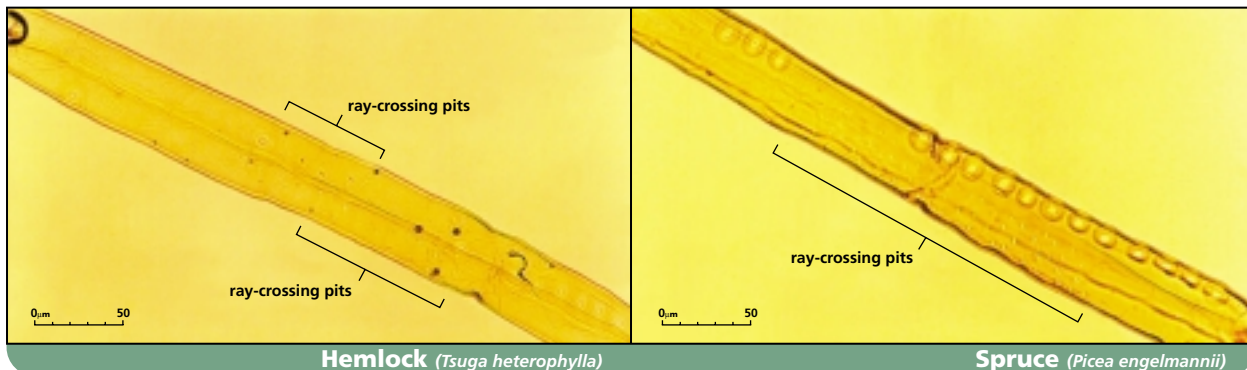
The cornerstone of pulp and paper microscopy is species identification. We take a pulp, paper, or wood sample and break it up into a slurry of individual fibers using a Waring Blender. These fibers are prepared onto a microscope slide. The slide is then placed under a compound microscope and scanned to identify the species of tree from which each fiber originated.

The photomicrograph on the right shows a section of a spruce fiber. It is identified by the crowded rows of small slash-like pits along the length of the fiber. The diagnostic features of spruce fibers are very similar to the characteristics of another species – hemlock. Hemlock fibers, as seen on the left, have similar, but less crowded pitting.

The natural variation in the appearance of these fibers can make it difficult to distinguish between the two. With experience, a technician can make the differentiation with reasonable confidence.

At Econotech, we typically differentiate between the two when both are suspected to be present in a particular sample. We report them as a group and give an estimated breakdown. 


For more information on species testing call Heather (heather@econotech.com) or Graham (graham@econotech.com) in the Microscopy Department



Precisely Accurate takes the Gold

On June 7, 2000, our own Heather McLeod was awarded the Kenneth R. Wilson award for “Best How-To Article” of 1999. Heather took home the gold - top honor - for her article, Precisely Accurate as published in the October/November issue of Occupational Health and Safety Canada magazine. A copy of this article, describing the ten things you should know about your testing lab, is still available by contacting

Janice Kilgour here at Econotech, either at janice@econotech.com, or by calling toll-free 800-463-5700.

Heather is currently working on a deal to sell the movie rights to this article. Hmm, Julia Roberts as the hard working microscopist... 

Update: Carbonate Analysis

This spring the methodology that had previously been used to measure carbonates was upgraded to incorporate the use of our Varian gas chromatograph, which we had been using to run terpenes and resin acids over the past year.

With this new methodology, the carbonates are decomposed by acidifying in a sealed vessel. Carbon dioxide is released into the headspace and is then analyzed. Formaldehyde is added due to the high level of sulfides present in process liquors. Using a packed column and a thermal conductivity detector, we can determine the amount of carbonates in your sample as low as 0.5% Na₂CO₃.

Over the last four months, we have had very good results using this new methodology for both alkaline cooking liquors and solids such as Burkite and Pirssonite scales that build up in the pulping process.

For more details on the capabilities of this analysis, please give me a call.

Thomas Yuen
Supervisor-Analytical (Pulp & Liquor)
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Igga Lukasik at the Varian GC

Testing Paper and Paperboard for Silver Tarnishing

To a very selective clientele, high reducible sulfur in paper and paperboard can make or break their business. Over the last year, Econotech has seen an appreciable increase in the number of samples sent to us for determination of reducible sulfur content. Currently, we follow two different TAPPI methodologies, depending on the level of reducible sulfur. They are TAPPI T406 om-94 and TAPPI T444 cm-85.

In T406, the sensitivity of the test is capable of detecting reducible sulfur as low as 0.0002%. The assumption is that if there is more than 0.0008% sulfur in the sample, the paper or paperboard will tarnish the silver coins or ingots it comes in contact with, but if the content is less than 0.0008%, and of low pH, tarnishing can still occur. Paper that is of a low pH (4-4.5) and contains as little as 0.0002% reducible sulfur can still cause tarnishing.

If your samples contain more than 0.0008% reducible sulfur, or if your client would like to know the effect that the high quantity of reducible sulfur has on silver in a large surface area, TAPPI T444 methodology can be followed. In this case, T444 is recommended, as it will give the curator a better understanding of the distribution of the tarnishing or staining on their samples.

For further discussion on this analysis, please give me a call.

Bill Warning Manager-Analytical bill@econotech.com



Econotech Strives to Provide Better Service to its Clients

At Econotech, we strive to help our customers learn more about their pulp by introducing new tests. One such test is Britt Jar fines, which we now run on a routine basis. Britt Jar fines

analysis differs from other fines content analyses by simulating the turbulence of a paper machine to show how it affects the behavior of pulp. Retention characteristics of various wet end additives can also be determined using the Britt Jar.

For the last couple of months, Econotech has been performing wet web testing. This important characteristic reveals something about the stress-strain properties of the web to the pulp producer, who can then use the data to determine the runnability of a pulp on a paper machine.

In an effort to provide better, more complete service to our clients, Econotech staff is always interested in communication from you as to your needs for new tests. Give us a call at 800-463-5700 or email info@econotech.com with your suggestions. We look forward to hearing from you.

Don McDermid Manager-Pulp & Paper Testing don@econotech.com

A Clever Idea from a Young Inventor

When I was eight years old, I was watching the TV show "Cops". I noticed that the police officers couldn't tell how fast cars were going when they crashed. So I thought that if something could stop the speedometer needle at the speed the car was going when it crashed, then they would know easily.

Three years later, I used my idea for a school science project. I worked hard on my project, and finally came up with a prototype which was a mechanical hand cranked, slow speed unit that had a basic bumper switch on it. When it was hit, a spring-loaded arm released onto the speedometer rod, which stopped the needle at the exact impact speed. I called it the C.V.I. or the Crash Velocity Indicator, and it was with this invention that I won the school science fair and the Surrey District Science Fair in March 2000. Within the next few weeks, I was interviewed and the stories were printed in a few local newspapers. My next step was a big one that would really get my idea into the open. I was invited to the National Inventors Fair in Winnipeg, Manitoba, hosted by Princess Auto (June 2000). I thought it was really cool that I was going and got lots of help from a few different companies (Insurance Corporation of BC, Econotech, Canada Trader and Hyland Elementary School).

I knew I had to come up with a better and faster prototype, so for three months, I worked with my Dad's supervision ("so I wouldn't cut my fingers", he said), to make an electronic, high-speed model to present in Winnipeg. Prototype three was a complete failure, but Dad said, "if we don't experience failure then we will never experience true success". My fourth prototype worked well but had an accident during testing. Number five worked very well and would go to Winnipeg with me. I took along the newspaper clippings, a new project board and a binder full of letters and notes. When the day came for me to go to Winnipeg, I was very excited; when I was there, I was extremely excited.

We were met by Dan who works for Princess Auto and who would be shuttling us around all weekend. When we got to the tent, we were treated like gold by all the Princess Auto staff and volunteers. There were thirty-six other inventions; I was the youngest inventor there, but I was confident that I would get first or second. Many of the inventors

already had their inventions patented or marketed and I got tips from a few of them. I met a lot of new people whether they were just passing by, other inventors or the Princess Auto staff and most of them were very pleasant. While I was there, I was interviewed by a Winnipeg newspaper. The reporter was very nice and wished me good luck. At the banquet, we had a wonderful dinner and I was awarded second place in the junior category. The award for second place was \$150 spending money and \$50 of Princess Auto money.

I think the other inventors had very interesting inventions, from "Gizmo" the Cookie Cutter by Charlie and Gerri from Powell River, BC, to the Table Saw Dust Collector by Max and Jean, who lived two blocks from my house! I think that going to Winnipeg taught me a lot of things about marketing and getting people to notice my invention. So in the end, I learned some things, met new people and got exposure for my C.V.I.

Melissa James
age 11, grade 5
daughter of Tim James
Maintenance Supervisor

e^{mc}²
I think the most often said words on the weekend were "thank you" and "good luck".




Phone, fax, mail or email - let us know what is best for you!

When I started working at Econotech the favored way of reporting results was by telex. Now that's surely dating me! Soon after though, the fax became the chosen method for reporting results, supplemented by the phone. Now email has added another dimension to the communications mix.

Short notes and small sets of data are suitable for reporting in the body of an email. Larger and more detailed reports are best sent as a file attachment. Our primary productivity software is Microsoft Office97/2000, so reports are Word documents or Excel spreadsheets. Most of our customers run software that will open these files but we can save them to practically any desired format.

Before a file attachment is sent, the email program "encodes" that file into the body of the message. This is usually transparent to the sender as it is handled by their email program. When the message is picked up by the recipients email program, the attachment is "decoded" on the fly, transparent to the receiver... usually. Have you ever received an email that was just one long string of random characters? It was likely an attachment that was not decoded. In the early days of the Internet and email, several encoding/decoding schemes were not

compatible with each other. Most files are now MIME encoded, which is the default at Econotech.

Once a customer has received the file, it is theirs to print (aaah, the revered hardcopy), forward to colleagues or file away for future reference. Regardless of what method the preliminary report is sent, a signed, hardcopy final report on Econotech letterhead always follows by snail mail. And don't forget, if you have any questions or comments... well, you know how to reach us. 

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Fiber Property Comparison

Species	WAFL mm	Coarseness mg/m	400 Canadian Standard Freeness		
			Burst factor	Tear factor	Tensile km
Western red cedar	3.01	0.216	106	101	13.8
Yellow cedar	1.89	0.106	112	82	13.5
Hemlock	2.25	0.173	96	110	11.6
Coastal Douglas fir	2.98	0.262	67	233	9.5
Interior Douglas fir	3.26	0.239	70	156	9.8
Englemann spruce	1.94	0.141	104	100	12.5
Balsam poplar	0.78	0.120	96	97	12.3

The data in this table can vary greatly depending on whether the pulp is from sawmill residual chips or whole logs. Climatic zones also play a significant role in pulp properties. We strongly suggest that these

values be used only as a general guide and that species in your particular area be tested.



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