Laboratory Services Price List

Pilot paper machine development and production runs
Pilot coating and laminating
Fermentation and hydrolysis
Compostability testing
Paper testing

Wisconsin Institute for Sustainable Technology
University of Wisconsin-Stevens Point
715-346-2331
wist@uwsp.edu
www.uwsp.edu/wist
The Wisconsin Institute for Sustainable Technology (WIST) provides high-quality, timely laboratory services to businesses in Wisconsin, across the United States and internationally.

Whether you’re a global player, a home-grown Wisconsin business or a solo entrepreneur, we give your project quality care and attention.

Founded in 2010, WIST is a unit within the College of Natural Resources at the University of Wisconsin-Stevens Point. We connect the university to business and industry and provide laboratory services, research and education. We’re entrepreneurial, working to bring new ideas and innovation from the university to the private sector.

WIST employs an experienced laboratory and technical staff. Our services include paper testing, paper making, pulping and bleaching, pilot coating and laminating, compostability testing and other analyses such as ion chromatography for carbohydrates, organic acids and alcohols. We perform chemical analyses. Testing is performed according to TAPPI, ASTM and ISO standard methods.
**Fourdrinier Pilot Paper Machine**

The pilot paper machine at UW-Stevens Point is a Fourdrinier machine with a 20-inch web. It is ready for your needs in:
- raw material and/or chemical additive studies
- equipment evaluation
- grade development
- production runs

This Fourdrinier machine has a 20-inch web, runs at speeds up to 200 fpm, and produces a sheet in basis weight from 25 to 400 gsm.

Chemicals can be metered in at seven locations in the approach flow system; the pre-fan pump port is a co-mix port that can meter in two chemicals. The wet end includes a dandy roll, single-felted two-nip press and a smoothing press.

The dry end features two independent dryer sections, a horizontal, flooded-nip, size press and calender stack.

The stock preparation area features a hydropulper, two-stage cleaner system, slotted pressure screen and automated temperature control.

In short, this machine is ready for your project needs.

**Pilot Coating and Laminating**

Our Faustel Pilot Coating and Laminating line handles paper, film and foil on roll sizes up to 300mm wide and at speeds up to 30m/min. We can perform gravure roll and slot die coating, water-based or solvent-less formulations, and dry bond laminating.

Small scale production runs, product development runs and tests with various substrates and coating/making materials are all within machine capability. Contact us to discuss your project and development needs.

**Equipment Price Notes**

- Coating and Laminating Run: Indicative $3,500 for an eight-hour day. Includes labor and machine only; start up and shut down time is included in the eight-hour period. Call for a detailed trial price quotation.
- Digestor - Pulp Studies: $90.00/hour. Request quote based on specific conditions.
- Disk Refiner: $275/condition. Request quote based on specific conditions.
- Bleaching Studies: $85.00/hour. Request quote based on specific conditions.
- Paper Making: $7,000 to $9,000 for an eight-hour day. The rate varies since trial plans are unique and differences affect the pricing. Shipping, materials and other supplies and services charged in addition. Call for a detailed trial price quotation.
- Benchmark Coating: Indicative $2,600 for a four-hour period. Call for a detailed price quotation.

The new Faustel Coating and Laminating pilot line was installed in 2014. It is used in trial and development runs as well as for educational purposes in the UW-Stevens Point Paper Science and Chemical Engineering Program and in WIST short courses for professionals.

**Pilot scale work can save money and speed your project**

**Coating/Laminating and Paper Making Prices**
## Paper Testing Services Price List

<table>
<thead>
<tr>
<th>Test Method</th>
<th>Price/sample</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC Pulping Liquor Test</td>
<td>$190</td>
<td>Three replicates</td>
</tr>
<tr>
<td>Absorption Time, Water Drop</td>
<td>$70</td>
<td>Test time, five minute maximum</td>
</tr>
<tr>
<td>Ash Testing (525 degC)</td>
<td>$110</td>
<td></td>
</tr>
<tr>
<td>Ash Testing (900 degC)</td>
<td>$135</td>
<td></td>
</tr>
<tr>
<td>Automated Solvent Extraction</td>
<td>$135/hour</td>
<td>May be additional charge for unusual solvents; call with details</td>
</tr>
<tr>
<td>Basis Weight (Paper and Pulpboard)</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>Brightness</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>Britt, Fines (pulp)</td>
<td>$220</td>
<td>Requires consistency</td>
</tr>
<tr>
<td>Bulk/Density</td>
<td>$220</td>
<td>Includes basis weight and caliper</td>
</tr>
<tr>
<td>Burst</td>
<td>$65</td>
<td>10 on each side</td>
</tr>
<tr>
<td>Caliper</td>
<td>$45</td>
<td></td>
</tr>
<tr>
<td>Carbohydrate Analysis</td>
<td>$165</td>
<td>Prepared solution measured by ion chromatography</td>
</tr>
<tr>
<td>Carbohydrate Analysis</td>
<td>$305</td>
<td>Polysaccharide hydrolyzed and measured by ion chromatography. If hydrolysis is required, add $100/sample</td>
</tr>
<tr>
<td>Carbohydrate Analysis and Klason Lignin</td>
<td>$360</td>
<td>Lignin-polysaccharide complex hydrolyzed and analyzed. If hydrolysis is required, add $100/sample</td>
</tr>
<tr>
<td>Carboxymethylcellulose Substitution</td>
<td>$415</td>
<td>Colorimetric procedure</td>
</tr>
<tr>
<td>Charge Analysis</td>
<td>$290</td>
<td>Samples must be shipped overnight delivery</td>
</tr>
<tr>
<td>Cotten Size Test</td>
<td>$110</td>
<td>Replicates depends on type of size used</td>
</tr>
<tr>
<td>Control L, w, b</td>
<td>$80</td>
<td>Consistency</td>
</tr>
<tr>
<td>Consistency</td>
<td>$85</td>
<td></td>
</tr>
<tr>
<td>Fatty Acid Analysis - Short Chain (1-6 Carbons)</td>
<td>$165</td>
<td>In house method</td>
</tr>
<tr>
<td>Fatty Acid Analysis - Long Chain (7-20 Carbons)</td>
<td>$330</td>
<td>Derivative and gas chromatography</td>
</tr>
<tr>
<td>Fiber Length Distribution - Morfi</td>
<td>$110</td>
<td></td>
</tr>
<tr>
<td>Fiber Length Distribution - Morfi w/ shives or coarseness</td>
<td>$125</td>
<td></td>
</tr>
<tr>
<td>Fold/Endurance</td>
<td>$125</td>
<td>10 in MD and 10 in CD</td>
</tr>
<tr>
<td>Formation Analysis</td>
<td>$80</td>
<td>Optit 1 Micro-Scanner</td>
</tr>
<tr>
<td>Freeness</td>
<td>$75</td>
<td></td>
</tr>
<tr>
<td>Gloss</td>
<td>$85</td>
<td></td>
</tr>
<tr>
<td>Gurley Permeability</td>
<td>$75</td>
<td>5 on felt and 5 on wire, reported as one</td>
</tr>
</tbody>
</table>

## Pulping and Bleaching

Count on WIST for all your needs in laboratory- and pilot-scale pulping and bleaching. Our staff has experience with a wide variety of biomass, including novel materials, and will work with you to develop the trial right for your project.

- Trials for wood and non-wood biomass, including food processing by-products and agricultural residual materials
- Benchtop equipment sized 50-360 grams dry product weight
- Larger volume pulping and bleaching tests at 5L, 10L and 100L scale
- Quantum mixer allows bleaching experiments with chlorine dioxide, hydrogen peroxide and ozone

Contact us for pricing on your specific project.
Compostability Testing and Certification

Our lab is ISO 17025-certified

Market differentiation can boost sales. Compostability certification places your product in the growing sustainable materials arena.

Our Compostability Testing Laboratory carries out the necessary tests to determine whether your materials are compostable under industrial composting conditions. We test to ASTM D6400 and D6868 standard specifications.

Material must pass three tests: disintegration, biodegradation and plant ecotoxicity.

Contact us early: The full compostability protocol may take up to 180 days to complete. We can test multiple products simultaneously. However, because test samples are compared to a control sample, we start all test samples at the same time and do not introduce new product samples once a trial has started. Consequently, there may be a wait of six months to a year to have your product tested for certification. Book your product for testing now.

We also offer a preliminary screening service in which a biodegradation test is carried out over 45 days and evolution of carbon dioxide by the sample is monitored and reported graphically. While this method alone is insufficient to make or substantiate any compostability claim and does not comply with any standard specification, it may be used to provide indication of whether a development sample has the potential to meet the requirements of a full compostability standard specification.

Our lab is ISO 17025-certified

Pricing for fermentation and hydrolysis

WIST has highly qualified staff and laboratory facilities for biochemical conversion of biomass, sugars, and waste materials into bio-based fuels, chemicals and materials.

We can hydrolyze biomass into fermentable sugars and assess its suitability for conversion to bio-ethanol, lactic acid, bio-butanol, bio-isoprene, and other bio-based chemicals as needed.

Fermentation analysis will typically assess product yield from biomass and help to identify and solve problems such as contamination and inhibitors that interfere with biochemical conversions.

Fermentation and hydrolysis

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Method</th>
<th>Price</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compostability</td>
<td>ASTM D6400 and ASTM D6868 standards</td>
<td>$14,850</td>
<td>20% discount applies to second and subsequent samples submitted at the same time</td>
</tr>
<tr>
<td>Preliminary Screening</td>
<td>Non-certification testing</td>
<td>$7,100</td>
<td>Indicative test of potential for sample to meet full requirements of ASTM D6400 or D6868.</td>
</tr>
<tr>
<td>Biodegradation Only</td>
<td>ASTM D5338</td>
<td>$7,100</td>
<td>45-day trial</td>
</tr>
<tr>
<td>Disintegration Only</td>
<td>ISO 20200</td>
<td>$7,100</td>
<td>84-day trial</td>
</tr>
<tr>
<td>Disintegration and Ecotoxicity</td>
<td>ISO 20200, OECD 208</td>
<td>$9,350</td>
<td>140-day trial</td>
</tr>
</tbody>
</table>

Cancellation policy:
To avoid a cancellation charge on booked compostability testing, cancel the test at least 21 days before trial start date. Cancellations after that time will incur a cancellation fee of 10 percent of total booked value if cancelled 15-21 days prior to test start date and a 20 percent cancellation fee if cancelled within 14 days of the scheduled start date.
Inquiries and ordering

For paper making, pulping and bleaching, or coating and laminating services, contact either:

Lindsey Hoffman, Laboratory and Papermaking Project Specialist
715-346-4036
Lindsey.Hoffman@uwsp.edu

Brian Bandow, Paper Machine and Laboratory Specialist
715-346-3733
Brian.Bandow@uwsp.edu

For compostability testing services contact:

Amber Davidson, Compostability Testing Laboratory Manager
715-346-2671
Amber.Davidson@uwsp.edu

For all other inquiries contact:

Paul Fowler, Executive Director
715-346-3767
Paul.Fowler@uwsp.edu

Payment should be made by check payable to:

University of Wisconsin–Stevens Point
Attn: Amber Davidson
800 Reserve Street, TNR 369
Stevens Point, WI 54481

Contact us for information before shipping bulk materials.

Terms of Service

We will invoice immediately upon completion of work. Payment is due upon receipt of invoice.

Payment:

Payment should be made by check payable to:

University of Wisconsin–Stevens Point

Mail payment to:

University of Wisconsin-Stevens Point
Wisconsin Institute for Sustainable Technology
800 Reserve Street, Room 369
Stevens Point, WI 54481

Shipment of materials

Ship product samples for testing to:

For compostability:
University of Wisconsin-Stevens Point
Attn: Amber Davidson
800 Reserve Street, TNR 369
Stevens Point, WI 54481

For papermaking, pulping, bleaching and paper testing:
University of Wisconsin-Stevens Point
Attn: Lindsey Hoffman
2001 Fourth Ave
Science D274
Stevens Point, WI 54481

For all other materials, contact Angie Hauer for shipping details at 715-346-2331,
Angie.Hauer@uwsp.edu

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