

How Can We Help You?

Durable wood products benefit the public and promote sustainable use of our forest resources. Our research teams are continually exploring innovative methods for making wood more durable. We work with internal and external cooperators to conduct a wide range of standardized and experimental tests that evaluate how well a product might perform in different applications.

Our durability and wood protection scientists have a broad background in wood science, timber physics, microbiology, chemistry, engineering, and material science. We welcome the opportunity to collaborate with industry, academia, trade associations, non-government organizations, and federal, state, and local government agencies to convert research into usable information and technology.

A partnership with the Forest Products Laboratory (FPL) helps your research advance by tapping into the expertise of our research personnel, providing access to our extensive laboratory facilities and equipment, and creating opportunities for patent and licensing agreements.

Collaborating with FPL can provide many benefits to partnering organizations:

- Flexible partnership agreements tailored to the partner's needs, such as confidentiality and licensing rights
- Experts in many disciplines working together in one location at a world-class facility
- Stable source of funding for long-term research projects that may be high-risk but have potential for a high return on investment
- Customer-focused commitment to technology transfer to convert research findings into products or processes that can be of use to society
- Results produced from innovative team approach to problem solving



Our new 90,000-ft² laboratory will extend and enhance the capabilities of durability and wood protection research.

For More Information

Carol Clausen
Project Leader
Supervisory Microbiologist
(608) 231-9253
cclausen@fs.fed.us

Frederick Green III
Biodeterioration Team Leader
Research Microbiologist
(608) 231-9305
fgreen@fs.fed.us

Stan T. Lebow
Wood Preservation Team Leader
Research Wood Scientist
(608) 231-9411
slebow@fs.fed.us

Robert White
Fire Science Team Leader
Research Wood Scientist
(608) 231-9265
rhwhite@fs.fed.us

Samuel Glass
Moisture Durability Team Leader
Research Physical Scientist
(608) 231-9401
svglass@fs.fed.us

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all of part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W. Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Durability & Wood Protection Research



Wood Products Research



U.S. Forest Service
Forest Products Laboratory
One Gifford Pinchot Drive
Madison, WI 53726-2398
Website: www.fpl.fs.fed.us

Durability & Wood Protection Research

Durability Testing Capabilities

Moisture tests are important for durable products used inside structures:

- ASTM D 1037
 - Water absorption and thickness swelling
 - Linear expansion with change in moisture content (dimensional stability)
- ASTM D 14980—Hygroscopic sorption isotherms
- ASTM E 96—Water vapor transmission
- Custom outdoor exposure tests
- Custom laboratory tests for comparative drying rates

Corrosion tests

- ASTM G 5—DC polarization
- ASTM G 59—DC polarization resistance
- ASTM G 106—Electrochemical impedance spectroscopy
- AWPA E 12—Corrosion of metal in contact with treated wood
- AWPA E 17—Corrosion rate of metals in contact with treating solutions
- Custom exposure tests



Mold, Decay & Termite Resistance



Decay resistance tests are important for many products exposed to moisture:

- AWPA E 10—Soil block fungal

cultural laboratory tests

- AWPA E 9, E 16, E 18, and E 21—Tests of wood used aboveground
- AWPA E 7 and E 9—Tests of wood used in ground contact

Termite resistance can be important for wood used either indoors or outdoors:

- AWPA E 1—Laboratory termite method
- AWPA E 21—Field termite method

Treatability tests are conducted to determine how well a preservative penetrates the wood during pressure treatment.

Leaching resistance must be evaluated for treated wood exposed outdoors:

- AWPA E 11—Small block leaching method
- AWPA E 20—Soil contact leaching method
- Simulated rainfall method

Specialized Equipment

- Moisture permeance apparatus
- Simulated rainfall leaching

Fire Test Laboratory

Fire performance testing is key for durable products in buildings:

- Flame retardancy
 - ASTM E 1354—Cone Calorimeter
 - ASTM E 2102—Mass loss calorimeter
 - ASTM D 2863—Oxygen index
 - ASTM E 69—Fire tube
- Fire resistance (ASTM E 119 fire exposure)
 - 20- by 20-in. vertical furnace
 - 3- by 6-ft. horizontal furnace with tensile load capability



Durability and Wood Protection Research Facilities

- Research demonstration house
- Pilot-scale pressure treatment facility
- Microbiology and chemistry labs
- Fungal cellar
- Fire test laboratory
- Field test exposure sites
 - Saucier, Mississippi (Hazard Class 5)
 - Madison, Wisconsin (Hazard Class 2)
- Moisture property test laboratory
- Electrochemical corrosion test lab