Montana Forest Products Marketing News

MSU Extension Forestry

July 2005

Primary Forest Products Measurement Units

When primary forest products like logs and pulpwood are bought and sold in Montana, either a volume or weight measurement is used to determine the amount of material exchanged.

The following paragraphs explain the fundamentals of each system. The chart on the left below shows the Scribner decimal C log rule and the chart on the right shows conversions between volume and weight measurements.

Volume - buyer and seller agree on a dollar amount per unit of volume exchanged (usually $ per 1,000 board feet, where 1 board foot = 1”x12”x12”).

The board foot volume of a log is determined by measuring log length and log diameter at the small-end of the log. These measurements are used to calculate the log’s board foot volume (see table below). Volume deductions may be taken to account for log defects.

Weight - buyer and seller agree on a dollar amount per unit of weight exchanged (usually $ per ton, where 1 ton = 2,000 pounds). Product weight is determined by measuring the weight difference between a loaded and unloaded log truck.

Wood weight varies by species, log size, season, geographic area, and the time between harvest and weighing. Therefore, it is a good idea to ask the buyer to weight scale and volume scale the same truck load of logs so that a weight to board foot conversion can be developed for that particular timber sale.

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Scribner Decimal C Log Rule (board feet in tens)

Log Length (feet)

Log Diameter (inches)	16	18	20	22	24	26	28	30	32	34	36	38	40
4	1	1	1	1	2	2	2	2	2	2	2	3	3
6	2	2	2	3	3	3	3	4	4	5	6	6	6
8	3	3	4	4	4	5	5	6	6	7	8	8	9
10	6	6	7	8	9	9	10	11	11	13	14	14	15
12	8	9	10	11	12	13	14	15	16	17	18	19	20
14	11	13	14	16	17	19	20	21	23	24	26	27	29
16	16	18	20	22	24	26	28	30	32	34	36	38	40
18	21	24	27	29	32	35	37	40	43	45	48	51	53
20	28	31	35	38	42	45	49	52	56	59	63	66	70
22	33	38	42	46	50	54	58	63	67	71	75	79	84
24	40	45	50	55	61	66	71	76	81	86	91	96	101

Board foot to ton conversions (logs)

1,000 BF Douglas fir	= 6.2 to 8.5 tons
1,000 BF Ponderosa pine	= 7.1 to 9.7 tons
1,000 BF Western Larch	= 7.6 to 10.4 tons
1,000 BF Western Hemlock	= 6.1 to 8.8 tons
1,000 BF White Pine	= 5.2 to 7.5 tons
1,000 BF Lodgepole pine	= 5.9 to 8.5 tons
1,000 BF Englemann spruce	= 5.8 to 8.4 tons
1,000 BF Grand fir	= 6.9 to 9.9 tons
1,000 BF Subalpine fir	= 6.7 to 9.7 tons
1,000 BF Western red cedar	= 4.0 to 5.9 tons

Woodrum Lumber—A New Family Business in Superior Montana

Near Superior, Montana on the site that was formerly Bailey's post and pole, Mike and Denise Woodrum are leasing space to operate their custom sawmilling operation. The property's new owner is Tricon Timber of St. Regis, Montana.

Mike, Denise and their son, Jason use a woodmizer LT 70 thin-kerf sawmill to turn logs into lumber and beams. They also have a twin-bladed edger and chop saw to help them manufacture products that are customized to meet their customer's needs.

The "custom-made" aspect is key to the Woodrum's ability to find a niche in the local economy. For example, nearby Tricon Timber produces about 200,000 board feet of wood products per day that includes kiln-dried lumber, construction studs, and larch flooring. The Woodrum's, in contrast, cut about 3,000 to 4,000 board feet per day that includes products manufactured to their customer's specifications. According to Mike, "We do custom cutting and edging. It's all rough-sawn lumber, such as you would use for docks, decks, fencing, or timbers for homes."

For example, a recent project called for cutting a number of 12" x 12" beams that will be used on the drain pad of a nuclear power facility in the Southwestern United States. In another project, a customer brought in a semi-load of logs and wanted them custom-cut into 3x8s, 2x8s and 2x10s, all cut to specified lengths. The customer then used the lumber to build a structure. With our thin-kerf sawmill, "he got everything out of the logs he wanted," Mike said. Another recent project involved a Trout Creek man who ordered about sixty 8"x8" timbers. They will be used to support a 16-sided house, Mike explained.

The Woodrum's recently moved to Montana from Illinois where Mike owned and operated eight Chicago-area barge offloading warehousing facilities and Denise completed a master's degree in business administration from Lewis University. Mike explained that they moved to Montana because, "we wanted to find a business here in Montana doing something we would like doing. I've always liked working with wood, and my best friend's dad owned a sawmill, so I was always around it. It seemed to be a match."

Their specialty sawmill operation is near Superior, Montana on Diamond Road, just past the bark plant at the five-mile marker. The Woodrum's welcome visitors and they can be reached at 406-822-1870.

Woodrum Lumber uses a woodmizer LT 70 sawmill (like the one shown) to turn logs into special order lumber and beams. In contrast to a circular saw that has a thick blade, the LT 70 uses a thin-kerf band saw blade, which means more lumber and less sawdust from each log.

Nanoscience—Will it revolutionize the forest products industry?

Nanoscience is the study of materials at atomic and molecular levels. To give some perspective on what that means in terms of size—a nanometer is one millionth of a millimeter.

Studies from this emerging field have revealed that at a nanoscale, material properties like mechanics, optics, melting point and electrical conductivity differ significantly from the same properties when the material is examined in bulk form.

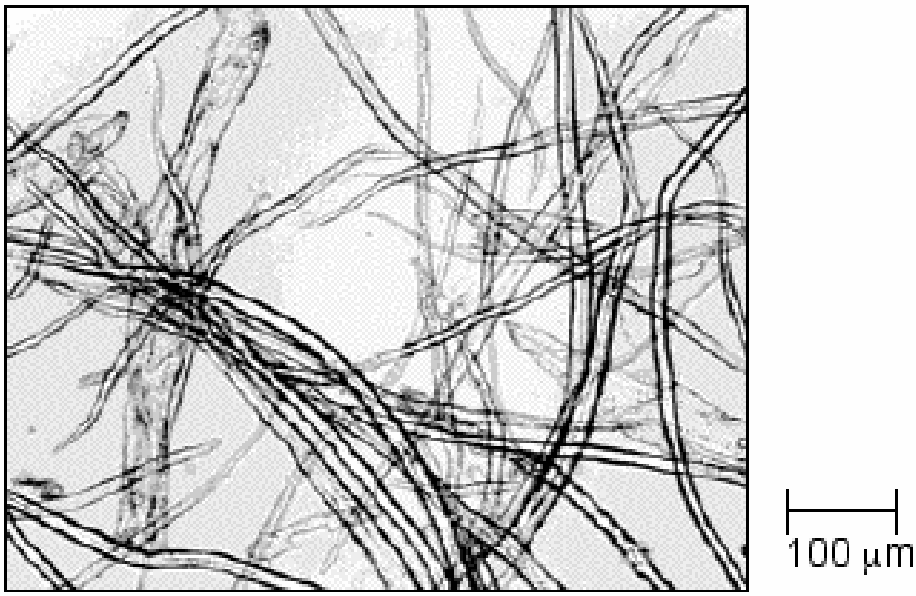
Knowledge of those changing properties at nanoscales allows scientists to manipulate atoms and molecules to precisely fabricate materials with desirable characteristics. It is believed that newly developed nanomaterials with unique properties will revolutionize technology and industry.

So what does nanoscience have to do with wood?

The answer to that question is given the report: *Nanotechnology for the Forest Products Industry—Vision and Technology Roadmap*. The report's authors state, "emerging nanotechnologies offer the potential to develop entirely new approaches for producing engineered wood and fiber-based materials. They can also enable the development of a wide range of new or enhanced wood-based materials and products that offer cost-effective substitutes for non-renewable materials used in the manufacture of metallic, plastic, or ceramic products. Nanotechnology could transform the forest products industry in virtually all aspects—ranging from production of raw materials, to new applications for composite and paper products, to new generations of functional nanoscale lignocellulosics. Research and development in nanotechnology is critically important to the economical and sustainable production of these new generations of forest-based materials, which will meet societal needs while improving forest health and contributing to the further expansion of the biomass-based economy."

See the full report for specific examples forest products nanotechnology applications.

Perhaps more importantly, the authors speculate that nanotechnology may provide new approaches for obtaining and utilizing energy from sunlight—based on the operation of the plant cell. According the authors, novel new ways to produce energy, chemicals, and other innovative products and processes from this renewable, domestic resource base will help address major issues facing our nation, including national energy security, global climate change, air and water quality, and global industrial competitiveness.



The picture shows the structure of a nanocomposite material developed at Virginia Tech University that combines virtues of cellulose, paper, and plastics. See more about this material here.

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Montana State University Extension Forestry is a branch of the MSU Extension Service and is housed cooperatively with College of Forestry and Conservation at the University of Montana in Missoula, Montana.

The mission of Extension Forestry is to provide education and outreach to non-industrial private forest landowners, forestry industry, and other forestry-related organizations in Montana.

Extension Forestry carries out its mission by providing its clients with educational workshops, publications, news releases, brochures, and videos. Common topics include forest stewardship planning, forest insect and disease, windbreaks/living snow fences, alternative forest management practices, wildfire hazard reduction, forest products marketing, and tree pruning & care.

We're on the Web:

http://www.forestry.umt.edu/hosting/forestproducts/index.htm

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If so, send them to Roy Anderson, newsletter editor

Calendar of Upcoming Events

*click here to link to a nationwide continuing forestry education events calendar

Forest Stewardship for Landowners Workshop

July 15,16 & 23
Thompson Falls, MT
call Caren Stewart 406-243-2773

The Big Horn Basin Floodplain Restoration Workshop

July 19-21
Thermopolis, WY
call Steve Christy 307-347-5148

Insect and Disease Management in Forested Ecosystems

July 27 &28
Bozeman, MT
call Beverly Bulanon 406-329-3298

Forest Insect & Disease Field Day

Friday July 29
University of Idaho, Coeur D' Alene Center
call Chris Schnepf 208-446-1680

Natural Resources Youth Camp

July 31-August 5th
Lubrecht Forest, Ovando, MT
call Caren Stewart 406-243-2773

Riparian Wetland Forest Stewardship Workshop

August 15,16, & 22
Helena, MT
call Caren Stewart 406-243-2773

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