

*Editorial*

## Wood is a porous and fibrous structural tissue found in the stems and roots of trees

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### EDITORIAL

It is an organic material a natural composite of cellulose fibers that are strong in tension and embedded in a matrix of lignin that resists compression. Wood is sometimes defined as only the secondary xylem in the stems of trees, or it is defined more broadly to include the same type of tissue elsewhere such as in the roots of trees or shrubs. [Citation needed] In a living tree it performs a support function, enabling woody plants to grow large or to stand up by them [1]. It also conveys water and nutrients between the leaves, other growing tissues, and the roots. Wood may also refer to other plant materials with comparable properties, and to material engineered from wood, or wood chips or fiber. Wood has been used for thousands of years for fuel making tools and weapons, furniture and paper. More recently it emerged as a feedstock for the production of purified cellulose and its derivatives, such as cellophane and cellulose acetate. As of 2005, the growing stock of forests worldwide was about 434 billion cubic meters, 47% of which was commercial [2]. As an abundant, carbon-neutral renewable resource, woody materials have been of intense interest as a source of renewable energy. In 1991 approximately 3.5 billion cubic meters of wood were harvested. Dominant uses were for furniture and building construction. Wood, in the strict sense, is yielded by trees, which increase in diameter by the formation, between the existing wood and the inner bark, of new woody layers which envelop the entire stem, living branches, and roots. This process is known as secondary growth; it is the result of cell division in the vascular cambium, a lateral meristem, and subsequent expansion of the new cells [3].

These cells then go on to form thickened secondary cell walls, composed mainly of cellulose, hemicellulose and lignin. Where the differences between the four seasons are distinct, e.g. New Zealand, growth can occur in a discrete annual or seasonal pattern, leading to growth rings; these can usually be most clearly seen on the end of a log, but are also visible on the other surfaces. If the distinctiveness between seasons is annual (as is the case in equatorial regions, e.g. Singapore), these growth rings are referred to as annual rings. Where there is little seasonal difference growth rings are likely to be indistinct or absent. If the bark of the tree has been removed in a particular area, the rings will likely be deformed as the plant overgrows the scar. If there are differences within a growth ring, then the part of a growth ring nearest the center of the tree, and formed early in the growing season when growth is rapid, is usually composed of wider elements. It is usually lighter in color than that near the outer portion of the ring, and is known as earlywood or springwood [4]. The outer portion formed later in the season is then known as the latewood or summerwood. However, there are major differences, depending on the kind of wood (see below). If a tree grows all its life in the open and the conditions of soil and site remain unchanged, it will make its most rapid growth in youth, and gradually decline. The annual rings of growth are for many years quite wide, but later they become narrower and narrower. Since each succeeding ring is laid down on the outside of the wood previously formed, it follows that unless a tree materially increases its production of wood from year to year, the rings must necessarily become thinner as the trunk gets wider.

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