To grasp the concept of the Lignin, its properties, and functions, it is important to note what the lignin is and where it survives in our environment. Like any other feature of living and non-living things, the lignin exists around us and it is always around us but we haven’t comprehended it because we haven’t paid keen attention to it.

The lignin is found in trees. The bark of a tree is a component of the lignin. Hence, the consideration of the lignin, its properties, and functions will be explained in this essay.

The lignin is an organic material that connects cells, fibers, and vessels together to compose wood and lignified entities of plants. In other words, it is an element found in cells, cell walls, and between the cells of vascular plants.

Lignin can also be described as the aromatic network polymer of monolignols which exists in plant cells. It should be regarded that lignin is the most substantial polymer on earth which comprises of carbohydrate monomers while the rest of the polymers discovered in plant cell walls contains carbohydrate monomers, e.g. cellulose.

Hence, lignin is a biological resin. It replenishes the spaces of plant cells and reinforces the cell walls by coating it with cellulose microfibrils. The origin of lignin is from the Latin word “lignum” which means wood. This indicates what lignin is all about. Most plants encompass lignin although its proportion and specie in the plant are varied. Lignin is a component that is responsible for the fiber in food.

Lignin contributes to man's constant re-sources attainable and renewable. It exists in the form of wood which means that it can be found in both trees and wood. It can be found basically in xylem cells. As the lignin is one of the largest resources available for man, it should be noted that millions of years ago, when a tree falls and the bugs eat the cellulose, they left the lignin. The lignin hence with time and pressure turns into coal. This, however, is limited. As lignin is found in plants like sugar cane and every other agricultural food plant we consume, it constitutes a reasonable percentage of carbohydrates.

Properties of the Lignin

While research continues on the properties of the lignin, it should be noted that it consists of a complicated polymer of monolignols, these are regarded as aromatic alcohols. It is insoluble in water and alcohol while it is soluble in soft and low alcohol solutions. The complex polymer of monolignols consists of p-Coumarryl alcohol, coniferyl alcohol, and sinapyl alcohol.

More so, it occupies atmospheric carbon and it reserves it in the tissues of woody vegetation. This thus enables it to decompose unhurriedly while it increases the soil moisture retention.

Lignin appears as an uneven and spontaneous cross-linked polymer of phenylpropane units which is networked by different linkages.

Functions of Lignin

The lignin is responsible for contributing to the construction of plant-like grasses, bushes, and sturdy trees. Lignin is found in almost every plant, which is grasses, bushes, and thick tall trees. This makes the product from a plant consisting of this woody substance renewable. As much as the product of a plant is used and exhausted, the lignin aids the reproduction of such a plant and makes it capable of nurturing its growth. In some trees, the lignin is the bark of the tree.

The lignin in plants prevents the absorption of water: in other words, lignin permits the regulation of water. Every tree or plants need water to survive, lignin is then used to transport this essential need of plants. It reinforces the cell walls and protects them from collapsing. By this, it allows the plant to grow upright (this in the form of trees).

The lignin also permits liquid to rise to each segment of the plant. It also functions as a medium to allow wastes to be transported out of the plant.

The lignin in plants works as a channel to mitigate against insects and fungi. As the lignin performs the function of permitting the intake of water and allowing wastes to be carried out of the plant, lignin also functions as a means of mitigating against insects that invade plants.

Lignin transports liquid to the all-around plant tissues: as explained above, the lignin permits the intake of water and it allows the rising of water from the root to the stem, branches, and leaves of a plant, bush or trees as the case may be.

In commercial industries, the lignin is used for the creation of pulp and paper, as well as for agricultural construction in subsistence farming: the lignin also has significant importance in commercial industries. This is because its importance isn't only efficient but also in raw materials and artificial components. To chemical engineers in the pulp mill, lignin is a wood constituent that must be used for the production of paper. This is why the lignin has great economic importance which permits the American population to use over a quarter of a quantity of paper per year.

Other function of the lignin includes its alternative use as a raw material in some industries as a result of the unavailability of plastic. As the lignin in plants also burns effectively, it functions as a bio-based substitute for petroleum. At this, it should be pointed out that the lignin in trees, after its rot, becomes coal. This renewable energy has its importance on earth. Some nations’ biggest form of renewable energy is coal.

As expressed above, the lignin constitutes a common asset to earth even in its asset of re-utilization. It is an unlimited mutual asset that could be found in differing structures depending on where it has been acquired. The lignin is as important to plants as water is important for man because of its numerous functions in plants.

The lignin permits the circulation of water in plants, bushes, and tall trees and this permits the plants to develop. Further, it allows water to rise while it is also liable for the exit of wastes in plants.

The lignin also functions as an important asset for the pulp mill and paper industry because of its efficiency in the production of paper. The lignin remains a huge source of a common asset to man which is found in varying percentages all over the earth.