

Uses of coir fibre, its products and utilization of geo-coir in India

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ABSTRACT

Coir is a natural fibre that's extracted from the Coconut husk, It's popularly known as "The Golden Fibre", composed of highly lignified form of cellulose. All coir fibre falls into two distinctly different categories viz. white coir and brown coir the differences between two categories are due to the conditions of husk used, the method of extraction, the physical properties as well as in the uses. Brown coir is used in floor mats and Mat Brush Mattress, floor tiles and sacking. A small amount is also made into Twine. Pads of curled brown coir fibre, made by *needle-felting* (a machine technique that mats the fibres together) are shaped and cut to fill mattresses and for use in erosion control on river banks and hillsides. A major proportion of brown coir pads are sprayed with rubber Latex which bonds the fibres together (rubberised coir) to be used as upholstery padding for the automobile industry in Europe. The material is also used for Thermal insulation and packaging. The major use of white coir is in rope manufacture. Mats of woven coir fibre are made from the finer grades of bristle and white fibre using hand or mechanical looms. White coir also used to make fishing nets due to its strong resilience to salt water. In, coir is a strongly recommended substitute for because it is free of Bacterium and Fulngus spore, and produces good results without the Natural environment damage caused by peat mining. Coir is also useful to deter snail from delicate plantings. Coconut coir from Mexico has been found to contain large numbers of colonies of the beneficial fungus, *Aspergillus terreus* which acts as a biological control against plant pathogenic fungi. Total production of Coir Fibre in the world 3,50,000 tones, In India 4,10,000 million tones during 2005-06. Kerala produces 60 per cent of world's supply of White Fibre, Sri Lanka produces 36 per cent of world Brown fibre output. Geo-coir are made of pure coir drawn from the husk of the coconut without adding any synthetic material - a cent per cent natural product. The whole thing can be expressed as geo-textile. A large amount of coir fibres can be collected, processed and used in India.

Key words : Coir fibre, Coir dust, Fibre extraction, Geo-coir

Coir (From Malayam *kayar*, cord) is a coarse fibre extracted from the fibrous outer shell of coconut the fruit of coconut, tree (*Cocos nucifera* L). This outer layer is called the coconut husk. The husk (exocarp) of the coconut consists of a smooth waterproof outer skin (epicarp) and fibrous zone (mesocarp). The mesocarp comprises of strands of fibro-vascular bundles of coir embedded in a non-fibrous paranchymatous "corky" connective tissue usually referred to as pith; which ultimately becomes coir dust (Woodroof, 1970).

Chemically coir fibre is composed of a highly lignified form of cellulose (cellulose lignin complex), which accounts for its colour, harshness and relative brittleness in comparison with pure cellulose fibre. The bulk of the ground tissue of the husk, on the other hand, is made up of pectin and hemicelluloses. *i.e.* pectin and hemi cellulose act as a spongy binding material that bind the large fibre

cells together to make up the husk. Coconut coir is in great demand unaccounted of natural resilience, durability, resistance to dampness and other properties. Grading of coir is based on its fibre length, colour, resilience and general cleanliness in relation to the quantity of pith present (Sudhakaran Pillai and Vasudev, 2001).

All coir fibres fall into two distinctly different categories, white coir and brown coir. The differences are due to the conditions of husk used, the method of extraction, the physical properties as well as in the uses. Coir obtained from immature green coconut is generally known as white fibre and is finer than the brown fibre obtained from seasoned coconuts, which has lost their green colour (>12 months). Both types of fibres are widely used and each has its own unique distinct type of application (Sudhakaran Pillai and Fernandez, 2000).

Coconuts are the seed of the palm trees. These palms flower on a monthly basis and the fruit takes 1 year to ripen. A typical palm tree has fruit in every stage of maturity. A mature tree can produce 50-100 coconuts per year. Coconuts can be harvested from the ground once they have ripened and fallen or they can be harvested while still on the tree. A human climber can harvest

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