

INNOVATIVE GREEN MATERIAL FROM NATURAL FIBER REINFORCED BIO-PLASTIC COMPOSITE

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Environmental consideration has been taken into account for the development of plastic composites. The addition of natural fibre to natural or bio-plastic appears very promising for the development of environmental friendly materials with its unique ability of bio-degradable and promising strength properties. Bio-plastics are a form of plastics or polymer that been derived from renewable biomass sources, such as vegetable, corn and soy beans. Synthetic plastics, such as fossil-fuel plastics are derived from petroleum. These plastics rely more on scarce fossil fuels and non-renewable resources. The production and use of bio-plastics is generally regarded as a more sustainable activity when compared with plastic production from petroleum, because it relies less on fossil fuel as a carbon source and also introduces fewer, net-new greenhouse emissions if it biodegrades. They significantly reduce hazardous waste caused by oil-derived plastics, which remain solid for hundreds of years.

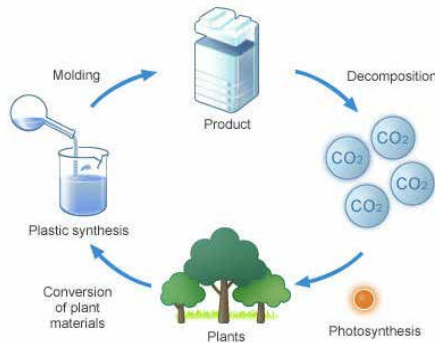


Figure 1: life-cycle of bio-plastics
Source: www.sunpack.com

Today, leading bio-plastic used is polylactic acid (PLA). Industrial lactic acid is derived from many starchy sources including wheat, beets, potatoes, soy beans and corn. The lactic acid, simple organic chemical that is a by-product of fermentation is converted to lactide, and lactide molecules are linked into long chains or polymer, to produce polylactic acid.

Natural fibre reinforced polylactic acid is categories as green composites material. It was manufactured for an alternative product for disposable packaging such as agriculture bag, kitchen utensils and medical apparatus. The incorporation of natural fiber such as kenaf in PLA matrix will improve their physical & mechanical strength performance thermal stability and at the same time reducing the production cost.

Bio-Plastics are one of the alternative materials that derived naturally and eco- friendly. In order to ensure preservation of our green-world, extensively research on renewable materials and green technology should be explored and implemented. Let's protect our earth today, for our children's tomorrow!

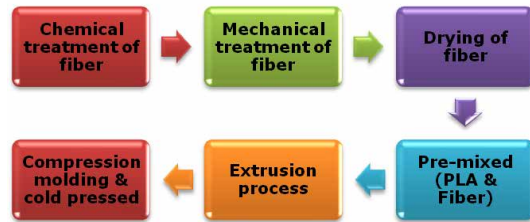


Figure 2: Flow chart of producing natural fiber reinforced polylactic acid green composite



Figure 3: Products made from bio-plastics