Eco-Friendly Insulator and Packing Material Using Natural Waste

N, Anusha (School: St. Philomena Aided High School, Puttur)

In India, small shops and houses are constructed from cement bricks with metal sheets as roofs due to which temperature is high inside particularly in summer. Biodegradable thermal insulators using areca sheath can be used for controlling temperature in house or shop systems. Insulator sheets prepared using this agriculture waste is the remedy for preserving perishable vegetables and other food materials. Areca sheaths are agriculture waste product. In some area there are industries which make the areca sheath plates to serve food. Even in such industries about 20% of areca sheath is available as scrap. The used areca sheath plates can be reused in our project. Our aim is to replace the thermocol by these materials. Method of preparation: Prepare the pulp from areca sheath. The required quantity of the pulp pressed using pressing unit. Squeeze or blot out excess water and allow it to evaporate in the atmosphere. Once it is fully dried the sheet becomes ready to use as thermal resistor. 1 kg of Areca sheath gives 0.8 kg of material. The physical parameters like Thermal conductivity, tensile strength, Young's modulus, density and burning temperature of the material was measured. By studying biodegradable nature it is found that 68% of degradation takes place within 60 days. The insulator sheath is coated with a mixture of castor oil and bees wax to increase the water resistant capacity. Effect of false sealing is studied by measuring the temperature variation inside the sample house fitted with areca insulators as false sealing. The measurement of heat preservation capacity was done by keeping the hot water and cold water inside the areca insulator box. It is found that water takes about a day to reach the atmospheric temperature.

Awards Won: