

University of Salerno
Materials Research
Salerno, Italy



Evaluating water vapour permeation of PLA nanocomposite film for food packaging

The University of Salerno was founded in 1988 and is situated in the village of Fisciano in the Irno Valley, a few miles from Salerno. With its modern campus and state-of-the-art facilities, it has become one of the leading universities in Southern Italy. At the laboratories of Technology of Polymers, the Department of Industrial Engineering, research has focussed on developing PLA nanocomposites with improved performance for use in food packaging applications.

As a result of growing consumer awareness of environmental issues and regulatory pressure concerning waste reduction, the plastics industry is moving increasingly towards the use of natural polymers. Poly-lactic acid (PLA) is one of the most widely used biopolymers in the production of food packaging. The PLA offers physical and mechanical performances comparable to traditional thermoplastic materials and it can be processed using conventional technologies. It also provides specific properties significant to food packaging products, such as a high barrier to aromas; grease resistance; high transparency and printability. However, PLA has some performance limitations including its barrier properties to water and oxygen. This has hindered application possibilities, such as packaging for foods with a short shelf life (yoghurt pots, fresh fruit and vegetable containers, juice and water bottles).

The research group at the University of Salerno aim to overcome this issue and improve the properties of the PLA by blending it with other biopolymers and through the addition of nanofillers. In evaluating the permeability of water vapour in the PLA nanocomposite films, the Research Centre at the University of Salerno have chosen the Systech Illinois 7002. This water vapour permeation analyser is capable of measuring 0.002-1000 g/m²/day. It offers quick response and consistently accurate measurements with absolute moisture measurement.



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