

Title Water absorption and oxygen barrier characteristics of ethylene vinyl alcohol films
Author K. Khanah Mokwena, Juming Tang and Marie-Pierre Laborie
Citation Journal of Food Engineering, Volume 105, Issue 3, August 2011, Pages 436-443
Keywords Ethylene vinyl alcohol; Oxygen transmission rates; Retort; Water uptake; Water activity

Abstract

Oxygen transmission rates (OTR) of two multilayer films containing ethylene vinyl alcohol (EVOH) were analyzed after water absorption at 121 °C. The films, referred to as film A and film B, were laminated film of PET/EVOH/PP and coextruded film of PET/PP/nylon 6/EVOH/nylon 6/PP, respectively. OTR increased with water absorption for both films. Graphical representation of data revealed two apparent linear regions describing the change of OTR with water absorption for both films. At low water contents (up to 4%) OTR were similar for the two films but differed dramatically at higher water contents. Water sorption characteristics of two monolayer EVOH barrier films (biaxially oriented and non-oriented) were determined at 25 °C using standard gravimetric method. Moisture sorption isotherms were analyzed using the Guggenheim-Anderson-de Boer model and the cluster theory of Zimm and Lundberg to evaluate the interactions between water and EVOH.