

Barrier properties of biocomposites/hybrid films

ABSTRACT

There are available reports on the barrier properties of composites; however, with highly focused research in this field, there is a need to reevaluate the findings and current trends. Hybrid composites are a mixture of inorganic and organic components at the nanometer or molecular level, whereas, biocomposites are formed by reinforcing natural fibers into a matrix to improve their properties, including barrier characteristics. Such composites can be used for many applications, including packaging, to maintain the quality of products. Thus, the barrier properties of films are important characteristics. This chapter discusses the parameters that influence the barrier properties of composites such as the pore size, chemical structure, free volume, and crystallinity of the polymer. The aims of this chapter are to provide comprehensive knowledge about factors affecting the permeability and preparation methodology, the types of composites, and the types of barrier characteristics including oxygen, carbon dioxide, water vapor, and aroma, and to present the potential applications of such hybrid films.

Keyword: Biocomposite film; Crystallinity; Food packaging; Gaseous permeability; Water vapor permeability