

## Abstract

The total Infra-red (IR) transmission of polymer films is a very important property in engineering, which determines their suitability for a specific application at a given temperature level. Aiming to investigate the percentage IR transmission of two polymer material films and glass of a particular thickness, an analysis is developed for the comparative evaluation of this very important physical property. Sand is a solid and a poor conductor of heat. That means that when sunlight hits sand, all the energy of the sunlight is absorbed in the first millimeter or so of the sand, the heat stays there or spreads only a few millimeters down. So those few millimeters get quite hot. High transmittance and absorptance of top cover and absorber plate are among the factors that contribute to the high efficiency of a SAH. Transmission and reflection spectra were obtained from the Spectro 320 Optical Spectrum Analyzer. IR Radiation (IR) was obtained from a lamp and measurements made at room temperature and relative humidity of 21°C and 25%RH respectively. The study shows that the transmittance of clear HDPE, LDPE and glass are 0.84, 0.72 and 0.72 respectively at wavelengths 791.90, 735 .02 and 820.89nm. The absorptance of sand layers was found to be 56% and 59% for grey and brown sand respectively.