ABSTRACT

In this study, reinforced and non – reinforced High-Density Polyethylene (HDPE) samples gave different ultraviolet transmittance rates. The reinforced composites were differently coloured and were prepared by mixing reinforces and HDPE samples in the ratios of 15:85 and 30:70 respectively. Reinforcers used include, Cassava flour, coconut husks flour and oak tree flour. Samples were rectangular. Two sets of HDPE samples were used to obtain the results presented in this paper. Samples used were of different thickness. The said materials are used to make containers used for storage of components like cooking oil, cosmetics among others. Less thick samples used were yellow (60.59 x12.24 x1.77 mm), white (61.64 x14.49x1.07 mm), transparent (59.65 x 11.95 x 0.93 mm) and black (59.44 x 13.03 x 1.24 mm) in colour and dimensions. The thicker samples were yellow (60.26 x 13.7 x 2.36 mm), white (61.16 x 11.36 x 1.90 mm), transparent (59.1 x 13.43 x 2.03 mm) and black (61.06 x15.35 x2.76 mm) in colour and dimensions. UV lamp (254 nm) used to illuminate the study samples was 20 cm from the aperture of the Spectro -320 where samples were placed. Optical Spectrum Analyzer (OSA) - 320 was used to study the UV transmittance of the samples. The transmittance difference in terms of percentage was represented using bar graphs. The results show that the reinforcers have a reducing effect on UV transmittance rate. As the reinforcer content increases, the UV transmittance rate decreases. This was verified by change in reinforcer - HDPE ratio from 0:100, 15:85 and 30:70.

Keywords: Ultra violet, transmittance, reinforcement, high density polyethylene.