

ABSTRACT

HDPE plastic materials as food packaging and household appliances. Because HDPE plastics have strong properties, hard and resistant to high temperatures up to 120°C. It is therefore necessary to research about the use of recycled materials as a mixture in the manufacture of HDPE plastic products. This study aims to determine the effect of adding HDPE recycled materials to tensile and hardness properties in virgin HDPE.

This study uses basic materials ie HDPE ore plastic added with recycled HDPE. There are three variations in the weight ratio of recycled HDPE mixtures, 90/10, 70/30, and 50/50. Preparation of specimens using injection molding machine, Tests were performed with ASTM D638-02a tensile test and ASTM D2240 hardness test

Based on the results of the research, the value of tensile strength decreases with the addition of recycled material. The maximum tensile strength value in HDPE 90/10 variation is 24.38 MPa and the value of minimum tensile strength in HDPE 50/50 variation is 23.76 MPa. Maximum hardness value on pure HDPE variation of 55.80 Shore D, minimum value on HDPE 70/30 variation of 26.15 Shore D and HDPE 50/50 variation of 26.2 Shore D. It can be concluded that the use of recycled material as a mixture of making HDPE plastic products can decrease tensile strength and hardness, but the ductile nature of HDPE material is still good enough and still feasible to be used for the manufacture of household appliances from HDPE materials.

Keywords: HDPE, recycled material, tensile strength, hardness