

# **EFFECT OF ORGANOCLAY ADDITION ON COMPATIBILIZATION, THERMAL AND MECHANICAL PROPERTIES OF HIGH DENSITY POLYETHYLENE /POLYSTYRENE BLENDS**

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Composites materials made of high density polyethylene (HDPE) and polystyrene (PS) were successfully prepared at different HDPE/PS weight ratios, by melt mixing with a small amount of bentonite clay organically modified with hexadecyl ammonium chloride (OBT). The structure and *morphology* of the resulting composites were examined by X-Ray diffraction (XRD) and scanning electron microscopy (SEM). Morphology changes between the composite materials and the constituent materials were observed. The decrease of PS (or HDPE) particles size in HDPE/PS 70/30 (or 30/70) blend after the OBT addition reflects a clear improvement of the HDPE/PS blend compatibility. The effect of OBT on the thermal and mechanical properties was investigated by differential scanning calorimetry (DSC), thermogravimetric analysis (TGA) and tensile measurements. The main results obtained for the HDPE/PS composite materials are 1) a significant decrease of the HDPE crystallinity within the composites matrices, 2) an improvement of their thermal stability and 3) a reinforcement of their tensile properties compared to their unfilled blends. Our work provides interesting new evidence of the effect of the organoclay filler on the morphology and properties of high density polyethylene (HDPE)/ polystyrene (PS) blends composites comparatively to virgin HDPE/PS blends