

Separation of waste plastic resulting from electrical products by forced aeration flotation

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Abstract. The separation of four waste plastic samples - Polyvinyl chloride (PVC), Acrylonitrile butadiene styrene (ABS), Polycarbonates (PC), and Polyamides (PA) resulting from electrical products in three bicomponent plastic mixtures (PVC-ABS, PVC – PA, and PVC - PC) was performed by using four different flotation solutions (5%, 10%, 20%, and 30% concentration) of CaCl_2 . Furthermore, the waste plastic samples were analyzed in terms of density, specific volume, particle size, initial water content, and water absorption capacity, while the flotation solutions were analyzed in terms of pH, density, electrical conductivity, and refractive index. Results showed that from the analyzed waste plastic samples, the PVC sample has the highest density (1.3823 g/cm^3), followed by PC (1.2034 g/cm^3) and PA (1.0607 g/cm^3), while the ABS (0.9723 g/cm^3) presented the lowest value. The highest recovery rate was obtained for the PVC samples (98.10 % - 99.75 %) when it was mixed with ABS, whereas the highest purity was measured for ABS samples (98.29 % - 99.76%) in the case of the same mixture.

Keywords: acrylonitrile butadiene styrene; flotation; polyamides; polycarbonates; PVC; waste plastic.

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