Mineral Paper Production Using Calcium Carbonate Obtained from Eggshells Mixed with Recycled Polyethylene

Esquivel Murillo, Susana (School: Preparatoria Oficial No. 19 San Martin De Las Piramides)
Juarez Ortega, Sara (School: Preparatoria Oficial No. 19 San Martin De Las Piramides)

The innovative proposal of this research focused on the evaluation of eggshell as an alternative source for obtaining calcium carbonate (CaCO3), in order to be used in the paper sheet manufacturing process, as a mineral load to modify physical characteristics of high density polyethylene (HDPE), to give rise to mineral paper. A CaCO3 extraction method was evaluated from eggshell, which includes the previous treatment, drying, pulverization and subsequent quantification and identification through grinding by recoil method. Tests were carried out formulating 60% -40%, 70% -30% and 80% -20% percentage mixes, between calcium carbonate (CaCO3) and recycled high density polyethylene respectively, evaluating the benefit of using stearic acid as a modifying agent of surface for the mineral, and thus favor the mixing between carbonate and polyethylene, generating a paste to obtain the product with characteristics similar to the paper obtained from cellulose pulps. General parameters of concentrations and temperature were established according to the behavior of CaCO3 of eggshell, in the formation of the mixture with the recycled polyethylene, compared with commercial calcium carbonate. Mainly considered the physical aspect and resistance to tearing in the product obtained, the data thrown in this part of the experimentation allow to establish the next steps to be followed in the treatment of carbonate, to optimize the process and make the appropriate design of the extruder system in order to facilitate the extraction of the paste with the established formulations in this project stage.