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DEVELOPMENT OF LONG GLASS FIBER REINFORCEMENT OF RIGID PVC MOLDING COMPOUNDS

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In this paper, a method to reinforce PVC with long glass fibers (LGF) was developed through the incorporation of continuous glass fibers, as rovings, with plasticized vinyl matrix prepared by the wire coating technique. The plasticized vinyl rovings were pelletized. The pellets (13 - 14 mm) were then blended to a granulated rigid PVC formulation and directly injection molded as testing specimens. The direct injection molding, eliminating the preliminary melt-compounding process, was achieved successfully, which was considered convenient because it reduced the number of processing steps, which allowed cutting expenses, reduced the deterioration of the glass fibers' length and reduced the possibility of PVC resins' degradation. 20 w/w% long glass fiber reinforced rigid PVC (LGF/PVC) composites were then obtained with twice as high modulus and Charpy's impact strength compared to the unreinforced rigid PVC even with the composites were formulated with a high quantity of plasticizer. As a result, PVC can be used in unrecognized high-performance applications that were not possible before.