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Novel PBAT-based biocomposites reinforced with bioresorbable phosphate glass microparticles

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Biocomposites based on poly(butylene adipate terephthalate) (PBAT) and reinforced with micro-particles of inorganic biodegradable phosphate glass (PG) at 2, 10 and 40 wt% are prepared and characterized from a mechanical and morphological point of view. Scanning electron microscope (SEM) images show a good dispersion of the PG micro-grains, even at high concentrations, in the PBAT matrix, resulting in homogeneous composites. Tensile and dynamic-mechanical tests respectively indicate that Young's and storage moduli increase with PG concentration. The reinforcement of PBAT aims at modifying and tailoring the mechanical and viscoelastic properties of the material to expand its application field especially in the food and agricultural packaging sector, thanks to the similarity of PBAT performance with polyethylene.

Keywords: biopolymers, composites, poly(butylene adipate terephthalate), phosphate glass