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خلاصه مقاله:

The objective of this paper is to introduce a novel model to simulate the time dependent pultrusion process of glass/polyester composites. The model is able to simulate the resin curing process step by step. The resin curing process is divided in two liquid and gel-solid phases. Physical properties of resin including, resin specific heat, viscosity and thermal conductivity change by altering the resin temperature and degree of cure. In liquid and gel-solid phases, some of resin physical properties have significant role in heat transfer and affect simulation results. Although the mechanical and physical properties of fibers do not change during the curing process but affect the heat transfer process in the resin area and curing time. For this purpose, an equivalent material is introduced instead of the resinfiber compound. The heat generation during the resin curing process is an important issue, which depends on the resin absolute temperature and causes a fast curing of the resin. The degree of cure of the resin, which is used in resin viscosity calculation, is the only parameter indicating the final stage of simulation of resin curing. As an example, the process of pultrusion of a circular pultruded cross section is simulated by the model. The results of the simulation are compared with a real pultrusion process. The results show that the model is able to simulate pultrusion process very well

کلمات کلیدی:

Pultrusion process, Simulation, Circular cross section, Glass/polyester

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https://civilica.com/doc/102884