

Computational Fluid Dynamics (CFD) Simulations for Studying Flow Behaviors in Dipping Tank in Continuous Latex Gloves Production Lines

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Abstract : Medical latex gloves are made from the latex compound in production lines. Latex dipping is considered one of the most important processes that directly affect the final product quality. In a continuous production line, a chain conveyor carries the formers through the process and partially submerges them into an open channel flow in a latex dipping tank. In general, the conveyor speed is determined by the desired production capacity, and the latex-dipping tank can then be designed accordingly. It is important to understand the flow behavior in the dipping tank in order to achieve high quality in the process. In this work, Computational Fluid Dynamics (CFD) was used to simulate the flow past an array of formers in a simplified latex dipping process. The computational results showed both the flow structure and the vortex generation between two formers. The maximum shear stress over the surface of the formers was used as the quality metric of the latex-dipping process when adjusting operation parameters.

Keywords : medical latex gloves, latex dipping, dipping tank, computational fluid dynamics

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