

Effect of die lip geometry on the operability coating window in slot coating

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Effect of die lip geometry on the operability coating window has been investigated in Newtonian slot coating flow system. By changing lip angle in upstream and/or downstream dies, various flow characteristics and uniform coating region have been predicted from one-dimensional (1-D) viscopillary and two-dimensional (2-D) models. To solve 2-D free-surface flows, a finite element numerical method has been newly devised, quantitatively corroborating results by rather simple 1-D model. Interestingly, regions where upstream vortex occurs have been found in various die lip geometries.