

SIMULATION OF THE MELTING PROCESS FOR BARRIER-FLIGHTED SINGLE-SCREW EXTRUDERS USING SCREW ROTATION PHYSICS

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The focus of this investigation was to develop a new model for the melting dynamics of the solid bed for barrier melting sections in single-screw extruders. This analysis is an extension of the screw rotation model presented earlier for conventional screws. In this paper we present a new physical concept for melting in a barrier screw for single-screw extruders that is consistent with more rapid loss of solid material in the cross-channel direction when compared to conventional screw melting discussed previously. We developed a dynamic melting model and then simulated this first-order theory. The simulation qualitatively fits the literature observations for melting in a barrier-flighted melting section of a screw.