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Stretch Blow Molding of PET Bottle: Simulation and Experimental Analysis on Blowing Process for Bottle Grades Showing Different Stretch Behaviour

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A stretch blow molding process of PET bottle is precisely simulated by using a software package in which we consider a strain-hardening behavior. The results are compared with those from simulation which couldn't treat the strain-hardening behavior. And then we select a different grade of PET material which is for a hot-fillable bottle. The grade shows a different stretch-behavior from a previous one which was for a carbonated-soft drink bottle. And the hot-filling application also requires a heat-setting which is following the stretch-blowing. The stretched state just before heat setting affects the dimension stability against heat. The relation between them is obtained through experimental work. Finally, we try to find out a well-designed shape of a pre-form to get a better heat-stability of dimension of the bottle in the hot-filling stage.