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PULSE BLOW METHOD AND APPARATUS FOR FORMING
CONTAINER WITH ENHANCED THERMAL STABILITY

ABSTRACT

A method and apparatus for forming a plastic container having an enhanced level of crystallinity for improved thermal stability. A substantially amorphous and transparent preform in the molecular orientation temperature range is expanded by a pulse-blow process one or more times to form an intermediate article, prior to a final expansion step to the full container dimensions. The pulse-blow step is conducted at a relatively high-strain rate to maximize the formation of crystal nucleation sites, followed by deflation to relax the amorphous orientation, and the final expansion step is conducted at a low-strain rate to minimize the amorphous orientation. The resulting container has a higher thermal deformation temperature and reduced thermal shrinkage and is particularly adapted for use as a refillable or hot-fill beverage container. A blow-mold and fluid supply apparatus is provided, including a metering chamber and piston, for alternatively supplying the high and low-strain rate inflations.

(Figure 2)

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