

Advancement in Injection Stretch Blow Molding of Polypropylene — Technology and Market Development

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Abstract

Injection stretch blow molding (ISBM) is a well-developed blow molding technology, particularly for polyester terephthalate (PET). However, traditionally this highly efficient molding technology can hardly be used in polypropylene (PP), mainly because PP preforms typically exhibit a very narrow processing window during the reheat, stretch, and blow steps. However, because of the low cost and low density of PP, along with some other advantages, such as high thermal stability, PP has been considered a potential replacement of PET for some beverage packaging applications. These facts drive a number of PP vendors to develop new PP grades for ISBM applications.

In the first section of this presentation, the marketing and commercialization related aspects for the PP ISBM application will be discussed. In the second section, the recent development in PP IBSM technology will be reviewed. Some key aspects highly related to PP ISBM will be discussed. The rheological and thermal properties that affect PP's processability in biaxially oriented processes will be analyzed, which helps to develop PP grades with a broader processing window during the stretch-blow molding process, and thus significantly improving PP's ISBM processability.

Short Biography of Dr. Luyi Sun

Dr. Luyi Sun is an Assistant Professor in Department of Chemistry and Biochemistry & Materials Science, Engineering, and Commercialization Program at Texas State University-San Marcos. He received his B.S. degree in Polymer Chemical Engineering from South China University of Technology. In 2004, mentored by Prof. Joseph S. Thrasher, he obtained his Ph.D. degree in chemistry at The University of Alabama. Following that, he did two years of postdoctoral research at Texas A&M University under the supervision of Profs. Abraham Clearfield and Hung-Jue Sue. From 2006 to 2009, he was a Senior Research Engineer at TOTAL Petrochemicals USA, Inc. Dr. Sun's current research focuses on design and synthesis of nano-structured multifunctional materials for various applications and new polymer processing technology development. Dr. Sun is an Editorial Board member of *Journal of Plastic Film & Sheeting*. Dr. Sun has published more than sixty (60) peer-reviewed journal articles and two (2) book chapters. He is also the inventor/co-inventor of 29 US/International Patents or Patent Application.