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THERMOFORMING CONCEPTS FOR POLYPROPYLENE RESINS MARCELO FARAH,

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Polypropylene is a linear molecules highly use in several different application. Its properties balance gives a highly versatility for any applications, as in injection molding, extrusion, films, etc. In thermoforming processing, a polymer sheet is reheated to be molded against a mold with the assistance of either pressure, vacuum or/and mechanically assisted for plug to conform a final article. PP normally has some limitation in to this processing because of its poor extensional regime properties, unlike HDPE, PS and ABS which have relatively higher melt elasticity. In the reheat step the sheets must to support their own weight to reach the thermoforming temperature, called SAG resistance. Polypropylene normally presents some difficulties in this step, being not friendly for thermoforming. To understand the Polypropylene behavior, Rheological properties were determined and correlated to SAG characteristics. Different molecular Weight, Molecular weighs distribution for some homopolymer and copolymer polypropylenes were studied. There were observed two difference stages on deformation. The first one was independent of MFI and a second one dependent of Mw. The concepts of themoformability are proposed for different PP grades.