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ADHESION PROPERTIES OF SINGLE-COMPONENT AMORPHOUS POLY ALPHA-OLEFIN PRESSURE SENSITIVE ADHESIVES

1. ABSTRACT

A continuous, liquid pool, solvent-free polymerization process using proprietary Ziegler-Natta catalyst technology is used to produce a range of amorphous poly alpha-olefin (APAO) co-polymers of propylene and hexene-1. Having certain and defined hexene-1 content, this family of APAOs have desirable hot melt pressure sensitive adhesive (PSA) properties, are heat stable, are low in VOC content, and can be used straight from the synthesis reactor without the addition of tackifiers, volatile plasticizers, or oils.

Propylene-hexene-1 APAO co-polymers were synthesized in REXtac's 50 kg/hr APAO pilot plant; three were selected to determine their specific, neat polymer PSA properties. The APAOs were laminated on a Mylar sheet and the PSA properties of the resulting laminates were determined using four PSTC and ASTM test methods: 180-degree peel force, Polyken probe tack, rolling ball tack and holding power. The properties of the laminates compared favorably to the tested properties of five commercially available tapes and three commercially available hot melt PSAs.