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LATERAL COEXTRUSION TECHNOLOGY FOR MANUFACTURING ADHESIVE TAPES

Lateral coextrusion is an advanced manufacturing process used to produce multilayer adhesive coat-ings by simultaneously extruding multiple polymer layers through a specialized die. This technique al-lows precise control over the composition, thickness, and functionality of each layer, making it ideal for applications in packaging, automotive, electronics, and medical devices. Key advantages of lateral co-extrusion include reduced material waste, lower production costs, and the ability to combine dissimilar materials for enhanced performance. However, the process also presents challenges such as complex die design, stringent process control requirements, and potential material compatibility issues. Despite these challenges, lateral coextrusion holds significant market potential as industries seek high-performance, multifunctional adhesive coatings.

In this work, lateral coextrusion coating was performed to test the behavior of combined different melts using a specially developed insert. The goal was to combine Pressure-Sensitive Adhesives (PSA) with reactive adhesives. This combination offers the advantage that the PSA adhesives, which have high initial tack, can initially fix the component, while the final strength is achieved through the significantly higher adhesive forces of the reactive tapes. The specially designed insert was mounted in a three-channel die, with the middle channel closed. The top and bottom channels were fed with PSA adhesive and reactive adhesive, respectively. The two layers met in the die before exiting through the die lip. Fi-nally, the laterally combined adhesives were coated and cooled using the chill roll process.

This special tape was then tested for peel strength, lap shear strength, and adhesion between the ad-hesives. The combined properties of the tape showed better performance than the individual properties of the single adhesive.
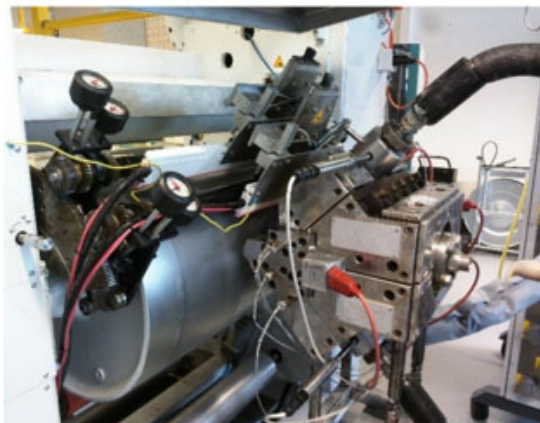
Coextrusion die with chill roll

Co-extruded Tape