

### Airflow effects on coating stress development

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This study explores airflow effects on the stress development of Polystyrene coating: 15wt% Polystyrene / Toluene and 15wt% Polystyrene / MEK polymer solutions are prepared and coated on the Silicon substrate by blade coating. Stress is measured with in-situ beam deflection method at the room temperature of airflow 3lpm, 21lpm, 40lpm(liter per minute) of nitrogen gas. Coating surface image were taken with microscope Glass transition temperature of coating layer is measured to investigate the airflow influence on free volume in the coating layer. For PS/Toluene coating, as airflow increases, coating surface becomes rough but stress value and glass transition temperature is independent of airflow rate. For PS/MEK coating, coating surface change with increasing airflow rate appears similar to PS/Toluene coating. However, coating stress decreases with increasing airflow rate although glass transition temperature is constant regardless to airflow rate. In order to understand airflow effect further, skinning mechanism caused by high airflow and its effect on the stress and surface change should be investigated.