



Surface Measurement Systems
World Leader in Sorption Science

Optimize Coatings Performance & Predict Real-World Behavior



Permeability to
Gases & Vapors



Glass Transition
Temperature



Surface Energy
& Heterogeneity



Adhesion & Cohesion



Solvent Interactions



Moisture Sorption
Isotherms

Unlock your research potential with advanced sorption analyzers, delivering unmatched materials characterization to drive the medical solutions of the future.



Empowering Material Research for World's Leading Coatings Companies



Johnson & Johnson

AMGEN

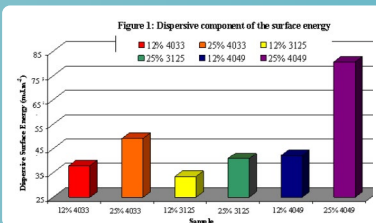
abbvie

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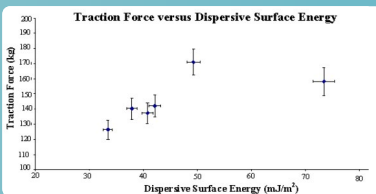
Bristol Myers Squibb™



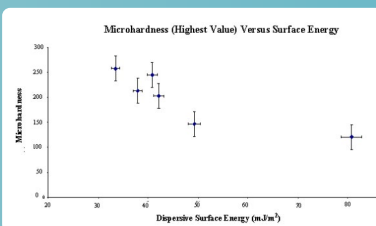
Our Instruments in Action



Dispersive surface energies of the different TPO samples measured at 303 K.



Correlation between dispersive surface energies (thermodynamic adhesion) and traction force required for shear delamination (practical adhesion).



Microhardness (measure of crystallinity) of the six TPO samples plotted versus dispersive surface energy (as measured by IGC SEA).

Case Study 606

The Problem: Coatings on polymers, particularly polyolefins, face adhesion challenges due to their low surface energy, which affects their bonding strength and durability. Additionally, moisture uptake in polymer coatings can impact material stability, permeability, and long-term performance.

The Techniques: - Dynamic Vapor Sorption (DVS)
- Inverse Gas Chromatography (IGC)

The Research: IGC analysis correlated TPO surface energy with polyolefin coating adhesion, revealing the influence of elastomer composition on both. Separately, DVS was employed to examine the water absorption behavior of moisture-protective coatings (Opadry AMB, Methocel E5, and Eudragit E PO), allowing for the evaluation of their barrier properties and stability under humid conditions.

The Results: Higher elastomer content in TPOs enhanced dispersive surface energy, improving coating adhesion, while increased crystallinity reduced it. DVS showed varying moisture uptake among polymer coatings, with Opadry AMB exhibiting a significant transition affecting water permeability at critical humidity. IGC and DVS effectively predict coating adhesion and moisture sensitivity.

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