



Surface Measurement Systems
World Leader in Sorption Science

Optimize Food & Drink Materials Performance & Predict Real-World Behavior



Moisture Sorption
Isotherms & Kinetics



Diffusion &
Permeability



Glass Transition
& Crystallization



Drying & Dehydration
Behaviors



Hygroscopicity



Powder
Caking

Unlock your research potential with advanced sorption analyzers, delivering unmatched materials characterization for food & drink development.





Surface Measurement Systems
World Leader in Sorption Science

Empowering Material Innovations for the World's Leading Food & Drink Manufacturers



MARS

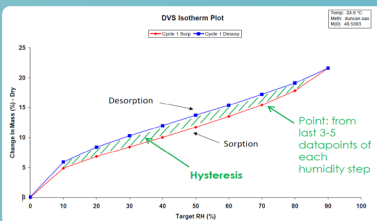


KERRY

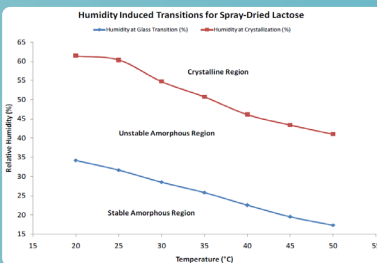
HERSHEY



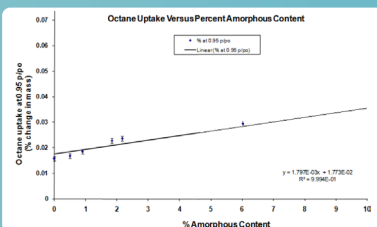
Our Instruments in Action



Moisture Sorption Isotherm plot for Starch at 25 °C



Humidity-induced phase transitions for spray-dried lactose measure via DVS



Octane vapor calibration curve for lactose samples with various amorphous fractions

DVS Application Note 102

The Problem: Moisture sorption critically impacts food stability, shelf life, processing behavior, and packaging performance. Traditional static methods to measure moisture content are slow, labor-intensive, and inaccurate. A rapid, sensitive, and real-time technique is needed to study water interactions with food materials, including moisture-induced phase changes, caking, flavour loss, and packaging permeability.

The Techniques: Dynamic Vapor Sorption (DVS)

The Research: Dynamic Vapor Sorption (DVS) was used to analyze water sorption behavior, phase transitions, flavour release, and diffusion in food ingredients, powders, and packaging films under varying humidity and temperature conditions.

The Results: DVS revealed humidity-driven transitions in amorphous food materials, quantified amorphous content, and measured diffusion and water vapor transmission rates in packaging films. Sorption data correlated with physical transformations, flavour loss, and caking behavior. The Payne cell accessory enabled precise water activity and flavour flux measurements, supporting formulation and packaging design.

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