



... New Isochema Website Launched !!! ...

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New Application Articles

“Effects of Temperature on the Solubility of Aroma Compounds in Polyethylene Film”

Yuichi Hirata and Violet Ducruet of ENSIA / INRA use the IGA-002 to study sorption characteristics of ester vapors in low density polyethylene film and isotherm analysis using the Engaged Species Induced Clustering Model (ENSIC) at various near ambient temperature

“Kinetic Isotope Effect for H₂ and D₂ Quantum Molecular Sieving in Sorption on Porous Carbon Materials”

Researchers at the University of Newcastle, UK, investigate isotope effects using the IGA-001

Exhibitions

Here are some of the meetings we are attending in the coming months so please stop by at our booth if you are able:

Fundamentals of Adsorption FOA9

Sicily, Italy 20th-25th May

Carbon 2007

Seattle, USA 15th-20th July

15th International Zeolite Conference IZC

Beijing, China 12th-17th August

31st International Vacuum Microbalance Techniques Conference

Izmir, Turkey 12th-14th September

AAPS 2007

San Diego, USA 12th-16th November

WEEE Directive

The EC Waste Electrical and Electronic Equipment directive comes into effect from 1st July 2007. Hidden Isochema has registered with the Environment Agency and our reference number is WEE/JK0067TX. Please contact us directly if you have any questions about compliance.

Vapor Sorption Behaviour of Mannitol Polymorphs at Different Temperatures ¹

W. L. Hulse and R. T. Forbes

Institute of Pharmaceutical Innovation
University of Bradford

Our objective is to determine the water vapor sorption behaviour and physical stability of beta and delta mannitol polymorphs over a range of temperatures using the IGAsorp system.

¹ Extract from poster presented at AAPS 2006 San Antonio

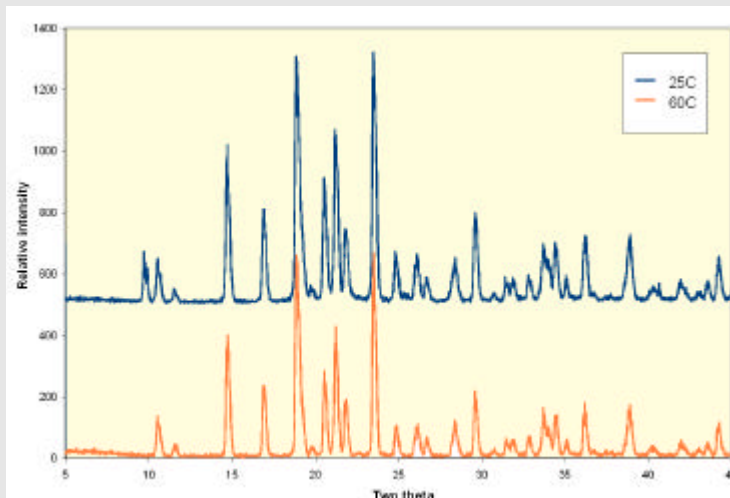




Mannitol exists in three polymorphic crystalline forms that are well characterised in the literature ^{1,2}. A number of techniques may be employed to differentiate between polymorphic forms. These include microscopy, spectroscopy, crystallography and thermal analysis. Of these crystallography is the principal method of determining polymorphic form giving rapid, unambiguous results.

More recently the use of vapour sorption has been used to probe the behaviour of crystal polymorphs ³. We investigated the water uptake at various temperatures as shown below.

Mannitol Polymorph	% Uptake d.b. (25°C)	% Uptake d.b. (40°C)	% Uptake d.b. (60°C)
Beta	4.3 +/- 0.08	6.6 +/- 0.04	11.9 +/- 0.35
Delta	1.2 +/- 0.09	3.3 +/- 0.53	7.5 +/- 0.69

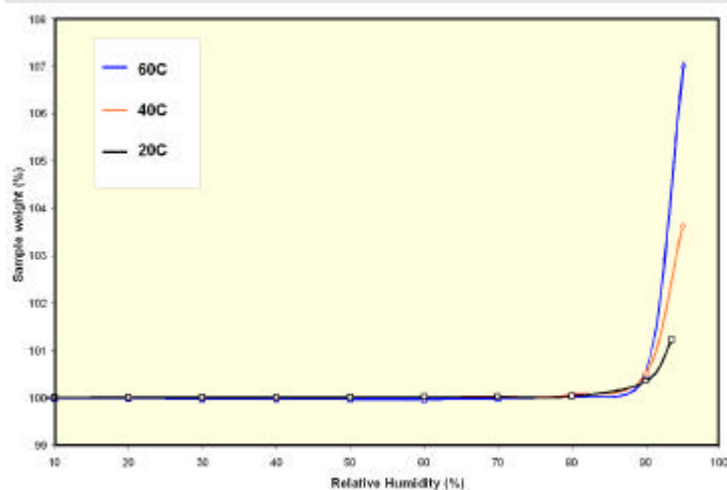


XRPD of mannitol polymorphs after vapour sorption

The summary of our findings so far is as follows: Beta mannitol is more hygroscopic than the delta form at all three temperatures employed. Delta mannitol showed complete polymorphic conversion at elevated humidity and 60°C but only a partial conversion at 25°C.

Polymorphic conversion can impact product quality and functionality and the moisture sorption technique can readily assess any temperature dependency of moisture-induced polymorphic conversion potential during manufacturing.

1. Walter-Levy, L., (1968). C.R.Acad.Sci. Paris Ser. C., 267: 1779
2. Burger, A. et al (2000). J. Pharm. Sci., 89: 457
3. Carvahal, M.T., Staniforth, J.N., (2006). Int. J. Pharm., 307: 216



Water isotherms of delta phase at various temperatures



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