SCIENTIFIC AND DIGITAL SYSTEMS®

Expression

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Memento being presented to Scientific and Digital Systems by the organizers of ILDEX

Staff of SDS at ILDEX from left to right: Mr. Raghav, Mr. Sandeep, Ms. Smita, Ms. Ragini, Mr. Himanshu

SDS participation in International Livestock & Dairy Expo (ILDEX), 2008 held at Pragati Maidan, New Delhi proved to be an opportunity for us to showcase our complete product range especially Texture Analyser and Rapid Visco Analyser and educate delegates from different work spheres in the field of Livestock and Dairy by giving live demonstrations of these instruments.

From left to right: Instruments viz. Texture Analyser, Rapid Visco Analyser and Diode Array 7200 on display at GPC, 2008

Conference Hall At The Global Potato Conference, 2008

SDS participated in the Global Potato Conference 2008 and the Agrotech Exhibition, 2008 held at NASC Complex at ICAR, New Delhi where Diode Array 7200, Rapid Visco Analyser and Texture Analyser were displayed. During the conference a lecture was also delivered by Ms. Bronwyn Elliott from Newport Scientific, Australia (a group company of Perten Instruments AB, Sweden) who are exclusively represented by SDS in India on STARCH FUNCTIONALITY IN POTATO & STARCHY FOOD PRODUCTS

IN THIS ISSUE

PERMEATION PRODUCTS

OXYGEN PERMEATION ANALYSER

The Oxygen Permeation Analyser uses a Proprietary Coulometric Oxygen sensor. The single sensor in the instrument is used to measure the transmission rates through flat barrier films, PET bottles and finished packages.

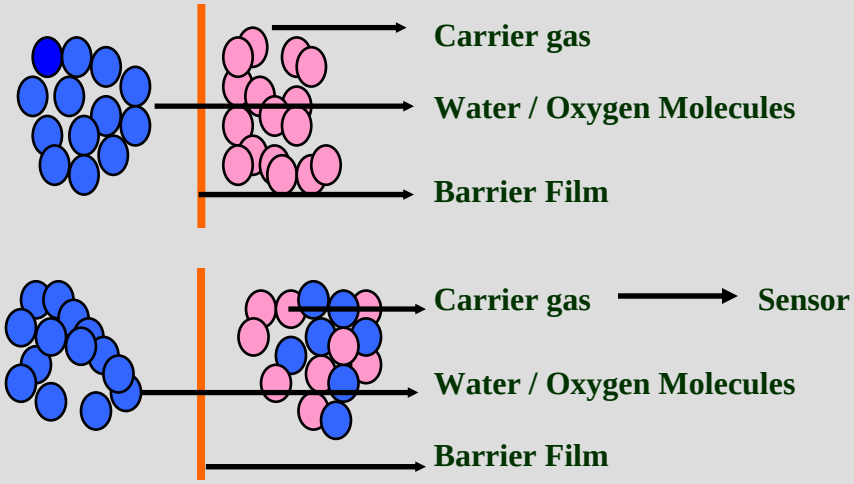
The instrument is confirming to ASTM D – 3985 standard. The results from the instrument can be easily compared to historical permeation data. The instrument can be calibrated through standard certified gas cylinders and films. This assures the best performance and simplest compliance with quality procedures.

Measurement of Oxygen Transmission Rate:

The film samples are clamped in a diffusion chamber. Pure Oxygen is then automatically introduced to the upper half of the chamber, while a carrier gas of industrial nitrogen flows through the lower half. Molecules of Oxygen permeating through the film to the lower chamber are passed to the sensor by the carrier gas. This allows a direct measurement of the OTR which is displayed as either cc/m^2/day or in imperial units cc/100in^2/day .

WATER VAPOUR PERMEATION ANALYSER

The instrument is used to measure the moisture transmission rates through flat film barriers, PET bottles and finished packages. It utilizes well proven electrolytic P_2O_5 (coulometric) sensors. These sensors offers a rapid response and very low level moisture detection giving the instrument the capability to analyse very high barrier films and packages. The instrument can be expanded to provide upto 12 testing chambers. Due to the advanced technology each pair of chambers can be used to measure films of different permeability, with no loss of speed and accuracy. The user can test films side by side with packages on the same analyzer. The Instrument comes with a fast response control software which gives the user control of all WVTR testing requirements. The Instrument displays WVTR in either cc / m^2 / day (g/m^2/day) or in imperial units cc/100in^2 / day (g/100in^2 / day).



PUBLICATIONS

Development of Intermediate Moisture Sand Pear Slices

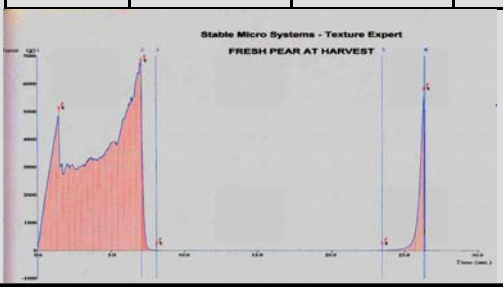
(Using Texture Analyser from Stable Micro Systems, U. K.)

Dr. Mahesh Kumar, Punjab Agricultural University, Ludhiana

The experiments were conducted to evaluate the quality of processed sand pear slices prepared using a osmo-mechanical drying procedure. This popular fruit crop of North-West India has been ignored for fresh consumption due to its grainy, gritty and hard texture. The properly cured fresh fruit was sliced (quarters and halves) and then blanched (10 and12 min for a batch of approx. 3 Kg) in boiling water. These slices were dried osmotically by mixing with sugar & glycerol syrup (Fruit: Sugar & glycerol :: 2.4:1) followed by mechanical drying at 60°C. The slices were dried to different moisture contents of 10%, 25% and 40 % (wb) and packaged in locally available flexible pouches made up of high density polyethylene, polypropylene and aluminium laminated pouches respectively. These pouches were stored at ambient conditions. The textural and biochemical parameters of fresh and processed slices were estimated. The textural properties of the stored slices were estimated in terms of textural profile analysis using Texture Analyser (TAHDi). The sensory evaluation of these slices carried out by a group of semi trained panellists after six month's storage revealed better acceptability with 25% moisture (wb). The average hardness and chewiness for these slices were calculated to be 5917.87 g_f and 615.13 g_f*s in comparison to 6589.2 g_f and 1449.5 g_f*s for fresh fruit having moisture content of 85% (wb). The biochemical parameters of acidity, total soluble solids, reducing and total sugar as well as optical density were estimated to be safe for the processed sand pear slices.

Table 1: Textural characteristic of fresh, blanched and osmosed sand pear slices

Sample	Moisture Content	Brittleness	Hardness	Adhesiveness	Elasticity	Cohesiveness	Gumminess	Chewiness
S1	86	4880.8	6589.2	692.8	2.8	0.08	512.2	1449.5
S2	86	4213.9	5472.2	4.6	3.3.	0.09	501.7	1640.6
S3	88	2678.3	3595.2	343.3	1.0	0.04	143.9	151.1
S4	70	5540.2	8229.8	22.5	1.1	0.05	425.7	492.1
S5	70	5724.8	8496.7	23.2	1.2	0.06	504.1	609.0



S1: Sand pear at harvest

S2: Sand pear cured

S3: Sand pear blanched

S4: Osmosed quarter slices

S5: Osmosed half slices

PROJECTS COMPLETED AT SDS

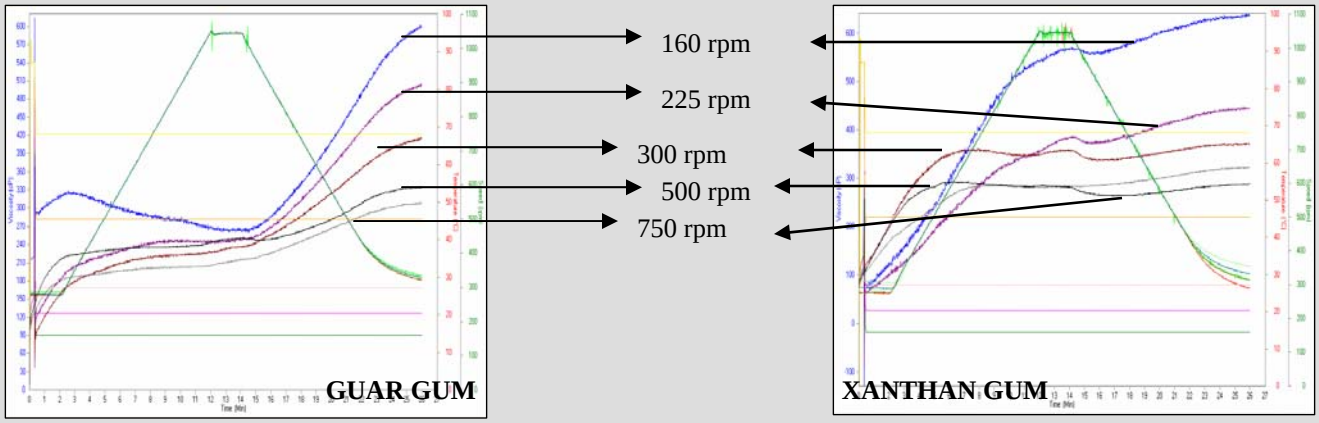
OBJECTIVE: To study the effect of shear rates on the sol-gel transition temperature in hydrocolloids (gums) using Newport Scientific's rapid Visco Analyser Tecmaster

GUMS USED: Guar Gum and Xanthan Gum (1% solution in distilled water)

PROFILE USED:

TIME PERIOD	PARAMETER	VALUE
00:00:00	Temperature	25 °C
00:00:00	Speed	960 rpm
00:00:20	Speed	160 rpm
00:02:00	Temperature	25 °C
00:12:00	Temperature	95 °C
00:14:00	Temperature	95 °C
00:24:00	Temperature	25 °C
00:26:00	Temperature	25 °C
00:26:00	End	

GRAPHS OBTAINED:



From the results for guar gum, it can be inferred that the transition temperature are not really dependent upon the shear rate. Thus we can say that guar gum will behave in a similar way at high and low shear rates. It can also be inferred from this, that if only a phase transition is desired then the shear rate applied at the time of processing is not a consideration. However, if the final viscosity is an essential criterion for the product, then shear rate cannot be undermined since it is clearly visible from the graph that the final viscosity lowers at higher shear rates. In case of xanthan gum, the transition temperature increases with the increase in shear while there is a decrease in the final viscosity. It can thus be said that it cannot be used at high shear since the final viscosity is low and transition temperature is high. Also at low shear rates it shows a constant increase in viscosity and hence can be used effectively at low shear rates for products where a loss of viscosity during production is not a desired feature.

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