materials of different composition reconstituted as bar-shaped test pieces. The flakes consist of a standard formulation and others in which one or more components have been subtracted. A hot press technique is used to mould bars from ground flakes of a given particle size to remove the geometry and structure effects and allow comparison of the matrix properties. The specimens are conditioned to different water contents in the range 9–29% (wet weight basis) prior to measurement of stiffness properties using Dynamic mechanical thermal analysis. The objective is to compare the mechanical properties of pressed specimens of multiple component systems with those published for simpler one and two component materials.

Acknowledgements — This work is supported by a MAFF - DTI LINK grant under the Food Processing Sciences Programme involving Weetabix Ltd, APV Baker, Campden Food and Drink Research Association, University of Nottingham and Novo Nordisk (UK) Ltd. The authors acknowledge the scientific and financial support of the MAFF and LINK participants.

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PARTITIONING OF WATER IN BINARY MIXTURES AT LOW MOISTURE CONTENT

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The work described investigates two approaches to measure the distribution of water between biopolymers in a binary mixture containing less than 0·3 g of water per g of dried solids. The systems investigated were native wheat starch with either egg white or xanthan gum.

It is well known that the crystallinity of starch, measured by X-ray powder diffraction, increases with increasing water content over the range 0 to 0·3 g water per g dry material (Bear & French, 1941). As egg white and xanthan show no crystallinity by this method we have used X-ray powder diffraction as a probe to determine the water partitioning to the starch. Sorption isotherms for the single systems and for the mixtures were recorded and the interaction parameters between the two components were calculated as described by Kaminski & Al-Bezweni (Kaminski & Al-Bezweni, 1994).

These interaction parameters and the degree of crystallinity of the mixtures are discussed in terms of the weighted averages for the individual components.

Data for the redistribution of water in the mixtures as a function of time will also be given.

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