



## News and Views

### FOOD THICKENERS AND STABILIZERS: USA & W. EUROPE: 1990

The in-depth market study of the food thickener and stabilizer industry conducted IMR International has now been completed. This 625 page report analyzes 15 food additives by geographic region, by stabilizer, and by application in the food industry.

The use of food additives continues to attract increasing attention both from the suppliers' point of view and by the industrial users and consumers. There are constant changes in the food processing technologies and in consumer tastes and practices when purchasing foods. The regulations governing the use of these products are also continually changing.

The countries covered by the survey include: USA, France, Italy, W. Germany and the UK. The 15 stabilizer groups covered are listed below:

Agar, alginates, arabic, carrageenan, carboxymethylcellulose, other celluloses, gelatin, guar, karaya, locust bean gum, pectin, starch (inc. modified), tragacanth, xanthan, other hydrocolloids.

Total consumption of these food additives in the countries surveyed amounted to 720 000 metric tonnes valued at \$960 million. Starch accounts for nearly 600 000 tonnes or 83% of the tonnage but only 28% of the total value i.e. \$270 million. In terms of value, Gelatin and gum Arabic ranked second and third respectively. Excluding starch, total hydrocolloid consumption was 122 000 tonnes, worth \$686 million in 1990.

The USA is by far the largest market accounting for nearly 50% of the total value. The use of xanthan gum in the US accounted for over 80% of the total consumption of xanthan gum. West Germany ranked second in overall hydrocolloid consumption followed by the UK, France and Italy. Italy has the most restrictive market for food thickeners. Xanthan gum is expected to be the fastest growing stabilizer at 6.2% per year. This high growth rate has attracted new suppliers and made the food grade xanthan gum market extremely competitive.

The food applications in which these stabilizers are used have been subdivided into ten categories which are listed below:

Bakery, beverages, confectionery, dairy, pet food, prepared meals, preserves, sauces & dressings, soups, other applications.

Confectionery and dairy applications were the largest in value accounting for 32% of the total value. Dairy applications are the fastest growing and consume the broadest range of stabilizers. Many W. European dairy products are now being produced and promoted in the USA.

The overall forecast growth rate excluding starch is about 3.1% per year in terms of value. This will increase 1990 consumption of non-starch hydrocolloids to nearly 140 000 tonnes worth over \$800 million in 1995.

Kelco's gellan gum was finally approved by the FDA for limited food use in September 1990. Approval in European countries is probably a few years down the road. Cassia Tora and Tara gum are still being promoted in Europe in an attempt to gain EEC approval. The recent FDA approval of semi-refined carrageenan for all human food applications has caused an uproar in the industry and is being strongly contested by all the suppliers of refined carrageenan. For further information about this survey and subscription terms, please contact: IMR International, Att'n Mr D. Seisun, PO Box 28993, San Diego, CA 92128, USA.

#### HYDRATION OF HYDROPHILIC MATERIALS IN FOOD AND DRUG DELIVERY APPLICATIONS

A major research project to study of the hydration characteristics of biopolymers has been approved. The research will be particularly aimed at applications for polysaccharides and proteins in the food and pharmaceutical industries. It will primarily be carried out at the University of Nottingham in the Department of Applied Biochemistry and Food Science and the Department of Pharmaceutical Sciences.

Efficient dispersion and subsequent dissolution is one of the most important requirements of industrial polysaccharides used in the food industry and one of the aims of the project will be to obtain a more fundamental understanding of this process. For example the rate of hydration of polysaccharide powders will be determined from viscosity and NMR measurements and this will be related to the fluid dynamics of the mixing process, the structure of the biopolymer e.g. whether it is in an

ordered or disordered form and the particle size, morphology and presence of surface contaminants. With regard to the latter, static secondary ion mass spectroscopy based in the Department of Pharmaceutical Sciences has already demonstrated that some industrial polysaccharides can contain small quantities of surface contaminants which would be expected to have an influence on the hydration performance of the material.

Of increasing importance is the use of polysaccharides as components of hydrophilic matrix tablets used in controlled drug delivery applications. Hydration here will be followed using confocal microscopy, nmr and scanning electron microscopy. Confocal microscopy should prove a particularly interesting technique in this respect since when combined with image analysis it will enable the ingress of the hydration front into the compressed powder to be followed dynamically. In addition by preparing tablets containing fluorescent markers and imaging diffusion from the tablet during hydration it will be possible to obtain information relevant to flavour release and drug release from the hydrating polysaccharide matrix.

Information on biopolymer structure will be obtained from raman spectroscopy and scanning tunnelling microscopy. A particularly interesting fundamental challenge which the project will address will be to see if the latter, with its potential for resolving to atomic dimensions, will be able to settle some of the controversies regarding structures of the polysaccharide ordered states.

Sponsorship for the work has been obtained from the UK Ministry of Agriculture Fisheries and Food via the successful Food Processing Link Scheme. So far support has been obtained from eight industrial companies giving the project a budget of £1 032 000 and allowing seven research and support staff to be employed. Although the start date will be 28 February 1991, the project is not expected to be fully underway until the middle of 1991. We would welcome approaches from other companies who wish to join the group. For a relatively modest contribution it will be possible to obtain access to a very large industrially relevant research project. Further details are obtainable from Dr J. R. Mitchell at the University of Nottingham.