

## Database of Physical Properties of Foods

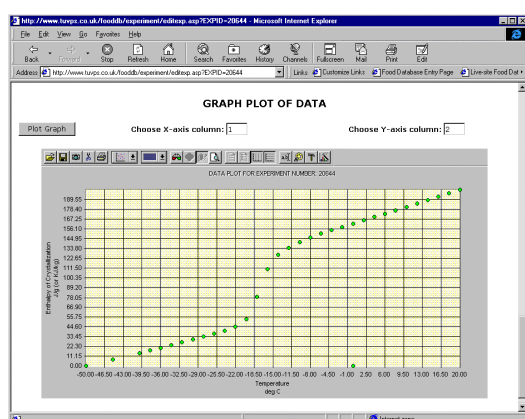
(Getting at the Physical Properties that other software can't reach!)

In the age of computer aided modelling the lack of reliable data on physical properties of foods is a limiting factor for designing new food processes. Building a solid scientific base is key for the food industry. The National Engineering Laboratory (NEL) Glasgow, UK has launched a unique knowledge base for the Physical Properties of Foods. This database is on <http://www.nelfood.com> and is a successful outcome of an EU project CT96-1063 co-ordinated by Dr Paul Nesvadba, a senior researcher in Food Physics at the Robert Gordon University in Aberdeen. NEL was chosen as the software contractor and web-host for the database. Several international food companies, Food Research Organisations and national research Institutes for Food and Agriculture across Europe support the project.

The unique feature of NELFOOD is that it provides a central repository of information, in **both** bibliographic and numeric forms. These are accessible to all registered users – free of charge - to enter, edit and retrieve data. The application provides data tables with graphical output. The information has been carefully collected and reviewed over the three-year period of the project by 24 project partners from 14 European countries (Sweden, Denmark, France, UK, Ireland, Germany, Netherlands, Greece, Israel, Italy, Czech Republic, Switzerland, Portugal and Spain).

The challenge of characterising the properties of foodstuffs is formidable. Most foods are complex materials which may be in a solid (e.g. apple) or a liquid (e.g. honey) state: they are often homogeneous or heterogeneous mixtures of other food components and can have variable compositions depending on ripeness, soil conditions, cooking history, etc. It is important to know the physical properties of these substances in order to predict the effects of processing or storage. Much of what we eat is processed in some way and questions such as 'what is the thermal conductivity of chicken legs?' are important. If it takes too long to chill and freeze the carcass, then salmonella and other micro-organisms can breed to levels where the product is not safe for consumption. The NELFOOD database characterises food materials in terms of the experimental conditions under which the measurements were made and gives bibliographic references together with the numeric data. The data are given quality codes and have been validated by leading experts in the field which relieves the non-expert user from the task of assessing whether the information is fit for the purpose he or she wants to use it.

Making the database a web-application opens up the possibility for a world-wide data repository. Information is pooled, thus avoiding duplication of effort and also making it easier to find out where critical information gaps exist. There are now (March 2002) over 1200 registered users of the Database from all over the world. There are over 5400 bibliographic references with over 1400 experiments containing numeric data or equations.



The figure is a screenshot of the main page of the Physical Properties of Food Database. The page features a header with the title "Physical Properties of Food" and a description: "The Physical Properties of Food DataBase - a free access database of bibliographic references and experimental data on the physical properties of foods over a wide range of conditions and processes." Below the description are links for "Log on" and "Register as New User Knowledge Base". The page also displays logos for "DataBase Sponsors" including Nestle, RHM TECHNOLOGY, DSM, and Unilever. A footer section provides contact information for the Project Coordinator and mentions funding from the Commission of the EU. The browser window shows the URL <http://www.knps.co.uk/FoodDB/>.

The picture shows an example of the graphical output available (enthalpy data on walnut oil, experiment ID 20644). The second picture is a screen-shot of the main page.

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