

## Composition of Foods

Physical properties of foods depend on the chemical composition of foods and on the structure of the food. In some cases engineering properties of foods can be calculated using the knowledge of the food composition. For example, thermal properties of foods can be calculated from the proximate composition of food using a computer program COSTHERM (reference 13).

The Food Standards Agency of the United Kingdom maintains the UK Nutrient Databank, This contains extensive information on the nutrient content of foods commonly consumed in the UK. A range of books based on information from the databank and containing nutrient composition data has been produced. These books include the McCance and Widdowson's The Composition of Foods series.

The Nutrient Databank is described on the Food Standards Agency website  
<http://www.food.gov.uk/science/dietarysurveys/dietsurveys/>

The composition of foods data is in an Excel file downloadable from  
<http://www.food.gov.uk/multimedia/spreadsheets/cofids.xls>

The user manual for the Excel file is downloadable from  
<http://www.food.gov.uk/multimedia/pdfs/cofuserdoc.pdf>

The data in the Excel file comprise the following (superscripts refer to References):

- 6th Summary Edition (2002) <sup>1</sup>
- Fatty Acids, supplement (1998) <sup>2</sup>
- Meat Products and Dishes, supplement (1996) <sup>3</sup>
- Meat, Poultry and Game, supplement (1995) <sup>4</sup>
- Miscellaneous Foods, supplement (1994) <sup>5</sup>
- Fish and Fish Products, supplement (1993) <sup>6</sup>
- Vegetable Dishes, supplement (1992) <sup>7</sup>
- Fruit and Nuts, supplement (1992) <sup>8</sup>
- Vegetables, Herbs and Spices, supplement (1991) <sup>9</sup>
- Milk Products and Eggs, supplement (1989) <sup>10</sup>
- Cereals and Cereal Products, supplement (1988) <sup>11</sup>
- Immigrant Foods (1985) <sup>12</sup>

The Excel spreadsheet consists of 16 separate sheets:

- Factors
- Proximates
- Inorganics
- Vitamins
- Vitamin Fractions
- Saturated fatty acids per 100g fatty acids
- Saturated fatty acids per 100g food
- Monounsaturated fatty acids per 100g fatty acids

Monounsaturated fatty acids per 100g food  
Polyunsaturated fatty acids per 100g fatty acids  
Polyunsaturated fatty acids per 100g food  
Other fatty acids per 100g food  
Phytosterols  
Organic acids  
Labelling  
Nutrient Footnotes

The sheet Proximates is of particular interest to the food engineer who wants to calculate the thermal properties. This sheet gives values of the contents of water, protein, fat and carbohydrates. Total carbohydrate (and its components, starch and total sugar) are expressed wherever possible as their monosaccharide equivalents. Further details about the Excel data and its use are in the mentioned user manual.

## References

1. McCance and Widdowson's The Composition of Foods, Sixth summary edition. Food Standards Agency (2002). Cambridge: Royal Society of Chemistry. ISBN 0-85404-428-0.
2. Fatty Acids. Ministry of Agriculture, Fisheries and Food. (1998). Seventh supplement to 5th edition of McCance and Widdowson's The Composition of Foods. The Royal Society of Chemistry, Cambridge.
3. Meat Products and Dishes. Chan, W. Brown, J. Church, S.M. and Buss, D.H. (1996). Sixth supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
4. Meat, Poultry and Game. Chan, W. Brown, J. Lee, S, and Buss, D.H. (1995). Fifth supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
5. Miscellaneous Foods. Chan, W. Brown, J. and Buss, D.H. (1994). Fourth supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
6. Fish and Fish products. Holland, B. Brown, J. and Buss, D.H. (1993). Third supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
7. Vegetable Dishes. Holland, B. Welch, A.A. and Buss, D.H. (1992). Second supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
8. Fruit and Nuts. Holland, B. Unwin, I.D. and Buss, D.H. (1992). First supplement to 5th edition of McCance and Widdowson's The Composition of Foods. Royal Society of Chemistry, Cambridge.
9. Vegetables, Herbs and Spices. Holland, B. Unwin, I.D. and Buss, D.H. (1991). Fifth supplement to McCance and Widdowson's The Composition of Foods, Royal Society of Chemistry, Cambridge.
10. Milk Products and Eggs. Holland, B. Unwin, I.D. and Buss, D.H. (1989). Fourth supplement to McCance and Widdowson's The Composition of Foods, Royal Society of Chemistry, Cambridge.
11. Cereals and Cereal Products. Holland, B. Unwin, I.D. and Buss, D.H. (1988). Third supplement to McCance and Widdowson's The Composition of Foods, Royal Society of Chemistry, Cambridge.

12. Immigrant Foods. Tan S.P, Wenlock, R.W, Buss, D.H. (1985). Second supplement to McCance and Widdowson's The Composition of Foods. Her Majesty's Stationery Office, London.
13. Computer program COSTHERM for calculating the thermal properties of foods from their proximate composition. <http://www.evitherm.org/default.asp?ID=1277>