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LanguaL 2008

LanguaL Thesaurus Introduction

Anders Møller, Jayne Ireland and Elizabeth Smith

Disclaimer

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EuroFIR, the world leading European Network of Excellence on Food Composition Databank systems (http://www.eurfir.net/) is a partnership between 49 universities, research institutes and small-to-medium sized enterprises (SMEs) from 26 countries. EuroFIR aims to develop and integrate a comprehensive, coherent and validated databank providing a single, authoritative source of food composition data for Europe.

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LanguaL 2008

INTRODUCTION TO THE LANGUAL THESAURUS

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LanguaL has a foundation that goes far back in time, and we find it important to mention the people, who brought LanguaL forward to us. Especially thanks to *Bradley Rosenthal* and *Thomas Hendricks*, both now retired from the FDA, for their enthusiasm and energy in promoting the LanguaL ideas in the past..We would especially like to express our gratitude to *Ivan Varsanyi*, Hungary, who during the bilateral French-Hungarian BALATON and the European COST Action 99 projects persistently invoked updates and changes to the LanguaL Thesaurus to make the thesaurus up-to-date. Ivan's much too early death meant a big loss in the knowledge of his specialities in food science and technology. *Judit Monspart-Senyi*, Hungary, who replaced Ivan Varsanyi in the BALATON project, has provided a tremendous effort in the follow-up and finishing of the work initiated by Ivan.

The most important event since the introduction of the LanguaL 2000 Thesaurus in 2000 is the introduction of the LanguaL Food Product Indexer, which greatly facilitates the indexing of foods in food data bases. The Food product Indexer was developed by *Erik Nørby*, Polytec, and *Anders Møller*, Danish Food Information, with a lot of help and constructive criticism from *Jayne Ireland*, French Food Safety Agency, and *Tue Christensen*, Danish Food Institute. It has taken much thought and many hours to develop the software to the present stage as a user-friendly LanguaL indexing tool.

For this 2008 version of the LanguaL Thesaurus we also owe special thanks to the food composition data base compilers in the EuroFIR Network: *Mark A. Roe, Carine Seeuws, Sylvia Tsanova, Tue Christensen, Leif Bøgh-Sørensen, Heli Reinivuo, Céline Le Stunff, Olafur Reykdal, Bernd Hartmann, Stavroula Soukara, Hille Vardi, Aida Turrini, Simonetta Salvini, Martine Jansen, Jannicke Fredriksen, Agata Troszczynska, Luísa Oliveira, Raimon Milà, Janka Porubska, Irene Mattisson, Marianne Arnemo, Åse Borgejordet, Gul Biringen Löker, Heidi Schwartz, Susanne Westenbrink*, and the other members of the national food composition database teams, Using the LanguaL Food Product Indexer, the compilers in the EuroFIR network have indexed the foods in their food composition databases. The tremendous work has accomplished many comments and suggestions of which most are included in the LanguaL 2008 Thesaurus.

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This updated version of the LanguaL 2008 Thesaurus would never have been possible without the financial support from the EuroFIR project. We are very grateful for this support.

Paris, July 2008 **Jayne Ireland, Elizabeth Smith & Anders Møller**

Introduction to the LanguaL Thesaurus, Version 2008

1 WHAT IS LANGUAL?

LanguaL stands for "**Langua aL**imentaria" or "language of food". It is an automated method for describing, capturing and retrieving data about food. The work on LanguaL was started in the late 1970's by the Center for Food Safety and Applied Nutrition (CFSAN) of the United States Food and Drug Administration (FDA) as an ongoing co-operative effort of specialists in food technology, information science and nutrition. The original name of the thesaurus was Factored Food Vocabulary (FFV).[1] Since then, LanguaL has been developed in collaboration with the US National Cancer Institute (NCI), and, more recently, its European partners, notably in France, Denmark, Switzerland and Hungary. Since 1996, the European LanguaL Technical Committee has administered the thesaurus.

The thesaurus provides a standardised language for describing foods, specifically for classifying food products for information retrieval.[2] LanguaL is based on the concept that:

- Any food (or food product) can be systematically described by a combination of characteristics
- These characteristics can be categorised into viewpoints and coded for computer processing
- The resulting viewpoint/characteristic codes can be used to retrieve data about the food from external databases.[3]

As constructed, LanguaL is a multilingual thesaural system using faceted classification. Each food is described by a set of standard, controlled terms chosen from facets characteristic of the nutritional and/or hygienic quality of a food, as for example the biological origin, the methods of cooking and preservation, and technological treatments.

One problem concerning multilingual thesauri is the multiplicity of natural languages: corresponding terms of different languages are not always semantically equivalent. A first approach would be to limit the terms of different languages in which the descriptors are provided. Another is to render it language-independent. This approach was chosen by the LanguaL thesaurus, which is used in the USA and Europe for numeric data banks on food composition (nutrients and contaminants), food consumption and legislation. Each descriptor is identified by a unique code pointing to equivalent terms in different languages (e.g. English, Danish French, German, Italian, Hungarian, and Spanish).

This document will describe the LanguaL thesaurus in some detail. It will then present an in-depth example of how LanguaL can be applied and give general rules for indexing. Finally, it will review the individual facets of the LanguaL thesaurus.

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[1] McCann, A. et al. *FDA's Factored Food Vocabulary for Food Product Description.* Journal of the American Dietetic Association, vol. 88, no. 3, pp. 336 – 341, 1988.

[2] Hendricks, T. *LanguaL, an Automated Method for Describing, Capturing and Retrieving Data about Food.* In Simnopoulos A.P., Butrum RR (eds.): International Food Data Bases and Information Exchange, World. Rev. Nutr. Diet., Basel, Karger, 1992, vol. 68, pp. 94 – 103.

[3] FDA/CFSAN. LanguaL User's Manual, version 1993.

2 THE MULTILINGUAL LANGUAL THESAURUS

2.1 THESAURUS STRUCTURE

A thesaurus is a structured, normalised and dynamic vocabulary destined to cover terminology of a field of specific knowledge. It is used for indexing and retrieving information in a natural language in a system of controlled terms.

English is the *dominant language* used in the LanguaL thesaurus. Spelling was originally US English. Later updates include British English, as these updates were based on European legislation. Other languages (*secondary languages*) include Danish, French, German, Italian, Spanish and Hungarian; the translations have been prepared by the corresponding national centres.

Contrary to some multilingual thesauri, LanguaL does not make use of an *exchange language.* Instead, interchange of food description information is based on the use of descriptor codes.

Terms in the thesaurus are generally expressed as singulars or plurals in accordance with the conventions recognised separately in each of the languages, especially when these are subject to national standards. For example, English indexers select the plural or the singular according to rules associated with the kind of concept represented by the term (count nouns or non-count nouns). In French, singular forms, similar to those found in dictionaries, are generally preferred.

2.2 HIERARCHY

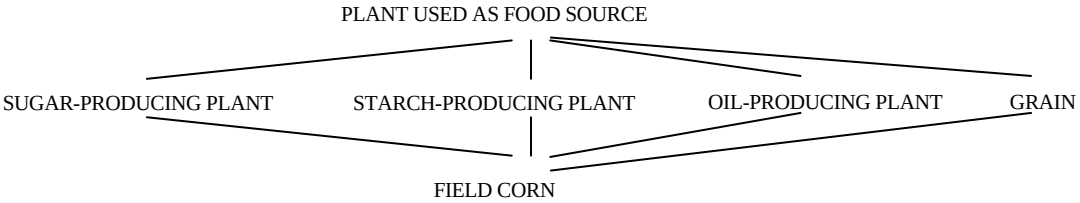
Equally as important as the identification of meaningful characteristics is the arrangement of facet terms in a hierarchic structure so that information can be retrieved at varying levels of specificity. In a particular search, one might be interested in all products with peanut as the food source. In another, one might need products with any nut as the food source. Alternatively, one might search specifically for *VITAMIN A ADDED*, more broadly for *VITAMIN ADDED*, or, still more broadly, for *NUTRIENT OR DIETARY SUBSTANCE ADDED*. These are all examples of hierarchical relationships among facet terms.

Hierarchical relationships are extremely important for searching. Hierarchy is also a useful tool for displaying the thesaurus in a logical way so that both searcher and indexer can eas-

ily comprehend it. Finally, it underlies the aggregation of numerical values when the food vocabulary is used in compiling data.

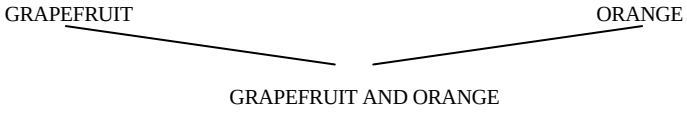
For these reasons, all of the facets were fully structured. Care was taken to include all useful hierarchical relationships. Some concepts can belong, on logical grounds, to more than one category at the same time; they are then said to possess **poly-hierarchical relationships**. Corresponding to its many uses, for instance, *FIELD CORN* appears under several broader terms:

- under *SUGAR-PRODUCING PLANT*
- under *STARCH-PRODUCING PLANT*
- under *OIL-PRODUCING PLANT*
- and under *GRAIN*



In this example, the term “FIELD CORN” is assigned to subordinate positions based on it generic relationship to four broader terms. In other cases, poly-hierarchical links may be based upon whole-part relationships.

Example:



In some cases, poly-hierarchical links can be based upon logically different relationships.

Example:

Broad terms can be used to describe very general groups of food products, such as vegetables. Such a general description can be made more specific by using narrower terms and/or adding terms from other facets (e.g. *FROZEN*).

The hierarchical relationships are complemented by additional cross references among facet terms, e.g., *PROTEIN-PRODUCING PLANT*

- Narrower term *ALFALFA*
- Narrower term *SOYBEAN*
- Narrower term *FIELD CORN*
- Narrower term *SESAME*

This indicates that any search for plant protein sources should employ *ALFALFA*, *SOYBEAN*, *FIELD CORN* and *SESAME*.

2.3 DEFINITIONS

This document follows definitions and conventions given in the International Standards concerning the establishment and development of monolingual thesauri[4] and of multilingual thesauri[5]. In accordance with these standards, the LanguaL thesaurus definitions have been expanded to include *additional information.* The following definitions from the standards are used:

Indexing language: a controlled set of terms selected from natural language and used to represent, in summary form, the systematic description of foods.

Thesaurus: the vocabulary of a controlled indexing language formally organised so that the *a priori* relationships between concepts (for example as “broader” and “narrower”) are made explicit.

Indexing term: the representation of a concept, preferably in the form of a noun or a phrase.

Preferred term: a term used consistently when indexing to present a given concept, also referred to as the **descriptor**.

Non-preferred term: the synonym or quasi-synonym of a preferred term. A non-preferred term is not assigned to documents, but is provided as an entry point in a thesaurus or alphabetical index, the user being directed by an instruction (for example USE or SEE) to the appropriate preferred term; also referred to as **non-descriptor**.

Precombined terms: The thesaurus has been further clarified by including Precombined terms (PCT's), which are food product names to which facet terms have been assigned. These are not to be used for indexing, but are included for either of these reasons:

(1) The Precombined term explains or illustrates the use of the facet terms, e.g., corned beef hash as an example of a food whose physical state is *SEMISOLID WITH SOLID PIECES*.

(2) For some foods, it is difficult for an indexer to select the proper combination of facet terms. For example, it might be obvious that the food product "Rhine wine" should be described as a *LIGHT WINE, 7-14% ALCOHOL*, but the indexer might not realise that *ALCOHOL FERMENTED* should be used in facet H (Treatment Applied) to describe the fermentation.

Precombined terms are always indexed with descriptors from facets A (Product Type), B (Food Source), C (Part of Plant or Animal) and E (Physical State, Shape or Form). Addi-

[4] International Standard ISO 2788 (1986). Documentation – Guidelines for the establishment and development of monolingual thesauri

[5] International Standard ISO 5964 (1985). Documentation – Guidelines for the establishment and development of multilingual thesauri

tional descriptors from other facets are assigned as needed to index the product information. Precombined terms are given in the LanguaL Users' Manual, edition 29 September 1993, but are not included in this version of LanguaL.

The following **abbreviations**, in accordance with the International Standards, are printed as prefixes to terms etc. Each abbreviation indicates the relationship or function of the term or node that follows:

BT Broader term.
The term that follows the symbol represents a concept having a wider meaning.

NT Narrower Term
The term that follows the symbol refers to a concept with a more specific meaning.

RT Related Term
The term that follows the symbol is associated, but it is not a synonym, a quasi-synonym, a broader term or a narrower term.

USE Use
The term that follows the symbol is the preferred term when a choice between synonyms and quasi-synonyms exists.

UF Use For
The term that follows the symbol is a non-preferred term or synonym.

SN Scope Note
A note attached to a term to indicate its meaning within an indexing language. It is not intended to be a dictionary definition, but it serves instead to indicate the *use* of a term.
The language of the food field is not always precise. Moreover, a faceted thesaurus contains many terms that require definition. Scope notes are therefore provided for many descriptors in order to achieve consistency in indexing and searching and, perhaps more importantly, to achieve the purpose of a common language for the description of foods.

AI Additional Information
In addition to indexing information handled by the scope notes, the LanguaL thesaurus also includes a special property named Additional Information (AI), to be used for further description of more lexical or encyclopaedic nature (list of many different properties).

FTC Facet Term Code
This symbol is followed by the unique identifier for each descriptor in the LanguaL thesaurus. The identifier, the facet term code, consists of one character identifying the facet followed by a four digit number.

In interchange of food description data, the use of facet codes using only the characters A to Z and digits solves the problem of special **character sets**. In addition, using the facet term code in food description, facilitates and simplifies food data interchange as the receivers of data may have the corresponding food descriptors translated to their own language.

The following **conventions** are used throughout the LanguaL thesaurus.

a) Preferred terms are printed in upper case.

Examples:

BEVERAGE

CONFECTIONERY

b) Non-preferred terms are printed in lower case except when the non-preferred term is a proper name requiring an upper case initial, or an abbreviation or acronym which should be printed throughout in upper case.

Examples:

BEVERAGE
UF drink

BREAM
UF abramis brama

DENMARK
UF DK

2.4 DISPLAY OF TERMS AND RELATIONSHIPS

Terms and their interrelationships of the LanguaL thesaurus are displayed in a variety of formats to meet different user needs:

alphabetical display, with scope notes and indications of inter-term relationships

systematic display, supported by an alphabetical index and a code index

XML display, with all definitions and other information for interchange of the LanguaL thesaurus between systems

2.4.1 ALPHABETICAL DISPLAY

In this form of thesaurus display, all indexing terms, whether preferred or non-preferred, are organised as a single alphabetical sequence. Broader, narrower and related terms and scope notes may also be included. When ancillary information is appended to preferred terms, it should be listed in the following order:

1) **FTC** references to the facet term codes representative of the terms

2) **BT** references to broader terms

3) **NT** references to narrower terms

4) **RT** references to related terms

5) **UF** references to non-preferred terms

6) **SN** scope note

7) **AI** additional information about the terms

In the LanguaL thesaurus alphabetical display, only one level above (BT) and one level below (NT) are given. The complete hierarchical relationships between terms are given in the systematic display (see below). Non-preferred terms are usually accompanied only by references (for example **USE**) to their preferred equivalents.

Example of alphabetical display:

ABALONE		
	FTC:	B1408
	BT :	ARCHAEOGASTROPOD (B1002)
	NT :	BLACKFOOT ABALONE (B2681)
	UF :	haloitis
abramis brama		
	UT :	BREAM
ACIDIFIED		
	FTC:	H0200
	BT :	FLAVORING OR TASTE INGREDIENT ADDED (H0117)
	UF :	pickled by acidification
	SN :	Used when acid is added to a food product at any level.

2.4.2 SYSTEMATIC DISPLAY

The systematic display shows the logical, hierarchical structure of the thesaurus; it consists of two parts:

- *Categories or hierarchies* of terms arranged according to their meanings and logical interrelationships.
- An *alphabetical index* which directs the user to the appropriate part(s) of the systematic section.

The ISO standards explain the link between these two sections to be a system of addresses. An address code is assigned to each of the preferred terms in the systematic section and this code functions as a reference in the alphabetical index. In LanguaL, these addresses are the *facet term codes*.

The systematic display allows the indexer or retriever to select the most specific term that can be assigned on the basis of the information at hand. It is frequently regarded as the main part of the thesaurus, i.e. the part that carries the most of the definitional and relational information, in which case the alphabetical index assumes the role of a complementary, but secondary, component.

Example of systematic display:

G. COOKING METHOD (G0002)
  COOKED BY MOIST HEAT (G0012)
    COOKED IN STEAM (G0021)
      STEAMED WITH PRESSURE (G0022)

```
      STEAMED WITHOUT PRESSURE (G0023)
   COOKED IN WATER OR WATER-BASED LIQUID (G0013)
      BOILED (G0014)
         BOILED AND DRAINED (G0015)
         BOILED IN LARGE AMOUNT OF LIQUID (G0016)
         BOILED IN SMALL AMOUNT OF LIQUID (G0017)
         BOILED AND UNDRAINED (G0018)
   BRAISED (G0019)
   SIMMERED, POACHED OR STEWED (G0020)
   STEEPED (G0036)
```

Example of alphabetical index of terms:

```
B1408   ABALONE
B1645   ABALONE MUSHROOM
B1241   abelmoschus esculenthus
B1763   abramis brama
B1327   ACACIA
B1241   acacia insuavis
B1762   acanthistius brasilianus
B1630   acanthocybium solanderi
B2303   acanthuridae
B1360   ACEROLA
H0300   ACETIC ACID FERMENTED
H0200   ACIDIFIED
```

Example of alpha-numerical index of codes:

```
A0105   DRESSING, CONDIMENT, GRAVY OR SAUCE
A0106   PREPARED GRAIN OR STARCH PRODUCT
A0107   BAKERY PRODUCT, UNSWEETENED
A0108   PASTRY SHELL, UNSWEETENED
A0109   PASTEURIZED PROCESS CHEESE SPREAD
A0110   PASTEURIZED PROCESS CHEESE
A0111   PASTEURIZED PROCESS CHEESE FOOD
A0112   NONALCOHOLIC BEVERAGE
A0113   SPICE OR HERB
A0114   FROZEN DAIRY DESSERT
A0115   CHEESE OR CHEESE PRODUCT
```

2.4.3 XML DISPLAY

For the LanguaL thesaurus a specific XML interchange format has been developed to facilitate interchange of LanguaL definitions and other information between computer systems.

The XML file is available on the LanguaL web site http://www.langual.org/

Example of the LanguaL XML display:

```
<?xml version="1.0" encoding="iso-8859-1" ?>
<LANGUALSCHEME>
   <HEADER>
```

```
      <EXPORTDATE>2008-08-18</EXPORTDATE>
      <TITLE>LanguaL 2008</TITLE>
      <DEFINITION>LanguaL 2008 Thesaurus Export File</DEFINITION>
      <URI>http://www.eurofir.org/xml/scheme/langual2008.xml</URI>
      <NOTE>This is the official XML export file for LanguaL</NOTE>
   </HEADER>
   <DESCRIPTORS>
      <DESCRIPTOR>
         <FTC>00000</FTC>
         <TERM lang="en UK">LANGUAL THESAURUS ROOT</TERM>
         <BT></BT>
         <SN>This term is for CLASSIFICATION ONLY; DO NOT USE term in indexing.
         Use a more precise narrower term.</SN>
         <AI>2008</AI>
         <CLASSIFICATION>True</CLASSIFICATION>
         <ACTIVE>True</ACTIVE>
         <DATEUPDATED>1899-12-30</DATEUPDATED>
         <DATECREATED>2000-01-01</DATECREATED>
         <UPDATECOMMENT></UPDATECOMMENT>
         <SINGLE>False</SINGLE>
      </DESCRIPTOR>
      <DESCRIPTOR>
         <FTC>A0001</FTC>
         <TERM lang="en UK">PRODUCT TYPE, NOT KNOWN</TERM>
         <BT>A0361</BT>
         <SN>Used when no product type is evident from the food product name, e.g.,
         &#39;artificially sweetened food&#39;, &#39;food with herbs added&#39;, etc.
         [FDA CFSAN 1995]</SN>
         <AI></AI>
         <CLASSIFICATION>False</CLASSIFICATION>
         <ACTIVE>True</ACTIVE>
         <DATEUPDATED>1899-12-30</DATEUPDATED>
         <DATECREATED>2000-01-01</DATECREATED>
         <UPDATECOMMENT></UPDATECOMMENT>
         <SINGLE>False</SINGLE>
      </DESCRIPTOR>
   ...
   </DESCRIPTORS>
</LANGUALSCHEME>
```

2.5 MANAGEMENT OF THE THESAURUS

2.5.1 LANGUAL VERSIONS 0, 2000 AND 2008

In an effort to harmonise existing versions of LanguaL, a first international version of the thesaurus, called **LanguaL Version 0**, was published on the Internet by the International LanguaL steering Committee.[6] The thesaurus provided by the US-FDA in 1995 (FDA 95)

[6] Schlotke F. (1996). Langual - harmonization of different national versions. Report of the European Langual Technical Committee, Institute of Scientific Computing, CH-8092 Zurich

was defined as the basis for the international "Version 0" and all further discussions. This "Version 0" differs from FDA 95 in respect to the following modifications:

- correction of inconsistencies;
- removal of French synonyms;
- removal of leading zeros from the codes, in order to be able to compare FDA 95 with the versions used in the International Interface Standard (IIS) and French and Hungarian data bases.

Copies of the standardised thesaurus, a means to browse the thesaurus, have been made available upon request at the Internet site http://www.langual.org.

National or regional user groups or authorities may organise the translation of the thesaurus, act as local competence centres and investigate how useful the different facets are in their cultural environment. A user interface allowing the search of foods available in nutrient databanks (USA and Europe) has also been created at the LanguaL Internet site in order to promote data interchange and provide a useful tool for persons looking for food composition data as well as publicity for national databanks. During the most recent years, The European project, European Food Information Resource (EuroFIR), has made a significant contribution in the further development of the LanguaL thesaurus.

The LanguaL thesaurus has been considerably modified over the last years in order to include alternative international classification systems (e.g., CIAA Food Categorisation System, Codex Alimentarius classifications, EuroCode2 Food Classification, EuroFIR Food Classification, European Food Groups, Global Product Classification (GS1), etc.). This is to allow the description and retrieval of foods according to different legislations or needs (e.g., monitoring additive intake). This extension of LanguaL has lead to a framework for food description, instead of a closed system consisting of 14 facets.

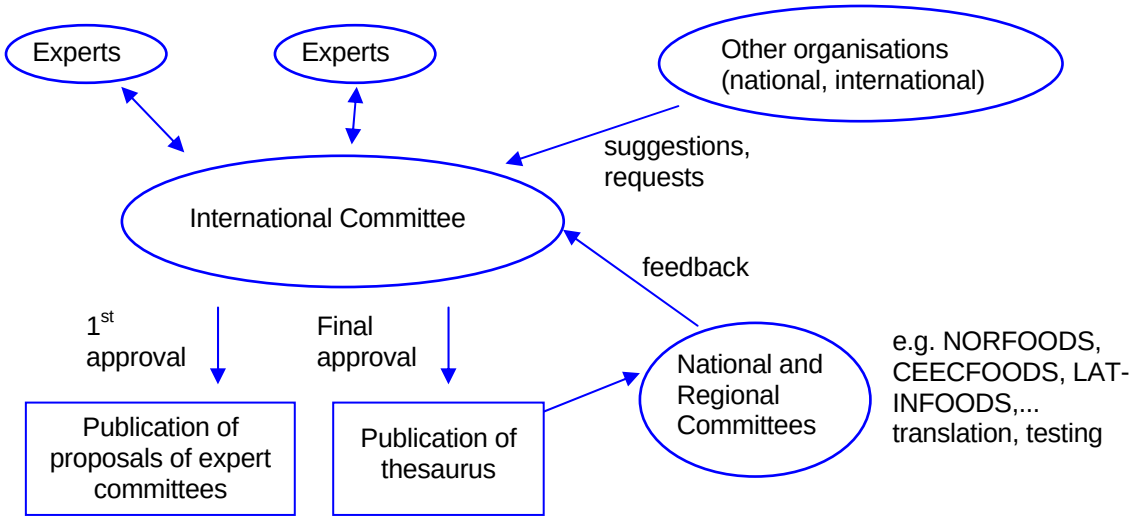
Version 0 contained 3647 descriptors, Version 2000 contained more than 4000 descriptors, and Version 2008 contains more than 5583 descriptors. The following updates and modifications have taken place:

- Facet A: Change of cardinality, inclusion of parallel food classifications and inclusion of food additive information
- Facet B: Inclusion of food additives, update of plant and fish species
- Facet C: Update of plant part information
- Facet E: Inclusion of particle size and change of cardinality
- Facet H: Inclusion of food additives
- Facet J: General
- Facet M: General update and change of cardinality
- Facet N: General update
- Facet R: General update
- Facet Z: Additional terms

2.5.2 INTERNATIONAL USE OF LANGUAL

LanguaL can facilitate direct links to many worldwide food consumption and analytical databases as well as bibliographic files. For example, LanguaL has been used to index all 1988 USDA Nationwide Food Consumption Survey (NFCS) foods, foods for which standards often relate to the US Code of Federal Regulations (CFR), and foods in Codex Alimentarius standards. LanguaL has also been used by the National Cancer Institute (US NCI) and the International Agency for Research in Cancer (WHO IARC) [7] in their studies of diet's relationship to cancer incidence. LanguaL is currently applied by all national food composition databases in Europe as well as by several official authorities Europe.

The international use of LanguaL is best shown in the demonstration database set up on the LanguaL web-site http://www.langual.org/. At this web-site, food composition data from Denmark, France, Hungary and the United States are linked together through a common LanguaL interface. The user interface allows the search of foods available in these nutrient databanks in order to promote data interchange, as well as to provide a useful tool for persons looking for food composition data and publicity for national databanks.



The flexibility and multidisciplinarity of a multifaceted approach allow expertise on food description to be divided up among smaller, ad hoc expert committees. The Working Group on Food Description in COST Action 99, a European project concerning food composition data, 1995- 1999, thus took over the development of the multilingual LanguaL thesaurus in 1996.[8] From 2005, the EuroFIR network has been the main contributor and user of LanguaL. The information flow decided upon is illustrated in the figure above.

Although it is not the only food description language, LanguaL is considered to be the most definitive at the present time. Altogether, over 65,000 food products have been indexed in various countries using this system. The LanguaL thesaurus remains a good start-

[7] Slimani N *et al.* (1998) Structure of the standardized computerized 24-hour diet interview used as reference method in the 22 centers participating in the EPIC project. *Computer methods and programs in biomedicine*.

[8] Ireland-Ripert J. and Møller A. (1996). LanguaL: international organisation. *Food Chemistry*, v.57 n°1, 155-156.

ing point for development of a truly international and flexible faceted thesaurus for food description.

2.5.3 CONTACT

A thesaurus is an evolving language, which should reflect scientific and technological evolutions in the field of foods. Suggestions to introduce new concepts or to improve those proposed in this edition are therefore welcome.

Eventual suggestions for updates/corrections should be send to the

LanguaL Secretariat:

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3 FOOD DESCRIPTION USING THE LANGUAL THESAURUS

3.1 HOW IS FOOD DESCRIBED?

One can systematically describe any food or food product using carefully selected points of view, in order to categorise its:

- Food group
- Origin
- Physical attributes
- Processing
- Packaging
- Dietary uses
- Miscellaneous characteristics.

Each viewpoint is called a **facet**, and the descriptive terms or characteristics under it are called **facet terms** (descriptors and non-descriptors)**.** The facets included in the vocabulary have been selected for their importance for food safety and nutrition. Due to its flexible structure, the vocabulary can be enriched by adding new viewpoints for food description or by including more detail within facets.

There are presently fourteen (14) facets in LanguaL. Their sequence was chosen to facilitate writing and reading food product descriptions and to aid in the comprehension of the vocabulary. Table 3.1 presents each facet by category together with a brief description (where appropriate) and examples of facet terms. After characterising the food product as a whole (Facets A-E), the facet sequence follows stages of processing (F - J), packing and packaging (K - N), consumption (P) and adjunct characteristics (Z).

Each facet answers a question:

? To what food group does the product belong?

This question is answered by the appropriate term from facet A. Product Type.

? What is the origin of the food product?

A food product can be specified by an appropriate combination of facet values from facet B. Food Source and facet C. Part of Plant or Animal.

? What are the physical characteristics?

A value from facet E. Physical State, Shape or Form is used to answer this question. The physical characteristics of food products may be inherent (*DIVIDED INTO PIECES*) or may be the result of processing (*LIQUID*). Both of these affect heat transfer and food safety.

Table 3.1. LanguaL Facets and Examples of Terms

CHARACTERISTIC	FACET
FOOD GROUP	**A. Product Type** Derived from a combination of consumption, functional, manufacturing and legal characteristics Ex.: Dairy product; Poultry product; Beverage; Gravy or sauce; Sweetener
FOOD ORIGIN	**B. Food Source** Species of plant or animal, or chemical food source Ex.: Cattle; Abalone; Wheat; Carob; Bean; Garlic
	C. Part of Plant or Animal Ex.: Leaf; Fruit; Skeletal meat; Organ meat
PHYSICAL ATTRIBUTES	**E. Physical State, Shape or Form** Ex.: Liquid; Semiliquid; Solid; Whole natural shape; Divided into pieces
PROCESSING	**F. Extent of Heat Treatment** Ex.: Fully heat-treated; Partially heat-treated; Not heat-treated
	G. Cooking method Cooked by dry or moist heat; cooked with fat; cooked by microwave Ex.: Sautéed; Baked or roasted; Griddled; Toasted; Popped; Deep-fried
	H. Treatment Applied All facet terms that apply Ex.: Enriched; Sweetened; Egg added; Fat or oil added; Fat removed; Decaffeinated
	J. Preservation Method All preservation methods Ex.: Dehydrated or fried; Frozen; Preserved by adding chemicals
PACKAGING	**K. Packing Medium** Ex.: Packed in broth; Packed in gelatine; Packed in gravy or sauce
	M. Container or Wrapping Container material, form, and possibly other characteristics Ex.: Paperboard tray with wrapper; Boil-in-bag; Glass container, Aluminium lid, Plastic lining
	N. Food Contact The surface(s) with which the food is in contact Ex.: Ceramic, Paperboard, Glass, Metal, Plastic
DIETARY USES	**P. Consumer Group/Dietary use** Consumer Group/Dietary Use/Label Claim Ex.: Human food no age specification; Low fat; Sodium free food; Reduced calorie food
GEOGRAPHIC ORIGIN	**R. Geographic Places and Regions** ISO-code (ISO 3166) for country of origin, local codes for region
MISCELLANEOUS CHARACTERISTICS	**Z. Adjunct Characteristics of Food** Additional miscellaneous descriptors Ex.: Pink fish flesh, Shoulder (meat cut), Choice (grade), Edible sausage casing, Mould rind, Dry mix

? What processing operations have been performed to transform the food or ingredients into the final product?

The facets primarily concerned with processing are F. Extent of Heat Treatment, G. Cooking Method, H. Treatment Applied, and J. Preservation Method. In addition, preliminary processing may be implied by facet C. Part of Plant or Animal (e.g., hulling or extracting) and by facet E. Physical State, Shape or Form (e.g., divided or disintegrated). Final processing may also be implied by facet E. Physical State, Shape or Form (e.g., forming, moulding).

? What is the product's packing medium? How is it packaged?

The packing characteristics are found in facet K. Packing Medium. Packaging description is simplified to consist only of facets M. Container or Wrapping and N. Food Contact Surface.

? Who uses the food product? What are its special dietary characteristics?

These questions are answered by appropriate terms from facet P. Consumer Group/Dietary Use/Label Claim.

? What further characteristics describe the food product?

Further characteristics of the food, such as cut of meat, grade of meat or degree of plant maturity, may be described by facet terms found in facet Z. Adjunct characteristics.

Figure 3.1. HOW IS FOOD DESCRIBED ?

Each viewpoint is called a **FACET**.
The characteristics related to it are called **FACET TERMS**.

Consider the food product **CORN FLAKES**:

FACET	**FACET TERM**
PRODUCT TYPE	BREAKFAST CEREAL
FOOD SOURCE	FIELD CORN
PART OF PLANT OR ANIMAL	SEED OR KERNEL, SKIN REMOVED, GERM REMOVED (ENDOSPERM)
PHYSICAL STATE SHAPE OR FORM	WHOLE, SHAPE ACHIEVED BY FORMING, THICKNESS <0.3 CM
EXTENT OF HEAT TREATMENT	FULLY HEAT TREATED
COOKING METHOD	COOKING METHOD NOT APPLICABLE
TREATMENT APPLIED	SUCROSE ADDED; FLAVORING OR SPICE EXTRACT OR CONCENTRATE ADDED; VITAMIN ADDED; IRON ADDED; FLAKED; WATER REMOVED
PRESERVATION METHOD	DEHYDRATED OR DRIED
PACKING MEDIUM	NO PACKING MEDIUM USED
CONTAINER OR WRAPPING	PAPERBOARD CONTAINER WITH PAPER LINER
FOOD CONTACT SURFACE	WAX; PAPERBOARD OR PAPER
CONSUMER GROUP/DIETARY USE/LABEL CLAIM	HUMAN FOOD, NO AGE SPECIFICATION
ADJUNCT CHARACTERISTICS OF FOOD	(none)

The LanguaL thesaurus consists of facet terms (descriptors) that are used to build food product descriptions. As an example, consider the commercial food product "corn flakes", as shown in Figure 3.1.

Its **Product Type** facet term, which identifies the food group it belongs to, based on common consumption, functional or manufacturing characteristics, is "Breakfast cereal".

The **Food Source** facet term, which identifies the individual plant or animal from which the food product (or its major ingredient) is derived, would be "Field corn".

The **Part of Plant or Animal** facet term, which describes the anatomical part of the plant or animal from which the food product (or its major ingredient) is derived, is "Seed or kernel, skin removed, germ removed (endosperm)".

Its **Physical State, Shape or Form** facet term, which distinguishes between liquids and solids and further describes solids in terms of shape or form, is "Whole, shape achieved by forming, thickness less than 0.3 cm".

The **Extent of Heat Treatment** facet term, which is used to broadly characterise a food product based on the amount of heat applied, is "Fully heat-treated".

The **Cooking Method** facet term, which identifies the way food products are cooked, reheated or warmed, is "Not applicable" because heat treatment is inherent in the process of making “corn flakes”.

The **Treatment Applied** facet term, which is used to describe components added or subtracted as well as processes involved in producing the food product and can have multiple values, includes:

- Sucrose added
- Flavouring or spice extract or concentrate added
  Vitamin added
- Iron added
- Flaked
- Water removed

The **Preservation Method** facet term, which identifies the method(s) for preventing or retarding microbial or enzymatic spoilage of a food product, is "Dehydrated or dried".

The **Packing Medium** facet term, which describes the medium in which the food is packed for preservation, handling and/or palatability, is "No packing medium used" in this example.

The **Container or Wrapping** facet term, which identifies the material comprising the main container as well as any liners, lids or ends, is "Paperboard container with paper liner".

The **Food Contact Surface** facet term, which identifies the specific container materials in direct contact with the food product and can have multiple values, includes:

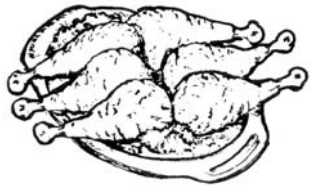
- Wax
- Paperboard or paper

The **Consumer Group/Dietary Use/Label Claim** facet term, which specifies who uses the food product, is "Human food, no age specification".

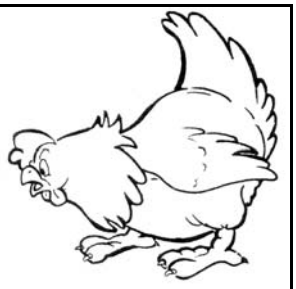
The **Adjunct Characteristics of Food** facet term, which allows for miscellaneous descriptions, does not have any value for the food product “corn flakes”.

As another example, consider the homemade food product "breaded, fried chicken". Figure 3.2 displays its facets and facet terms. As can be seen from these examples, virtually any food or food product can be described in this systematic fashion.

FIGURE 3.2. HOW IS FOOD DESCRIBED?



Consider the food product
HOMEMADE BREADED FRIED CHICKEN



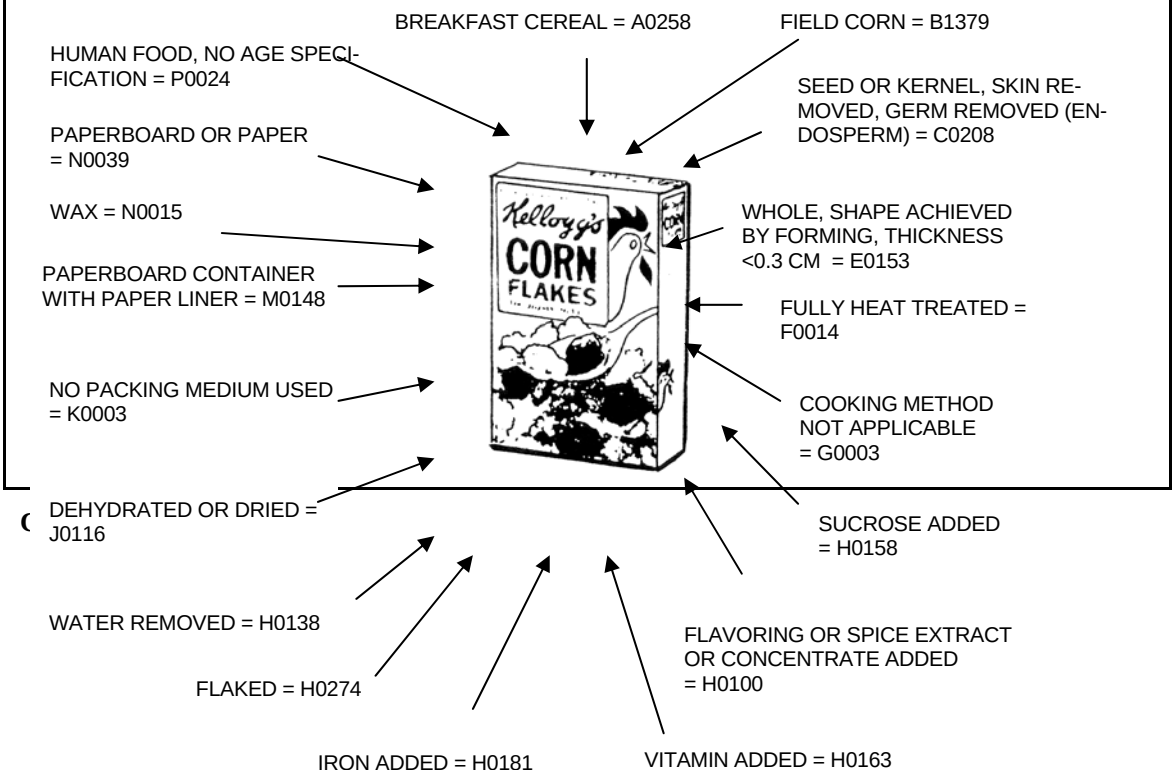
FACET	FACET TERM
PRODUCT TYPE	POULTRY OR POULTRY PRODUCT
FOOD SOURCE	CHICKEN
PART OF PLANT OR ANIMAL	SKELETAL MEAT PART, WITH BONE WITH SKIN
PHYSICAL STATE SHAPE OR FORM	WHOLE, NATURAL SHAPE
EXTENT OF HEAT TREATMENT	FULLY HEAT TREATED
COOKING METHOD	COOKED WITH ADDED FAT
TREATMENT APPLIED	FAT OR OIL COATED; GRAIN ADDED; BREADED, BATTER-COATED
PRESERVATION METHOD	NO PRESERVATION METHOD USED
PACKING MEDIUM	NO PACKING MEDIUM USED
CONTAINER OR WRAPPING	NO CONTAINER OR WRAPPING USED
FOOD CONTACT SURFACE	NO FOOD CONTACT SURFACE PRESENT
CONSUMER GROUP/DIETARY USE/LABEL CLAIM	HUMAN FOOD, NO AGE SPECIFICATION
ADJUNCT CHARACTERISTICS OF FOOD	MEAT COLOR, MIXTURE

3.2 HOW ARE FACET TERMS IDENTIFIED?

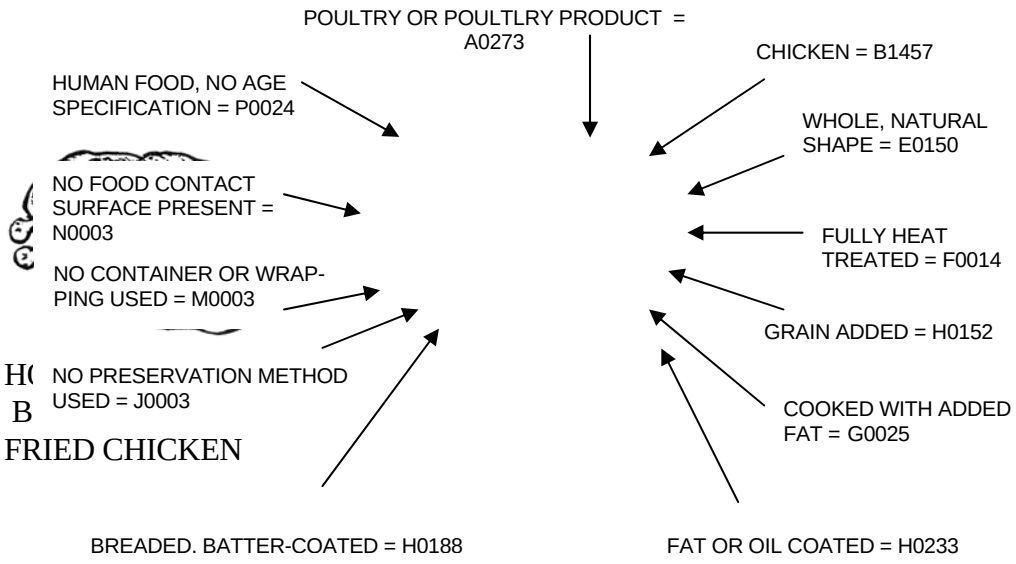
In order to facilitate computer processing, each facet term is assigned an alphanumeric code identifying the facet and the unique characteristic (e.g., A0258 = Product Type "Breakfast cereal", A0273 = Product Type "Poultry or poultry product"). A computer record contains the food (product) name and assigned facet term codes, as well as product identification codes for accessing the database. Figure 3.3 shows this coding schema for the Corn Flakes and Fried Chicken examples described above.

FIGURE 3.3. HOW ARE FACET TERMS IDENTIFIED ?

Each is assigned a CODE for computer processing.
Example: corn flakes



Example: homemade, breaded, fried chicken

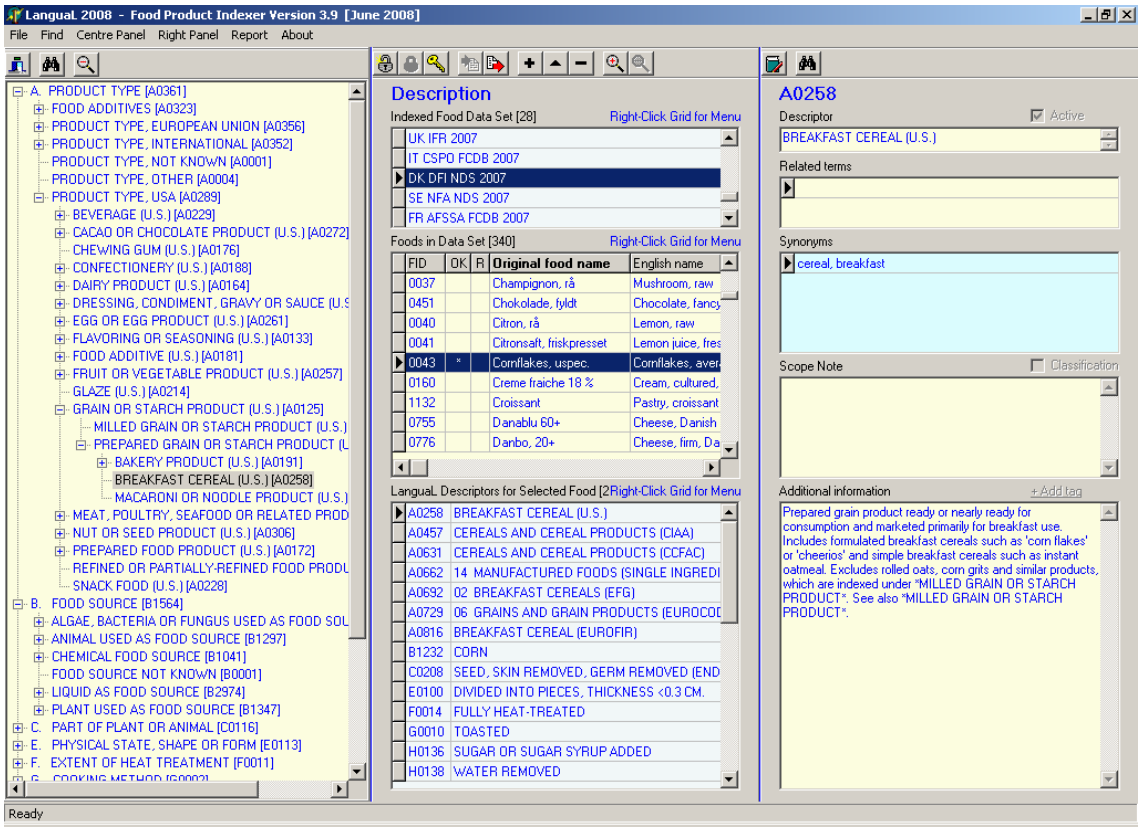


3.3 How are Foods indexed?

Manually assigning the facet term codes to each food in food composition datasets is a tremendous task. Therefore, Polytec Ltd. and Danish Food Information (DFI), both partners in the EuroFIR project, started developing the so-called LanguaL Food Product Indexer software in 2000.

The LanguaL FPI facilitates indexing with LanguaL considerably, and makes indexing of even long food lists feasible as it allows for copying food description from already indexed foods of similar nature. The LanguaL FPI software is simple to use as all information necessary is present in one window.

Screen shot from the LanguaL Food Product Indexer (FPI):



The LanguaL FPI software has been further developed in the EuroFIR project, where it was used to index the food lists from 26 European food composition databases.

The current version of LanguaL FPI is version 3.9 (June 2008), which ships with the LanguaL 2008 version of LanguaL.

For further information on the LanguaL Food Product Indexer, see the LanguaL website http://www.langual.org/.

3.4 How Is Information Retrieved?

In general, a LanguaL search is conducted to answer a specific question. The records selected as a result of this search contain pointers to outside databases. These databases may then be accessed (using the pointers) to obtain very detailed information related to the original query.

For example, consider the question: "What breakfast cereals are sweetened with sucrose"? By conducting a Boolean search of indexed foods in the selected European and American food composition databases from the EuroFIR eSearch facility (http://www.eurofir.org), a number of food records will be selected, including the corn flakes example described previously. The record selected from the American list contains a pointer to the USDA's Nutrient Database where additional information can be obtained. Figures 3.5 to 3.7 depict this process.

Figure 3.5: Search for Breakfast Cereals

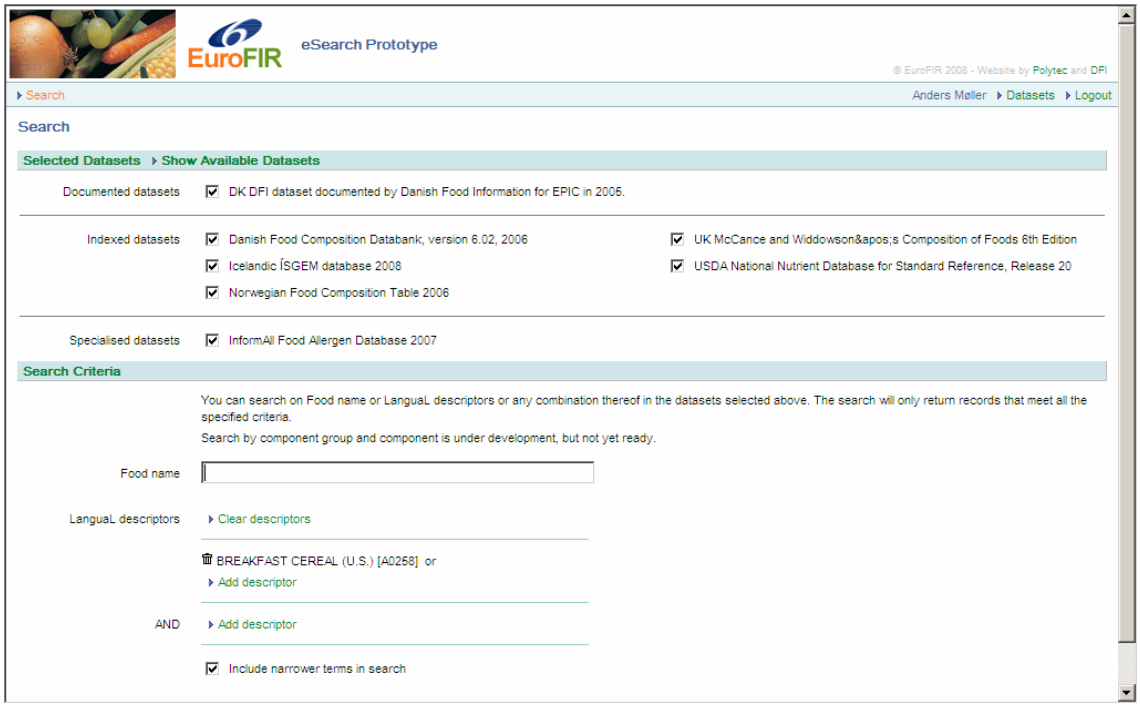
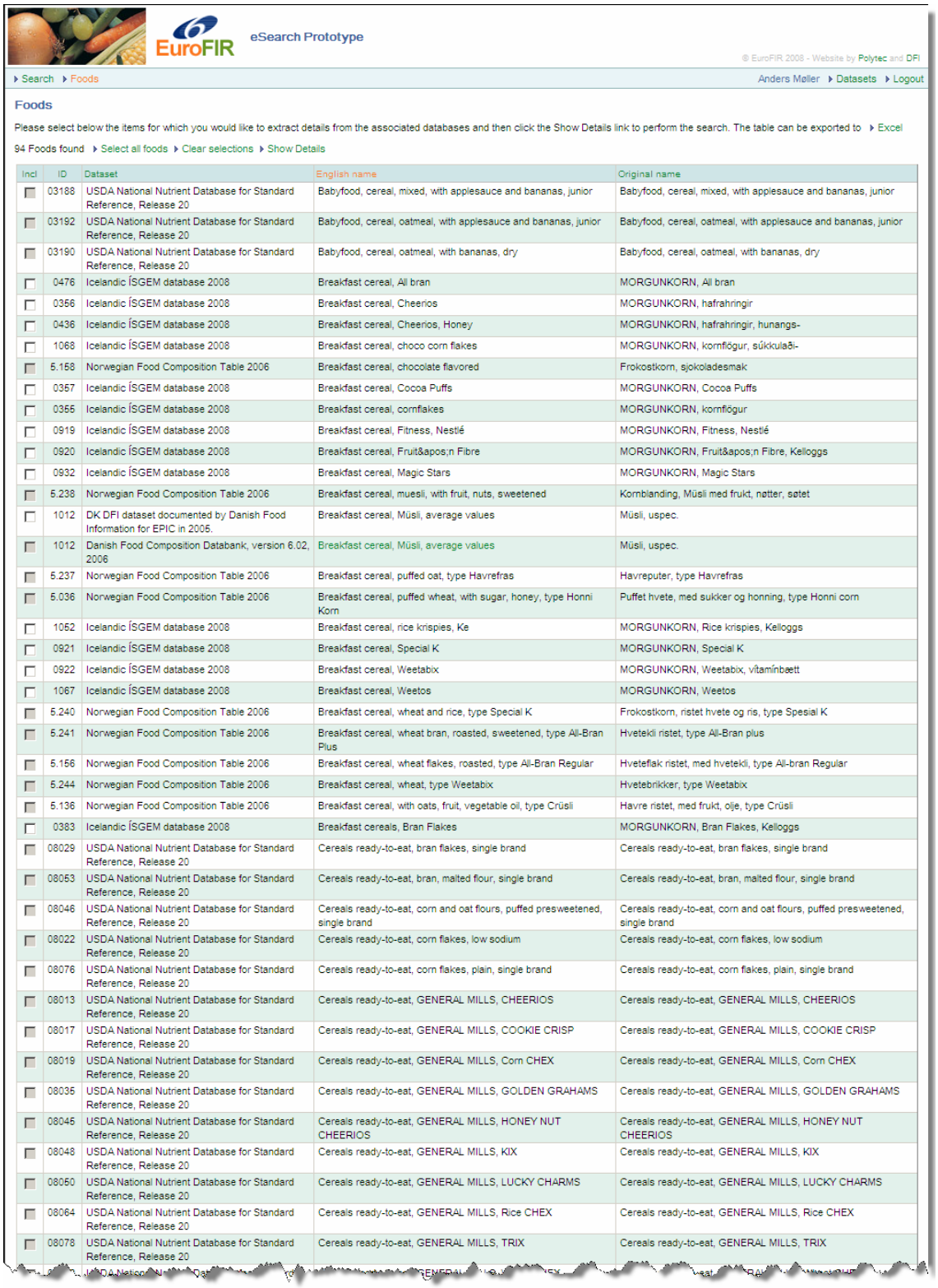


Figure 3.6: - and Sucrose Added (detailed srceen shot):

Figure 3.7: The result of the search



Incl	ID	Dataset	English name	Original name
☐	03188	USDA National Nutrient Database for Standard Reference, Release 20	Babyfood, cereal, mixed, with applesauce and bananas, junior	Babyfood, cereal, mixed, with applesauce and bananas, junior
☐	03192	USDA National Nutrient Database for Standard Reference, Release 20	Babyfood, cereal, oatmeal, with applesauce and bananas, junior	Babyfood, cereal, oatmeal, with applesauce and bananas, junior
☐	03190	USDA National Nutrient Database for Standard Reference, Release 20	Babyfood, cereal, oatmeal, with bananas, dry	Babyfood, cereal, oatmeal, with bananas, dry
☐	0476	Icelandic ÍSGEM database 2008	Breakfast cereal, All bran	MORGUNKORN, All bran
☐	0356	Icelandic ÍSGEM database 2008	Breakfast cereal, Cheerios	MORGUNKORN, hafrahringir
☐	0436	Icelandic ÍSGEM database 2008	Breakfast cereal, Cheerios, Honey	MORGUNKORN, hafrahringir, hunangs-
☐	1068	Icelandic ÍSGEM database 2008	Breakfast cereal, choco corn flakes	MORGUNKORN, kornflögur, súkkulaði-
☐	5.158	Norwegian Food Composition Table 2006	Breakfast cereal, chocolate flavored	Frokostkorn, sjokoladesmak
☐	0357	Icelandic ÍSGEM database 2008	Breakfast cereal, Cocoa Puffs	MORGUNKORN, Cocoa Puffs
☐	0355	Icelandic ÍSGEM database 2008	Breakfast cereal, cornflakes	MORGUNKORN, kornflögur
☐	0919	Icelandic ÍSGEM database 2008	Breakfast cereal, Fitness, Nestlé	MORGUNKORN, Fitness, Nestlé
☐	0920	Icelandic ÍSGEM database 2008	Breakfast cereal, Fruit'n Fibre	MORGUNKORN, Fruit'n Fibre, Kelloggs
☐	0932	Icelandic ÍSGEM database 2008	Breakfast cereal, Magic Stars	MORGUNKORN, Magic Stars
☐	5.238	Norwegian Food Composition Table 2006	Breakfast cereal, muesli, with fruit, nuts, sweetened	Kornblanding, Müsli med frukt, nøtter, søtet
☐	1012	DK DFI dataset documented by Danish Food Information for EPIC in 2005.	Breakfast cereal, Müsli, average values	Müsli, uspec.
☐	1012	Danish Food Composition Databank, version 6.02, 2006	Breakfast cereal, Müsli, average values	Müsli, uspec.
☐	5.237	Norwegian Food Composition Table 2006	Breakfast cereal, puffed oat, type Havrefras	Havreputer, type Havrefras
☐	5.036	Norwegian Food Composition Table 2006	Breakfast cereal, puffed wheat, with sugar, honey, type Honni Korn	Puffet hvete, med sukker og honning, type Honni corn
☐	1052	Icelandic ÍSGEM database 2008	Breakfast cereal, rice krispies, Ke	MORGUNKORN, Rice krispies, Kelloggs
☐	0921	Icelandic ÍSGEM database 2008	Breakfast cereal, Special K	MORGUNKORN, Special K
☐	0922	Icelandic ÍSGEM database 2008	Breakfast cereal, Weetabix	MORGUNKORN, Weetabix, vítamínbætt
☐	1067	Icelandic ÍSGEM database 2008	Breakfast cereal, Weetos	MORGUNKORN, Weetos
☐	5.240	Norwegian Food Composition Table 2006	Breakfast cereal, wheat and rice, type Special K	Frokostkorn, ristet hvete og ris, type Spesial K
☐	5.241	Norwegian Food Composition Table 2006	Breakfast cereal, wheat bran, roasted, sweetened, type All-Bran Plus	Hvetekli ristet, type All-Bran plus
☐	5.156	Norwegian Food Composition Table 2006	Breakfast cereal, wheat flakes, roasted, type All-Bran Regular	Hveteflak ristet, med hvetekli, type All-bran Regular
☐	5.244	Norwegian Food Composition Table 2006	Breakfast cereal, wheat, type Weetabix	Hvetebrikker, type Weetabix
☐	5.136	Norwegian Food Composition Table 2006	Breakfast cereal, with oats, fruit, vegetable oil, type Crüsli	Havre ristet, med frukt, olje, type Crüsli
☐	0383	Icelandic ÍSGEM database 2008	Breakfast cereals, Bran Flakes	MORGUNKORN, Bran Flakes, Kelloggs
☐	08029	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, bran flakes, single brand	Cereals ready-to-eat, bran flakes, single brand
☐	08053	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, bran, malted flour, single brand	Cereals ready-to-eat, bran, malted flour, single brand
☐	08046	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, corn and oat flours, puffed presweetened, single brand	Cereals ready-to-eat, corn and oat flours, puffed presweetened, single brand
☐	08022	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, corn flakes, low sodium	Cereals ready-to-eat, corn flakes, low sodium
☐	08076	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, corn flakes, plain, single brand	Cereals ready-to-eat, corn flakes, plain, single brand
☐	08013	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, CHEERIOS	Cereals ready-to-eat, GENERAL MILLS, CHEERIOS
☐	08017	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, COOKIE CRISP	Cereals ready-to-eat, GENERAL MILLS, COOKIE CRISP
☐	08019	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, Corn CHEX	Cereals ready-to-eat, GENERAL MILLS, Corn CHEX
☐	08035	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, GOLDEN GRAHAMS	Cereals ready-to-eat, GENERAL MILLS, GOLDEN GRAHAMS
☐	08045	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, HONEY NUT CHEERIOS	Cereals ready-to-eat, GENERAL MILLS, HONEY NUT CHEERIOS
☐	08048	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, KIX	Cereals ready-to-eat, GENERAL MILLS, KIX
☐	08060	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, LUCKY CHARMS	Cereals ready-to-eat, GENERAL MILLS, LUCKY CHARMS
☐	08064	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, Rice CHEX	Cereals ready-to-eat, GENERAL MILLS, Rice CHEX
☐	08078	USDA National Nutrient Database for Standard Reference, Release 20	Cereals ready-to-eat, GENERAL MILLS, TRIX	Cereals ready-to-eat, GENERAL MILLS, TRIX

The search result lists all information in the food composition databases on the food information ‘Breakfast cereals’ containing ‘Sucrose added’.

This means that a wide variety of food composition, food consumption, and specialized databases can be referenced by a single LanguaL search, using their existing coding schemes without change. Concomitantly, there is no need to know the codes or structure of the databases being simultaneously searched using the LanguaL thesaurus. This single LanguaL query could turn up a wealth of information about sucrose sweetened breakfast cereals. Such information would be difficult (if not impossible) to obtain in any other way.

4 GENERAL RULES FOR INDEXING

This chapter discusses the general rules for using the LanguaL thesaurus to index food products at a moderate level of detail. This level corresponds to the information available from a food product label, recipe or a physical inspection of the food product. Furthermore, this chapter will describe the concept of *Full Ingredient Indexing:* the level of information to be found about the food from recipes, when the full details about the ingredients in the food is indexed.

Full information about the use of the facet terms will be found in the following chapters. More specific rules for the use of individual descriptors are given in their respective scope notes.

4.1 SIMPLE INDEXING

The FDA originally defined rules for simple indexing using the LanguaL thesaurus.

The first indexing rule is:

Always consult the systematic display (hierarchical list, 'tree') when selecting descriptors. It arrays the choices to be considered in a logical framework. For unfamiliar descriptors, consult the scope notes.

Each of the fourteen facets in LanguaL describes a food product characteristic (e.g. product type, food source, treatment applied). Within each facet, descriptors are arranged in hierarchic order. In the systematic display (hierarchic tree structure), each descriptor is more specific or "narrower" to the "broader" term above it. A user can readily explore the full structure by scanning the top-level descriptors and following each branch to its end.

In some facets, a descriptor may appear in more than one place in the hierarchy. As mentioned previously, field corn is "oil-producing", "starch-producing" and "sugar-producing". Nonetheless, ***FIELD CORN*** is a single facet value when used for indexing and searching.

The hierarchy shows the indexer broader, narrower and neighbouring descriptors. All candidate descriptors can be considered and the most appropriate selected at the appropriate level of specificity. It is particularly important to scan the hierarchic structure for facets allowing multiple values to be indexed. These are A. Product Type, where several classifications can be used in parallel, G. Cooking Method, H. Treatment Applied, J. Preservation Method (for mixtures), M. Container or Wrapping, N. Food Contact Surface, P. Consumer Group/Dietary Use/Label Claim and Z. Adjunct Characteristics of Food. In B. Food Source, most plant and animal names can be located in the alphabetical index. However, the indexer should scan the tree structure to assure the most specific descriptor has been

located. For example, *****WALNUT***** is subdivided into *BLACK WALNUT*, *BUTTERNUT*, *CHINESE WALNUT* and *ENGLISH WALNUT*. The term *CORN* has narrower terms *FIELD CORN*, *POPCORN* and *VEGETABLE CORN*, with each having yellow and white varieties. The specific descriptor may be missed by relying solely on alphabetical order.

Scope notes define the use of each descriptor. For example, the indexer can find out what falls under *CACAO AND CACAO PRODUCT* and what products fall under *CANDY*, or what fat level a cheese should be indexed by *FAT PARTIALLY REMOVED*. The indexer needs to consult the scope notes for any unfamiliar descriptors.

The second indexing rule is:

To fully describe a food product, use a descriptor from each facet, following the specific rules for that facet.

The rule "at least one descriptor from each facet" ensures that the indexer does not overlook applicable descriptors. A set of descriptors, specific for each facet, is provided for instances of "not known", "not used", and "other". Table 4.1 gives an example this rule in indexing.

Table 4.1 Apple juice, canned in glass bottle, unsweetened

A. Product Type	Fruit juice
B. Food Source	Apple
C. Part of Plant or Animal	Fruit or berry, peel present, core, pit or seed present
E. Physical State, Shape or Form	Liquid, low viscosity, with no visible particles
F. Extent of Heat Treatment	Fully heat treated
G. Cooking Method	Cooking method not applicable
H. Treatment Applied	Unsweetened
J. Preservation Method	Sterilized by heat
K. Packing Medium	No packing medium used
M. Container or Wrapping	Glass container, aluminum lid, plastic lining
N. Food Contact Surface	Glass; Plastic
P. Consumer Group/Dietary Use/Label Claim	Human food, no age specification
R. Geographic Places and Regions	(no appropriate facet term)
Z. Adjunct Characteristics of Food	(no appropriate facet term)

The third indexing rule is:

Use each facet independently.

When selecting a descriptor for a facet, the indexer needs to consider the purpose of the facet. Descriptors assigned to other facets are of no concern, even when they overlap the meaning of the descriptor under consideration. Examples of overlapping descriptors include:

A. Product Type:	Light wine, 7-14% alcohol
H. Treatment Applied:	Alcohol fermented
A. Product Type:	Bakery product, sweetened
H. Treatment Applied:	Sweetened with sugar or sugar syrup
H. Treatment Applied:	Salted
J. Preservation Method:	Preserved by salting
A. Product Type:	Milk or milk product
C. Part of Plant or Animal:	Milk
M. Container or Wrapping:	Plastic container, rigid or semirigid, aluminum lid
N. Food Contact Surface:	Polyethylene; Aluminum

This rule assures retrieval that is more complete when searching and simplifies the work of the indexer. When considering one facet, such as H. Treatment Applied, the indexer need not check to see whether a descriptor, such as *ALCOHOL FERMENTED*, is implied by the descriptor assigned in A. Product Type.

The fourth indexing rule is:

Index as specifically as the thesaurus permits.

The objective of the LanguaL thesaurus is to index at a moderate level of detail, corresponding to the information available from a food product label, a recipe, or by physical inspection of the food. When such detail is present, it should be indexed to the extent provided by the thesaurus. To do otherwise results in loss of information that could be retrieved in searching.

The amount of information available influences the specificity of indexing. For example, consider a bread product and the facet C. Part of Plant or Animal. If the indexer can determine that the bread is made from grain without skin and without germ, the descriptor is *SEED OR KERNEL, SKIN REMOVED, GERM REMOVED*. If the indexer can determine that the skin was removed and the germ is present, the descriptor is *SEED OR KERNEL, SKIN REMOVED, GERM PRESENT*. However, if the indexer has only definite information about the skin (it was removed) but cannot determine whether the germ is present, only the broader descriptor *SEED OR KERNEL, SKIN REMOVED* can be assigned. If the indexer has no definite information about the skin or germ, the broader descriptor *SEED OR KERNEL* is chosen to describe the product.

Reasonable assumptions should be made – orange juice is surely a *FRUIT JUICE* with *****ORANGE***** as its origin. However, it cannot be indexed as *FROZEN* or *REHYDRATED* unless the label or recipe so indicates.

The fifth indexing rule is:

If a characteristic of a food product cannot be expressed specifically by a descriptor currently in the thesaurus, use the most specific descriptor available.

A candidate product for indexing might be preserved by cryogenic freezing. Cryogenic freezing is presently not a LanguaL descriptor. Because cryogenic freezing is a type of "quick freezing", using a fluid or solid gas, the descriptor *FROZEN BY REFRIGERATING AGENT* (with broader term *QUICK-FROZEN*) is used. If the product is frozen by a new method that is not addressed by descriptors listed under *FROZEN*, the descriptor *FROZEN* is used. If a product does not fall under any of the major subdivisions of J. Preservation Method, the index term used is *PRESERVED BY OTHER METHOD*.

LanguaL is frequently updated, and this revision is a product of the updating that has taken place during the years 2000-2008. This update is based on the request from the LanguaL users for more precise descriptors. A technique often used when a user needs a specific descriptor, in order to assign more precise description to a food than possible with the present version of LanguaL, is to assign a provisional descriptor and to suggest this provisional descriptor be included in coming updates of the thesaurus. A lot of effort has been put into the LanguaL thesaurus to ensure that foods can be indexed as precise as possible. Therefore, the thesaurus is constantly being updated.

Note that facet headings are never used in indexing. This also concerns several subheadings introduced recently. The scope notes will clearly indicate if a certain descriptor can be used in indexing.

The above remarks also mean that

A broad descriptor is used for indexing only when:

- Not enough information is available to decide on a more specific descriptor;
- The descriptor needed is not available in the thesaurus;
- The product is a mixture of parts or a mixture of different size pieces and a specific descriptor for a mixture is not available.

The sixth indexing rule is:

For a mixture or other multiple-value characteristic, use the specific descriptor if available; otherwise select a descriptor according to facet-specific rules.

Rules governing the indexing of these multiple-value characteristics appear in the section 4.2 (Mixtures and Multiple-Value Food Products). Specific mixture terms for each facet are listed in subsection x.5 of the appropriate facet description.

Multiple-value characteristic can also be handled in parallel by *Full Ingredient Indexing*, see section 4.3 (Full Ingredient Indexing).

Summary of the general indexing rules:

Always consult the systematic display (hierarchical list, 'tree') when selecting descriptors. It arrays the choices to be considered in a logical framework. Consult scope notes and additional information for unfamiliar descriptors.

To fully describe a food product, use a descriptor(s) from each facet, following the specific rules for that facet.

Use each facet independently.

Index as specifically as possible.

Use a broader term in indexing only when

- Not enough information is available to decide on a more specific descriptor

- The specific descriptor needed is not available in the thesaurus

- The product is a mixture of parts or a mixture of different size pieces and a specific descriptor for a mixture is not available.

For a mixture or other multiple-value characteristic, use the specific descriptor if available. Otherwise, select a descriptor according to facet-specific rules.

4.2 MIXTURES AND MULTIPLE-VALUE FOOD PRODUCTS

For simple indexing, a single facet term is used to describe each characteristic. However, there are instances of multiple characteristics being combined in a single descriptor, such as *PEA AND CARROT* (see Table 4.2). Because the rules for handling multiple characteristics or "mixtures" differ from one facet to another, they are summarised here for convenient reference.

A mixture consists of two or more significant similar components used together in a food product. Examples include mixed vegetables (e.g. *PEA AND CARROT* or *SUCCOTASH*) and ground meat for meat loaf (e.g. *CATTLE AND SWINE AND CALF*). Treating these as multiple ingredients rather than indexing only one ingredient provides enhanced information for retrieval. Any combination of characteristics, such as two or more parts (*POD AND FULL-SIZE SEED, MIXTURE*), physical shapes (*WHOLE AND PIECES*), or packing media (*PACKED IN OIL AND VINEGAR*), may be handled in the same way. The LanguaL thesaurus includes specific descriptors for frequently-used mixtures and other multiple-value characteristics.

These specific facet terms, when available, should be used. If no mixture descriptor is available, one of the following indexing techniques should be employed:

- In facet B. Food Source, index the first (predominant) ingredient and add other ingredients as directed under *INGREDIENT ADDED* in facet H. Treatment Applied.
- Use the most specific broader index term that includes the individual characteristics. This is done in facet C. Part of Plant or Animal and in facet E. Physical State, Shape or Form. For example, a mixture consisting of leaves and roots is indexed under *ROOT, STEM, LEAF OR FLOWER*.
- Only the predominant characteristic is indexed in facet A. Product Type and in facet B. Food Source. For facets other than A and B, index multiple individual characteristics, as many as needed. In facet Z. Adjunct Characteristics of Food, only a single descriptor may be selected from each category as appropriate.

The "Mixture" descriptors and detailed instructions for use can be found in the sections on individual facets. What follows is a summary of these instructions.

Table 4.2 Examples of Mixtures and Multiple-Value Food Product

Facet	Kind	Example	How handled	Comment
A.	More than one product type	Peanut butter and jelly in a jar	*NUT OR NUT PRODUCT*	
B.	More than one ingredient	Peas and carrots Wheat and soy Three bean salad	*PEA AND CARROT* *WHEAT AND SOY* 1st ingredient and *___ added* Also *PACKED IN ____*, if appropriate	
C.	More than one part	Pods and seeds	*POD AND FULL-SIZE SEED, MIXTURE*	May be: - Parts of single plant or animal - Parts of different plants or animals NOT: part of plant and part of animal
E.	More than one shape or form	Whole and pieces Semisolid with pieces	*WHOLE AD PIECES* *SEMISOLID WITH SOLID PIECES*	Except for salads these are not generally considered mixtures; neither are semi-liquids or liquids
F.	More than one component and components vary in degree of cooking	TV dinner	*HEAT-TREATED, MULTIPLE COMPONENTS, DIFFERENT DEGREES OF TREATMENT*	Must pair with *MULTICOMPONENT MEAL*
H.	More than one component		Index main ingredient, add *FOOD ADDED* descriptors as needed	This is the usual way of describing food products
J.	More than one preservation method	Canned (bottled) pickles	Index as many descriptors as needed	Methods may be sequential
K.	More than one packing medium. Both are used together	Packed in water and fruit juice	Index as many descriptors as needed	
M.	More than one container	Pie in aluminium tray placed in a cardboard box	Index as many descriptors as needed	
N.	More than one food contact surface	Glass and coating enamel	Index as many descriptors as needed	
P.	More than one dietary characteristic		Index as many descriptors as needed	
R.	More than one geographic location		Index as many descriptors as needed	
Z.	More than one adjunct characteristic.		Index as many descriptors as needed	only a single descriptor from each category

A. Product Type

When several products belonging to different product types are combined or packaged together as in a *SANDWICH* or a *MULTICOMPONENT MEAL*, a mixture of product types results. If no facet term has been assigned for the combination, the product's major component should be indexed.

B. Food Source

Specific descriptors for frequently used food source mixtures are listed in the section for facet B. Food Source later in this manual. The specific mixture descriptor is used if one of the components is the first ingredient of the mixture and the other component is a significant ingredient of the mixture (second, third or fourth).

Mixtures not listed are indexed by the specific descriptor for the first ingredient or major component of the mixture in combination with the appropriate descriptor(s) from *FOOD ADDED* in facet H. Treatment Applied. Specific rules are discussed in the section covering that facet.

C. Part of Plant or Animal

The following specific mixture terms are provided, as required for frequently used combinations:

- Germ and bran
- Pod and full-size seed, mixture

These can be used for mixtures of different parts of the same plant or for different parts of different plants. Intact plant structures which contain various parts (e.g. pod containing full-size seeds) are not considered mixtures. For other mixtures, use broader term that includes the parts in the mixtures.

E. Physical State, Shape or Form

The descriptors provided for specific mixtures are listed in the section explaining physical state. For other mixtures, use the broader term that includes both components.

F. Extent of Heat Treatment

The only type of product that may require more than one descriptor from this facet is one with multiple components, which vary in degree of cooking. Such a product is indexed as *HEAT TREATED, MULTIPLE COMPONENTS, DIFFERENT DEGREES OF TREATMENT*. See the scope note for this term in the section for facet F.

G. Cooking Method

For multiple-ingredient foods, both the cooking methods applied to the whole food as well as to any indexed ingredient are described. Index terms used to describe a lasagne dish would be *BAKED OR ROASTED* (for the final dish), *BOILED AND DRAINED*

(for the lasagne pasta), *SIMMERED, POACHED OR STEWED* (for the sauce) and possibly *COOKED WITH INHERENT FAT* (for meat ingredients).

H. Treatment Applied

Multiple individual characteristics, as many as needed, should be indexed.

J. Preservation Method

Index all methods that are known.

K. Packing Medium

The following specific mixture descriptors are provided:

- Packed in a mixture of gases
- Packed in vinegar and oil
- Packed in vinegar with sugar

If there are several packing media (e.g. peaches packed in syrup with nitrogen in the head-space), index all that are known.

M. Container or Wrapping

Index all containers known.

N. Food Contact Surface

Index all materials with which the food comes in contact.

P. Consumer Group/Dietary Use/Label Claim

Multiple descriptors may be used.

R. Geographic Places and Regions

Index all geographic terms needed.

Z. Adjunct Characteristics of Food

Index all appropriate groups (but only a single descriptor from each group).

4.3 FULL INGREDIENT INDEXING

Full Ingredient Indexing (FII) was introduced in the beginning of the 1990's by the Crédoc[9] in order to accommodate more specific data in the food description, for example to include more specific information on *all* ingredients in the food. This is especially important in combined food composition/consumption databases dealing with minor constituents in foods (e.g. food additives, pesticides, carry-over effects, etc.).

Compared with traditional LanguaL indexing where the food is described with a set of descriptors representing the whole food (including its ingredients), Full Ingredient Indexing allows for a more precise description of every single ingredient in the food. FII can handle the description of treatments applied to the ingredients and preserve the information attached to the ingredient, whereas simple indexing will attach the information of the various treatments to the final food product and not to the ingredient.

Full Ingredient Indexing enables the user to index every ingredient in a 'mixture' or composite food as a single food. The resulting description of the composite food is a set of descriptions for each ingredient in the food (eventually accompanied by amounts of each ingredient, if known), as well as the overall description mentioned in the previous chapter. FIC thus allows for a better tracking of single ingredients and their treatments.

4.3.1 EXAMPLE OF FULL INGREDIENT INDEXING

The following example of Full Ingredient Indexing has been provided by the Crédoc. In the food consumption database, a "Product" table identifies a certain product as a milk chocolate bar filled with cocoa, praline and puffed rice, containing aspartame and polyols, without added sugar, produced in Poulain's "gourmet" line. The product is given an identifier and a recipe code.

Identification of a food in the "Product" table of the database

Product identifier	Brand	Product name	Recipe code
7004996	POULAIN	Barres ligne gourmande chocolat au lait fourré cacao praliné riz soufflé sans sucre ajouté à l'aspartame et aux polyols	W02626

The product's ingredients are listed in a separate "Recipe" table in descending order by weight. The percentage of each ingredient is entered only if this information is present on the product label; otherwise, it is left "0". Each ingredient also has a food identifier in the database.

[9] Centre d'Étude et de Recherche sur les Conditions de Vie, Département Prospective de la Consommation, 42 rue Chevaleret, F-75013 Paris, France

"Recipe" table: ingredients of product n° 7004996

Recipe code	Ingredient rank	Ingredient %	Ingredient identifier	Name of intredient
W02626	1	28.00	7004991	Praliné noisettes édulcoré aux polyols
W02626	2	0.00	3001039	Beurre de cacao
W02626	3	0.00	7003415	Matières grasses végétales hydrogénées
W02626	4	0.00	7001577	Pâte de cacao
W02626	5	0.00	7002542	Riz soufflé ou croustillant
W02626	6	0.00	7001772	Lait partiellement écrémé en poudre
W02626	7	0.00	7001584	Poudre de lactosérum
W02626	8	0.00	7001712	Cacao maigre en poudre
W02626	9	0.00	7001144	Aromes
W02626	10	0.00	7000516	E951 aspartame édulcorant
W02626	11	0.00	7004987	E966 lactitol édulcorant
W02626	12	0.00	7001582	E322 lécithines émulsifiant

The product is described using terms chosen from the LanguaL thesaurus, as shown below. The description table (single ingredient indexing) contains the product identifier and the respective LanguaL facet term codes.

LanguaL description of product n° 7004996

Product identifier	LanguaL code	Corresponding LanguaL term
7004996	A0272	CHOCOLATE OR CACAO PRODUCT
7004996	B1318	CACAO
7004996	C0208	SEED OR KERNEL, SKIN REMOVED, GERM REMOVED (ENDOSPERM)
7004996	E0140	WHOLE, SHAPE ACHIEVED BY FORMING, THICKNESS 0.3-1.5 CM
7004996	F0014	FULLY HEAT TREATED
7004996	G0004	COOKED BY DRY HEAT
7004996	H0108	NONNUTRITIVE SWEETENER ADDED
7004996	H0177	NUT OR SEED ADDED
7004996	H0192	TEXTURED
7004996	H0227	FLAVORING, SPICE OR HERB ADDED
7004996	H0231	CHOCOLATE OR COCOA ADDED
7004996	H0263	VEGETABLE FAT OR OIL ADDED
7004996	H0297	MILK OR MILK PRODUCT ADDED
7004996	H0302	SUGAR ALCOHOL ADDED
7004996	H0321	RICE ADDED
7004996	H0355	CHOCOLATE COVERED OR COATED
7004996	J0144	ARTIFICIALLY HEAT DRIED
7004996	K0003	NO PACKING MEDIUM USED
7004996	M0128	PLASTIC WRAPPER
7004996	N0036	PLASTIC
7004996	P0024	HUMAN FOOD, NO AGE SPECIFICATION
7004996	P0091	NO SUGARS ADDED CLAIM OR USE
7004996	RFR00	France
7004996	Z0112	FOOD INDUSTRY PREPARED

In Full Ingredient Indexing, the ingredients are also considered to be foods, so each of them is described separately, using terms from the LanguaL thesaurus, as in the next three tables. The first of these ingredients was created specifically to describe product n° 7004996, whereas the following two ingredients in the example are common ingredients, used in other products.

LanguaL description of ingredient n° 7004991 "Praliné noisettes édulcoré aux polyols"

Product identifier	**LanguaL code**	**Corresponding LanguaL term**
7004991	A0269	ICING OR FROSTING
7004991	B1533	EUROPEAN FILBERT
7004991	C0136	SEED OR KERNEL, SKIN UNDETERMINED, GERM PRESENT
7004991	E0108	PHYSICAL STATE, SHAPE OR FORM, MULTIPLE
7004991	F0018	PARTIALLY HEAT TREATED
7004991	G0001	COOKING METHOD UNKNOWN
7004991	H0231	CHOCOLATE OR COCOA ADDED
7004991	H0262	ANIMAL FAT OR OIL ADDED
7004991	H0302	SUGAR ALCOHOL ADDED
7004991	J0001	PRESERVATION METHOD NOT KNOWN
7004991	K0003	NO PACKING MEDIUM USED
7004991	M0001	CONTAINER OR WRAPPING NOT KNOWN
7004991	N0001	FOOD CONTACT SURFACE NOT KNOWN
7004991	P0024	HUMAN FOOD, NO AGE SPECIFICATION
7004991	P0091	NO SUGARS ADDED CLAIM OR USE
7004991	Z0112	FOOD INDUSTRY PREPARED

LanguaL description of ingredient n° 7002542 "Riz soufflé ou croustillant"

Product identifier	**LanguaL code**	**Corresponding LanguaL term**
7002542	A0125	GRAIN OR STARCH PRODUCT
7002542	B1322	RICE
7002542	C0134	SEED OR KERNEL, SKIN REMOVED
7002542	E0150	WHOLE, NATURAL SHAPE
7002542	F0014	FULLY HEAT TREATED
7002542	G0009	POPPED
7002542	H0138	WATER REMOVED
7002542	H0268	PUFFED
7002542	J0117	HEAT DRIED
7002542	K0003	NO PACKING MEDIUM USED
7002542	M0001	CONTAINER OR WRAPPING NOT KNOWN
7002542	N0001	FOOD CONTACT SURFACE NOT KNOWN
7002542	P0024	HUMAN FOOD, NO AGE SPECIFICATION

LanguaL description of ingredient n° 7001772 "Lait partiellement écrémé en poudre"

Product identifier	LanguaL code	Corresponding LanguaL term
7001772	A0148	MILK OR MILK PRODUCT
7001772	B1201	COW
7001772	C0235	MILK
7001772	E0106	FINELY GROUND
7001772	F0018	PARTIALLY HEAT TREATED
7001772	G0003	COOKING METHOD NOT APPLICABLE
7001772	H0112	WATER REMOVED TO RECONSTITUTION RATIO 3 PLUS 1 OR HIGHER
7001772	H0169	INSTANTIZED
7001772	H0247	FAT PARTIALLY REMOVED
7001772	H0274	FLAKED
7001772	H0306	HOMOGENIZED OR EMULSIFIED
7001772	J0116	DEHYDRATED OR DRIED
7001772	K0003	NO PACKING MEDIUM USED
7001772	M0001	CONTAINER OR WRAPPING NOT KNOWN
7001772	N0001	FOOD CONTACT SURFACE NOT KNOWN
7001772	P0024	HUMAN FOOD, NO AGE SPECIFICATION
7001772	P0040	REDUCED FAT FOOD

4.3.2 USE OF FULL INGREDIENT INDEXING

Although more complex to perform, Full Ingredient Indexing allows for better tracking of specific ingredients in foods (for example, food additives and flavourings). The intake/exposure to these ingredients can thus be estimated and evaluated via household budget and individual food consumption surveys. Such estimates become more and more important in risk assessment and management and are equally important in determining use levels in foods.

Full Ingredient Indexing is needed in specific cases for estimation of food additive intake according to the requirements set by the European Food Additive Directives for national food additive monitoring in EU countries.

5 INDIVIDUAL LANGUAL FACETS

To fully utilise all the features of the LanguaL thesaurus, the indexer or searcher must understand its structure. This section covers each facet in detail. The structure and use of each facet is discussed. Included are explanations for the use of individual descriptors in both indexing and searching. These explanations are also contained in the Scope Notes.

Each chapter in this section follows the same format. The chapter begins with a definition of the facet and an explanation of its conceptual structure. The criteria used for defining and arranging facet terms are explained and a list of the major headings within the facet is arranged in a logical sequence. An explanation of how the facet is used in indexing and searching follows. Points the indexer or searcher should consider in selecting a value from each facet are discussed. What to do in the absence of enough information or a suitable descriptor are covered next. Each chapter concludes with a brief discussion of how to treat mixtures.

In summary, each chapter uses the following outline:

- Definition
- Structure
- Use in indexing and searching
- Not known, not done, other
- Mixtures.

5.1 FACET A – PRODUCT TYPE

Product type is a major facet in describing or defining a food product. Product type is concerned with a food product as a whole: its manufacture, marketing and consumption. We commonly say "This product is a *BREAD*" or "This product is a *BEVERAGE*". To introduce more detail, descriptors are added from facets described in subsequent chapters. With these additional descriptors, we can then say: "This product is a *BREAD* made from *WHEAT* using the *SEED OR KERNEL, SKIN PRESENT, GERM PRESENT*. It is *FULLY COOKED* and it is *HUMAN FOOD, NO AGE SPECIFICATION*."

All of the different product types are arranged in hierarchical order. This hierarchy represents a summary-level classification of food products. Thus the product type always describes a food class, such as *SEAFOOD OR SEAFOOD PRODUCT*, *CURED CHEESE*, *FRUIT JUICE*, *SALAD* or *CANDY*, rather than an individual variety of food. In certain applications, these terms can be used without any other descriptors. For example, food production statistics or registration of food manufacturing establishments may only require food products to be described at this level.

Characteristics related to manufacturing and marketing (e.g., *DAIRY PRODUCT*, *CONFECTIONERY*, *MEAT OR MEAT PRODUCT*) define product types that have the same common plant or animal origin and/or manufacturing processes applied. Use or consumption characteristics — such as the nutrient profile, the purpose of the dish or drink (e.g., *ALCOHOLIC BEVERAGE*), the occasion at which the food is used (e.g., *SNACK FOOD*) and its use in preparing more complex foods (e.g., *FLAVOURING OR SEASONING*) — also play key roles in defining product types.

Because any product type descriptor may be associated with any plant or animal origin (see B. Food Source and C. Part of Plant or Animal), the LanguaL thesaurus allows a wide range of combinations, both usual (e.g., *FRUIT JELLY* with *GRAPE* and *FRUIT OR BERRY*) and unusual (*VEGETABLE OR VEGETABLE PRODUCT* with *GRAPE* and *LEAF*). This makes it possible to retrieve all products of a given type, regardless of origin. Conversely, all products with a given origin, regardless of type, can be retrieved.

5.1.1 DEFINITION OF PRODUCT TYPE

Product Type is defined as a food group having common consumption, functional or manufacturing characteristics (e.g. *FRUIT OR VEGETABLE PRODUCT*; *DAIRY PRODUCT*; *CONFECTIONERY*; *PREPARED FOOD PRODUCT*).

5.1.2 STRUCTURE OF FACET A

Product types delineate food groups whose members share certain characteristics. These defining characteristics are:

- Plant or animal origin (at the summary level)
- Characteristics imparted by manufacturing, such as cooking, curing, extracting, concentrating, seasoning or sweetening
- Consumption characteristics, which determine the use of the food product
- Legislation.

Because product types are defined by applying these different characteristics, sometimes simultaneously, the structure is not easy to determine. However, each of the characteristics can affect the use of the food product. Thus, they collectively give rise to user-oriented product types.

Facet A is divided into different sections, corresponding to different classification systems. The facet A in the LanguaL version 0 was based on the food classification originally defined by FDA. Many of the facet terms employed originate in the US Federal Food, Drugs and Cosmetics Act. Title 21 of the Code of Federal Regulations (CFR) contains the regulations of FDA relating to this area, and the facet terms in the LanguaL version 0 thesaurus are headlines of some of the sections in the CFR.

As food classifications are dependent on the different uses of the indexed data, a single classification system cannot sufficiently cover all of these. Therefore, it was decided to include the most commonly used classifications systems used regionally and/or internationally in more recent versions of LanguaL. The present version of LanguaL also includes more complete food additive information than LanguaL version 0. Facet A now comprises the overall classification in Table 5.1.

Table 5.1 Facet A listing (levels 1 to 3)

PRODUCT TYPE
FOOD ADDITIVES
CODEX ALIMENTARIUS, FUNCTIONAL CLASSES
FOOD ADDITIVE CLASSIFICATION, EUROPEAN COMMUNITY
PRODUCT TYPE, EUROPEAN UNION
CIAA FOOD CLASSIFICATION FOR FOOD ADDITIVES
CLASSIFICATION OF PRODUCTS OF PLANT AND ANIMAL ORIGIN, EC
EUROCODE 2 FOOD CLASSIFICATION*
EUROFIR FOOD CLASSIFICATION
EUROPEAN FOOD GROUPS (EFG)
PRODUCT TYPE, INTERNATIONAL
CLASSIFICATION OF FOOD AND FEED COMMODITIES (CODEX ALIMENTARIUS)
FOOD BALANCE SHEETS*
FOOD CLASSIFICATION FOR FOOD ADDITIVES (CODEX ALIMENTARIUS)
GENERAL STANDARD FOR CHEESE (CODEX ALIMENTARIUS)
GLOBAL PRODUCT CLASSIFICATION (GS1 GPC)
PRODUCT TYPE, NOT KNOWN
PRODUCT TYPE, OTHER
PRODUCT TYPE, USA

* Signifies that the classification scheme is currently not implemented in LanguaL

5.1.2.1 PRODUCT TYPE, USA

The classification PRODUCT TYPE, USA is the original FDA LanguaL (and version 0) facet A. In this classification, Product Type can be separated into two broad groupings

based on whether the use of the food product is or is not related to the animal/plant origin of the product:

Group 1: **Use related to plant or animal origin**

Meat, poultry, seafood or related product
Dairy product
Egg or egg product
Fruit or vegetable product
Grain or starch product (includes bakery and other prepared grain products)
Nut or nut product
Cacao or chocolate product

Group 2: **Use unrelated to origin**

Beverage
Prepared food product
Snack food
Confectionery
Dressing, condiment, gravy or sauce
Sweetener
Flavouring or seasoning
Food additive
Refined or partially-refined food plant

At the broadest level, product types characterised by animal or plant origin are roughly comparable to the major food groups traditionally described by nutritionists. At a somewhat more specific level these product types reflect major industries (e.g., *MEAT OR MEAT PRODUCT* and *FRUIT OR FRUIT PRODUCT*).

Characteristics imparted by manufacturing are seen in the subgroups, such as *CURED MEAT* and *FRUIT JUICE*. Product analogues, such as non-dairy creamer, are grouped here with their originals, because of their common use characteristics.

5.1.2.2 Other Product Classification Schemes

For food additives, the classification schemes are defined as follows:

Codex Alimentarius, Functional Classes.

The classification of food additives according to the Codex Alimentarius Commission[10]. Furthermore, the class definitions will be included in the Codex Alimentarius Proposed General Standard for Food Additives.

Food Additive Classification, European Union.

In the European Union food additives are regulated in the framework directive (94/34/EC), and its underlying directives on sweeteners (94/35/EC), colours (94/36/EC) and the directive concerning food additives other than colours and sweeteners (95/2/EC). The classification of food additives with definitions is given in the food additive directives 94/35/EC, 94/36/EC and 95/2/EC (see also Appendix "Addition of food additive information in LanguaL").

[10] FAO Food and Nutrition Paper 30/Rev. 1, FAO, Rome 1985

The **Codex Alimentarius Standards** define food classifications for pesticides, contaminants, and food additives, as well as other classifications incorporated in the Codex Alimentarius standards. These classifications currently included in LanguaL are as follows:

- FAO/WHO Codex Classification of Foods and Animal Feeds (pesticide driven)[11]
- Food categorisation system of the Codex Alimentarius General Standard for Contaminants and Toxins in Foods [12]
- Codex Food Categorization System in the proposed Codex General Standard on Food Additives[13]
- Codex General Standard for Cheese[14]

The **Global Product Classification** (GS1 GPC)[15] is the Global Data Synchronisation Network categorisation for manufacturers and retailers, from which the LanguaL thesaurus has only retained categories pertaining to foods.

The **European food classifications** are defined as follows:

- CIAA Food Categorization System for Food Additives[16]
- Classification of Products of Plant and Animal Origin, European Community[17]
- Eurocode 2 Food Classification[18]
- European Food Groups (EFG)[19]
- EuroFIR Food Classification[20]

5.1.3 USE OF FACET A IN INDEXING AND SEARCHING

The general rule for indexing using facet A. Product Type is:

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[11] Joint FAO/WHO Food Standards Programme, Codex Alimentarius Commission: Pesticide Residues in Food, Codex Alimentarius, Volume 2, Section 2: Codex Classification of Foods and Animal Feeds, Rome 1992, pp. 147–366

[12] Codex Alimentarius Commission, GSC. *General Standard for Contaminants and Toxins in Foods*. ALINORM 97/12A, Annex V, 1997

[13] Codex Alimentarius Commission (1996). *Codex Food Categorization System (CFCS) for the General Standard for Food Additives (GSFA*). Codex Commission on Food Additives and Contaminants. Document no. CL 1996/14-FAC, Part II.

[14] General Standard for Cheese (CODEX STAN A-6-1978, Rev.1-1999, Amended 2006)

[15] http://www.gs1.org/productssolutions/gdsn/gpc/

[16] CIAA: The CIAA Food Categorization System, a tool for allocating additives. CIAA Document ADD/385/90E rev. 5, 1994

[17] COMMISSION REGULATION (EC) No 178/2006 of 1 February 2006 amending Regulation (EC) No 396/2005 of the European Parliament and of the Council to establish Annex I listing the food and feed products to which maximum levels for pesticide residues apply

[18] Unwin, I. and Møller, A.: Eurocode 2 Review and modified Core Classification. Danish Veterinary and Food Administration, Søborg, Denmark, 1998

[19] Ireland, J.; van Erp-Baart, AMJ; Charrondiere, UR.; Møller, A.; Smithers, G.; Trichopoulou, A. (2002) Selection of a food classification system and a food composition database for future food consumption surveys. European Journal of Clinical Nutrition, 56 Supplement 2, S33-S45.

[20] Anders Møller and Jayne Ireland LanguaL 2008 - Introduction. Danish Food Information 2008. ISBN 978-87-92125-07-1. EuroFIR D1.8.21a.

Choose at least one descriptor from facet A

Facet A contains several parallel classification schemes. Therefore, dependent on the circumstances, and the specific food in question, several facet A descriptors can be chosen for that food.

The second general indexing rule for facet A is:

Choose a maximum of one descriptor from each of the classification systems listed in facet A listing (level 1 to 3) shown above. The criteria for choosing more than one descriptor from facet A is food dependent, and the rules are different for the different subclassifications in facet A. Therefore, the specific rules for each sub-class will be given in the following sections.

5.1.3.1 Indexing Rules for PRODUCT TYPE, USA Classification

PRODUCT TYPE, USA is the original food classification for A. Product Type. One and only one descriptor can be applied from this sub-classification for a specific food.

Since several criteria are used simultaneously to subdivide PRODUCT TYPE, USA, the resulting classes often overlap, so that a food product might be considered to belong in two classes. For example, potato chips might be considered both a vegetable product and a snack food, but only one PRODUCT TYPE, USA descriptor may be assigned. This puts the indexer in a quandary: which of two applicable product types should be used?

The general rule is:

Use a product type whose definition is based predominantly on USE in preference to a product type whose definition is related to food source. Thus, the product type for potato chips is *SNACK FOOD* rather than *VEGETABLE OR VEGETABLE PRODUCT*. The product type for cheery pie is *PIE, SWEETENED* rather than *FRUIT OR FRUIT PRODUCT*.

Exceptions to this general rule are noted in scope notes: a *FRUIT JUICE* (classes under *FRUIT OR FRUIT PRODUCT*) is not indexed as a *BEVERAGE*; plain or roasted peanuts, even if packed for a vending machine, should be indexed as *NUT OR NUT PRODUCT* not as *SNACK FOOD*. If no specific instructions are provided in a scope note, use the general rule, making exceptions as judgement dictates.

The presence of descriptors that denote plant or animal origin in facet A's PRODUCT TYPE, USA, as well as in facet B. Food Source and/or Facet C. Part of Plant or Animal has important consequences for searching. For example, when searching for all products made primarily from eggs, do NOT use *EGG OR EGG PRODUCT*; use the *PART OF ANIMAL* (Facet C) descriptor *EGG*. Searching on *EGG OR EGG PRODUCT* will not retrieve every product with eggs. Some egg products, such as meringues, may have sugar as the first ingredient, while others may be analogues. On the other hand, *EGG* may retrieve some *DESSERT* products.

It is because of this property of the original LanguaL system that the Full Ingredient Indexing was introduced as an extra indexing possibility for more straightforward searching on specific food constituents/ingredients.

5.1.3.2 Indexing Rules for the International Food Classification Schemes

The two Codex Alimentarius food classification schemes currently in the LanguaL thesaurus — the CLASSIFICATION OF FOOD AND FEED COMMODITIES (CODEX ALIMENTARIUS), and the FOOD CLASSIFICATION FOR FOOD ADDITIVES (CODEX ALIMENTARIUS) — are traditional food classifications. The Global Product Classification (GS1 GPC) is a more recent categorisation system for manufacturers and retailers. One and only one descriptor from each of these three classifications can be applied to a specific food.

The GENERAL STANDARD FOR CHEESE (CODEX ALIMENTARIUS) is divided into three sections: CHEESE HARDNESS CLASS (CODEX), DESIGNATION ACCORDING TO MILK FAT CONTENT and DESIGNATION ACCORDING TO PRINCIPLE CHEESE RIPENING CHARACTERISTICS (CODEX). One and only one descriptor from each of these three sections can be applied to a specific cheese.

5.1.3.3 Indexing Rules for EUROPEAN UNION Classification Schemes

The five European food classification systems currently in the LanguaL thesaurus — the CIAA FOOD CLASSIFICATION FOR FOOD ADDITIVES, the CLASSIFICATION OF PRODUCTS OF PLANT AND ANIMAL ORIGIN, EUROPEAN COMMUNITY, the EUROCODE 2 FOOD CLASSIFICATION*, the EUROFIR FOOD CLASSIFICATION and the EUROPEAN FOOD GROUPS (EFG) — are traditional food classification systems.

One and only one descriptor from each of these classifications can be applied to a specific food.

5.1.3.4 Indexing Rules for FAO Classification Schemes

The FAO FOOD BALANCE SHEETS are lists of commodities. Hence, prepared, processed or manufactured foods cannot be indexed directly using this food classification system. Unless the specific food to be indexed is a commodity or can be broken down into commodities (ingredients) and coded via Full Ingredient Indexing, this classification system should be omitted. If at all possible, one and only one descriptor can be applied to a specific food.

The FAO FOOD BALANCE SHEETS classification is not currently included in the LanguaL thesaurus.

5.1.3.5 Indexing Rules for FOOD ADDITIVES

The two food additive classifications — the CODEX ALIMENTARIUS, FUNCTIONAL CLASSES and the FOOD ADDITIVE CLASSIFICATION, EUROPEAN UNION — are both solely to be used for indexing of food additives, e.g. in connection with Full Ingredient Indexing.

Considering that a food additive can have several functions (e.g., ascorbic acid is an antioxidant, a vitamin, an acidifier etc.), the rule for indexing food additives allows more than one descriptor from either of the two classifications to be applied. This is an exception to the general rule allowing a maximum of one descriptor from each of the classification systems in Facet A.

5.1.4 PRODUCT TYPE NOT KNOWN, NOT DONE, OTHER

In the facet A, the following descriptors are included:

PRODUCT TYPE NOT KNOWN
Use when no product type is evident from the food product name (e.g., “artificially sweetened food”, “food with herbs added”, “food from cafeteria”, etc.)

PRODUCT TYPE, OTHER
Use very selectively, normally it should be possible to determine at the least broad category for a product.

5.1.5 TREATMENT OF MIXTURES IN FACET A

A mixture occurs when several products belonging to different product types are combined or packaged together, as expressed in *SANDWICH* or *MULTICOMPONENT MEAL* of the *PRODUCT TYPE, USA*.

For simple indexing:
If no facet term has been assigned for such a combination (NB: check thoroughly), it should be indexed using the major component/ingredient.

For Full Ingredient Indexing:
All single ingredients are listed in descending order and indexed separately.

5.2 FACET B – FOOD SOURCE

5.2.1 FOOD ORIGIN

Facet B - Food Source
Facet C - Part of Plant or Animal

LanguaL facets B and C describe the origin(s) of the food, specifically what plant, animal or chemical source(s) it comes from and, for a plant or animal source, what part is used.

The origin of a simple food (e.g., wheat flour, an apple, a lamb chop, orange juice) can be indexed completely by a combination of one descriptor from facet B - Food Source (e.g., *WHEAT*) with one descriptor from facet C - Part of Plant or Animal (e.g., *SEED OR KERNEL, SKIN REMOVED, GERM REMOVED*). A composite food (e.g., cherry pie) can be indexed selectively, designating the origin(s) of one or a few ingredients, or completely by Full Ingredient Indexing. The LanguaL thesaurus is well suited for either approach. The rules given below are based on the premise that satisfactory retrieval can be obtained by indexing the origin of the major ingredient. This description is then augmented by *FOOD ADDED* descriptors from Facet H - Treatment Applied.

5.2.2 DEFINITION OF FOOD SOURCE

The Food Source is defined as the individual plant, animal, or chemical food source from which the food product or its major ingredient is derived.

5.2.3 STRUCTURE OF FACET B

Food sources are divided into live food sources (i.e., plants, animals, and algae or fungi), water and chemical food sources, which include substances such as salt and monosodium glutamate. The general structure of Facet B is shown in Table 5.2.

Two major subdivisions, *PLANT USED AS FOOD SOURCE* and *ANIMAL USED AS FOOD SOURCE*, are further subdivided by consumer and industry-oriented characteristics. For animals, this corresponds to taxonomic classification, except that invertebrates living in water are grouped with the fish in *FISH OR LOWER WATER ANIMAL* (source of seafood).

For plants, however, the consumer and industry-oriented subdivision is quite different from the taxonomic subdivision. For instance, plants from many taxa are used for producing sugar or vegetables or spice. A functional category, such as *SUGAR-PRODUCING PLANT*, contains the plants which are chiefly used in this category. The presence or ab-

sence of a plant within a specific section of hierarchy does not impose any constrains upon its use in indexing. For example, if hearts of palm are used as a vegetable, the food source descriptor will be *PALM* although in the hierarchy *PALM* is listed only under *OIL-PRODUCING PLANT*.

With a few exceptions, species is the lowest level of the Food Source classification. Cultivars, breeds and strains of plants, animals and algae or fungi are not customarily used.

Table 5.2 Facet B - Food Source

ALGAE OR FUNGUS USED AS FOOD SOURCE
ANIMAL USED AS FOOD SOURCE
- AMPHIBIAN OR REPTILE
- FISH OR LOWER WATER ANIMAL
- INSECT
- MEAT ANIMAL
- POULTRY OR GAME BIRD

CHEMICAL FOOD SOURCE
LIQUID AS FOOD SOURCE
- ALCOHOL
- HUMAN AS FOOD SOURCE
- WATER

PLANT USED AS FOOD SOURCE
- FRUIT-PRODUCING PLANT
- GRAIN OR SEED-PRODUCING PLANT
- PLANT ACCORDING TO FAMILY
- PLANT FOR MEDICINAL USE
- PLANT USED AS FODDER
- PLANT USED FOR PRODUCING EXTRACT OR CONCENTRATE
  - CARBOHYDRATE-PRODUCING PLANT
  - OIL-PRODUCING PLANT
  - PROTEIN-PRODUCING PLANT
- SPICE OR FLAVOUR-PRODUCING PLANT
- VEGETABLE-PRODUCING PLANT
  - VEGETABLE-PRODUCING PLANT, ABOVE-GROUND PARTS USED
  - VEGETABLE-PRODUCING PLANT, MOST PARTS USED
  - VEGETABLE-PRODUCING PLANT, ROOT, TUBER OR BULB USED

5.2.4 USE OF FACET B IN INDEXING AND SEARCHING

The general rule for indexing using Facet B - Food Source is:

Choose one descriptor from facet B.

If the food product has multiple ingredients, the source of the **major ingredient** is indexed. The major ingredient is the one which predominates **by weight** as seen from the label statement, formulation or recipe (not counting water). Water is considered an ingredient only if it is the sole ingredient (e.g., mineral water) or if the food product is a soft drink.

A **mixture** of two or more similar food sources is sometimes indexed as one ingredient (e.g., if peas and carrots are listed as ingredients, the descriptor is *PEA AND CARROT*). See the Mixtures section below for a detailed explanation.

If the major ingredient is itself a **composite product**, such as "bread" in bread pudding, the major ingredient of that product determines the source descriptors (i.e., *WHEAT*, combined with *SEED OR KERNEL, SKIN REMOVED, GERM REMOVED (EN-

DOSPERM)* from facet C – Part of Plant or Animal (see next chapter). In the case of chicken broth, it would be *CHICKEN* combined with *BROTH OR STOCK*.

An indexer or searcher new to the LanguaL thesaurus should examine the *systematic display* to find the most specific descriptor applicable. Indexing by a descriptor that is too broad adversely affects retrieval. For example, *CORN* is usually too broad for indexing. Normally the indexer should be able to determine whether the food source is *FIELD CORN*, *POPCORN* or *VEGETABLE CORN*, and whether it is yellow or white. Searching for a descriptor that is too broad results in low precision. When the requestor needs all food products derived from *VEGETABLE CORN, YELLOW*, that descriptor (and not *CORN*) should be used. Similarly, the indexer should not use *WALNUT* without first trying to ascertain the species (*BLACK WALNUT*, *BUTTERNUT* or *ENGLISH WALNUT*).

If a specific food source is not found in the alphabetic list, scanning the systematic display in the appropriate section may help. If a species of plant or animal is not found in LanguaL, then the vocabulary should be updated. Please contact the LanguaL Secretariat.

For *Full Ingredient Indexing*, see chapter 4.3.

5.2.5 Food Source Not Known or Other

The descriptor *FOOD SOURCE NOT KNOWN* is used in the rare case when the food source cannot be determined even at the highest level (animal, chemical, water, plant, algae or fungus). There is no descriptor for "No food source" because there is always a food source. There is no descriptor for "Other food source" because the broad subdivisions (animal, chemical, water, plant, algae or fungus) exhaust all the possibilities.

5.2.6 Treatment of Mixtures in Facet B

The following specific descriptors are provided for frequently used food source mixtures:

CATTLE AND GOAT
CATTLE AND LAMB
CATTLE AND SHEEP
CATTLE AND SWINE
CATTLE AND SWINE AND CALF
GOAT AND COW
GRAPEFRUIT AND ORANGE
ORANGE AND APRICOT
PEA AND CARROT
PEA AND ONION
PEANUT WITH OTHER NUT OR SEED
PINEAPPLE AND GRAPEFRUIT
PINEAPPLE AND ORANGE
SHEEP AND COW
SHEEP AND GOAT
SHEEP AND GOAT AND COW
SUGAR CANE AND FIELD CORN
SWINE AND CALF

The appropriate specific mixture descriptor is used if one of the components is the first ingredient and the other component is a significant ingredient (second, third or fourth). The order in which the ingredients are listed in the mixture descriptions is not of significance. For example:

Food product:	Nut brittle
Label:	Peanuts, corn syrup, pecans
Indexing:	*PEANUT WITH OTHER NUT OR SEED*; *CORN SYRUP ADDED*

Mixtures not listed are indexed by the specific descriptor for the first ingredient (the major component of the mixture) in combination with the appropriate descriptor(s) describing the food added (facet H – Treatment Applied), following the rules given there. Example:

Label:	Pineapple juice, grape juice, water
Indexing:	*PINEAPPLE*; *FRUIT JUICE ADDED*

5.3 FACET C – PART OF PLANT OR ANIMAL

5.3.1 DEFINITION OF PART OF PLANT OR ANIMAL

The Part of Plant or Animal is defined as the anatomical part of the plant or animal from the food product or its major ingredient is derived (e.g., leaf, root or tuber, organ meat, milk, egg). Also included are components of the part (e.g., cream) and extracts, concentrates or isolates (e.g., protein extract, sugar).

5.3.2 STRUCTURE OF FACET C

This facet considers two characteristics: anatomical part and extract. These two characteristics could be in different facets and be freely combined to index such products as cod liver oil (anatomical part *LIVER* and extract type *FAT OR OIL*). However, with the use of a more compact structure, a trade-off is made as to which of these descriptors should be used. This is explained more fully below. The top-level structure is shown in Table 5.3.

Table 5.3 Facet C. Part of plant or animal

EXTRACT, CONCENTRATE OR ISOLATE OF PLANT OR ANIMAL
CARBOHYDRATE OR RELATED COMPOUND
ESSENTIAL OIL, OLEORESIN OR OTHER FLAVOURING SUBSTANCE
FAT OR OIL
MULTICOMPONENT EXTRACT, CONCENTRATE OR ISOLATE
PROTEIN EXTRACT, CONCENTRATE OR ISOLATE
ANATOMICAL PART OF PLANT OR ANIMAL (*explanatory heading, not a descriptor*)
PART OF ALGAE OR FUNGUS
PART OF ANIMAL
ANIMAL BODY OR BODY PART
MEAT PART
NONMEAT PART OF ANIMAL
WHOLE ANIMAL OR MOST PARTS USED
EGG
MILK
PART OF PLANT
FRUIT OR SEED
ROOT, STEM, LEAF OR FLOWER
BARK
COTYLEDON
PLANT ABOVE SURFACE, EXCLUDING FRUIT AND SEED
ROOT, TUBER OR BULB
WHOLE PLANT OR MOST PARTS USED
PART OF PLANT OR ANIMAL NOT APPLICABLE (*water or chemical food source*)
PART OF PLANT OR ANIMAL NOT KNOWN

Plant secretions (subsumed under extracts) are considered *PART OF PLANT*. *MILK* and *EGG* are considered *PART OF ANIMAL*. This is because their composition depends on the nutrient intake and physiology of the plant or animal.

5.3.3 USE OF FACET C IN INDEXING AND SEARCHING

The general rule for indexing using facet C Part of Plant or Animal is:

Choose one descriptor from facet C.

Descriptors in facet C – Part of Plant or Animal complete the description of the origin of the major ingredient. If the part is not an extract, use the appropriate descriptor listed under *PART OF PLANT*, *PART OF ANIMAL*, or *PART OF ALGAE OR FUNGUS *. Always verify the choice, especially the level of specificity by consulting the systematic display.

In the case of an **extract**, the anatomical part from which the extract is made is usually ignored. Examples:

Product	Product Type	Food Source	Part Indexed (Part Ignored)
Cod liver oil	*REFINED OR PARTIALLY REFINED FOOD PRODUCT*	*CODFISH*	*FAT OR OIL* or * LIVER OIL* (not Liver)
Corn oil	″	*FIELD CORN*	*FAT OR OIL* or * SEED OIL* (not Seed/kernel)
Corn syrup	″	*FIELD CORN*	*DEXTROSE* (not Seed/kernel)
Cane sugar	″	*SUGAR CANE*	*SUCROSE* (not Stem/stalk)
Beet sugar	″	*SUGAR BEET*	*SUCROSE* (not Root)

This rule has important consequences for searching, namely that a search for an anatomical part descriptor may not retrieve all the relevant products. For example, a search for all products made from fish liver and formulated as *FISH* and *LIVER* does not retrieve products which are extracted from fish liver, such as cod liver oil.

If, on the other hand, the product type implies a specific kind of extract, use the appropriate anatomical part descriptor instead of the extract descriptor (which would be redundant). Examples:

Product	Product Type	Food Source	Part Indexed
Apple juice	*FRUIT JUICE*	*APPLE*	*FRUIT OR BERRY, PEEL PRESENT, CORE, PIT OR SEED PRESENT*
Grape jelly	*FRUIT JELLY*	*GRAPE*	″
Beer	*MALT BEVERAGE*	*BARLEY*	*GERMINATED OR SPROUTED SEED*
Carrot juice	*VEGETABLE JUICE*	*CARROT*	*ROOT, TUBER OR BULB*
Peppermint tea	*STEEPED BEVERAGE*	*PEPPERMINT*	*LEAF*

The *PART OF PLANT* indexed is the part that is involved in the process of making the juice, wine or other extract. This is because the extract stays in contact with this part and

substances may be extracted from all subparts, such as peels and seeds. Apple juice is made from chopped whole apples (*FRUIT OR BERRY, PEEL PRESENT, CORE, PIT OR SEED PRESENT*).

5.3.4 PART OF PLANT OR ANIMAL NOT KNOWN OR OTHER

This facet includes the notion of part of plant or animal not known, which is used only in combination with *FOOD SOURCE NOT KNOWN*. If the food source is known to be a plant, then the part is known to be a *PART OF PLANT* even if nothing else can be said.

There is no descriptor for "No part" because for a living source there is always a part from which the product is made. Similarly for "other" the top-level descriptors exhaust all the possibilities. For a nonliving (water, chemical) food source, use the descriptor *PART OF PLANT OR ANIMAL NOT APPLICABLE*.

5.3.5 TREATMENT OF MIXTURES IN FACET C

Specific mixture descriptors are provided for frequently used combinations. These include:

GERM AND BRAN
POD AND FULL-SIZE SEED, MIXTURE

The mixture terms are applied to the major ingredient. Intact plants (e.g., pod containing full-size seeds) are not considered mixtures. For other mixtures use the broad term that includes the parts in the mixture.

5.4 FACET E – PHYSICAL STATE, SHAPE OR FORM

The physical state, shape and form of a food have important implications for food safety and nutrition. They directly affect heat transfer through the product in processing (e.g. warming, cooking, and freezing). They also affect the product's susceptibility to permeation by chemical substances and to invasion by micro-organisms. All of these are influenced by the physical state and, for solid products, by size, surface-to-volume ratio and type of surface (e.g., unbroken skin or crust vs. Exposed internal areas).

5.4.1 DEFINITION OF PHYSICAL STATE, SHAPE OR FORM

The physical state of a food product specifies whether it is liquid, semiliquid, semisolid or solid. Solid food products are further subdivided by shape or form. Terms are provided for products that have both liquid and solid components and those that incorporate air or other gases.

Table 5.4 Facet E – Physical State, Shape or Form

LIQUID
LIQUID, HIGH VISCOSITY
LIQUID, HIGH VISCOSITY, WITH NO VISIBLE PARTICLES
LIQUID, HIGH VISCOSITY, WITH SMALL PARTICLES
LIQUID, HIGH VISCOSITY, WITH SOLID PIECES
LIQUID, LOW VISCOSITY
LIQUID, LOW VISCOSITY, WITH NO VISIBLE PARTICLES
LIQUID, LOW VISCOSITY, WITH SMALL PARTICLES
LIQUID, LOW VISCOSITY, WITH SOLID PIECES
PHYSICAL STATE, SHAPE OR FORM NOT KNOWN
PHYSICAL STATE, SHAPE OR FORM, MULTIPLE
SEMILIQUID
SEMILIQUID WITH SMOOTH CONSISTENCY
SEMILIQUID WITH SOLID PIECES
SEMISOLID
SEMISOLID WITH SMOOTH CONSISTENCY
SEMISOLID WITH SOLID PIECES
SOLID
CRYSTAL
DIVIDED OR DISINTEGRATED
DISINTEGRATED OR GROUND
DIVIDED INTO HALVES, QUARTERS OR SEGMENTS
DIVIDED INTO PIECES
WHOLE
WHOLE, NATURAL SHAPE
WHOLE, SHAPE ACHIEVED BY FORMING
WHOLE AND PIECES

5.4.2 STRUCTURE OF FACET E

The physical states of food products are arranged on a continuum from the liquid to the solid state as shown in Table 5.4.

LIQUID, LOW VISCOSITY, *LIQUID, HIGH VISCOSITY*, *SEMILIQUID* and *SEMISOLID* are each subdivided by the degree of homogeneity. Some products are homogeneous liquids or semisolids; others contain solid particles in a liquid or semisolid base.

SOLID is subdivided by shape, form or size. Within *DIVIDED OR DISINTEGRATED*, distinctions are based on the size of the pieces or particles. For products that are *WHOLE, NATURAL SHAPE* or *DIVIDED INTO HALVES, QUARTERS OR SEGMENTS*, the size can be inferred from the food source (e.g., a coconut vs. a poppy seed) and need not be indexed.

For solid products that are *WHOLE, SHAPE ACHIEVED BY FORMING* a distinction may be made between homogeneous and particulate structure within *PARTICLE SIZE IN SOLID FORMED PRODUCTS*. This is used, for example, to describe different kinds of sausages.

5.4.3 USE OF FACET E IN INDEXING AND SEARCHING

The general rule for indexing using facet E. Physical State, Shape or Form is:

Choose one descriptor from facet E

In the case of products that are *WHOLE, SHAPE ACHIEVED BY FORMING* one may wish to further distinguish between homogeneous and particulate structure; this can be done using *PARTICLE SIZE IN SOLID FORMED PRODUCTS* in Facet Z.

5.4.3.1 Determining the physical shape or form

It is important to note that the physical state of the food product is determined on a uniform temperature basis, room temperature (20°C or 68°F). Liquid and semiliquid products can be poured. Semisolid products are spreadable or able to be formed. Solid products (hard or soft, firm or not firm) are capable of retaining their shapes.

In determining the physical shape or form of a *SOLID* product, the following should be considered:

- For a product that is a **whole plant or animal** or a whole **part** thereof (as indexed in C – Part of Plant or Animal), the descriptor is *WHOLE, NATURAL SHAPE* regardless of the size (from a beef carcass to a poppy seed).
- If the **shape** of a whole product is achieved by forming (e.g., moulding or extrusion), the descriptor is *WHOLE, SHAPE ACHIEVED BY FORMING* (or an appropriate narrower term according to thickness).
- For a product that is **not whole**, determine how it is *DIVIDED OR DISINTEGRATED*. If the product is *DIVIDED INTO HALVES, QUARTERS OR SEGMENTS* (i.e., pieces whose shape is defined in relation to the whole), use the de-

scriptor appropriate for the segment, regardless of size. The whole may be divided naturally or artificially (e.g., by cutting).

- If the product is **divided into pieces** that bear little or no relationship to the shape of the whole, the descriptor is *DIVIDED INTO PIECES* (or an appropriate narrower term according to thickness).
- If the product is **ground** (i.e., if all particle dimensions are below 0.2 cm) the descriptor is *DISINTEGRATED OR GROUND* (or an appropriate narrower term).
- **Crystal** is a partial exception to these rules. The descriptor *CRYSTAL* is used for whole and broken crystals. If crystals are ground (as in confectioner's sugar) the descriptor is *DISINTEGRATED OR GROUND* (or an appropriate narrower term).

A number of complications arise in the use of this facet:

- Physical state is dependent on temperature. At what temperature should the physical state of a food product be determined?
- Dividing or disintegrating a solid food product may result in a product that is closer to a semisolid mass than to an assembly of solid parts. Should the shape descriptor *DIVIDED OR DISINTEGRATED* or the physical state descriptor *SEMISOLID* be used?
- *WHOLE* is an ambiguous term, with different meanings in different facets.
- Some shape descriptors do not consider size and the searcher needs to be aware of this.
- For products packed in a packing medium, one must decide whether to determine the physical state with or without the packing medium.

These complications are discussed in the following sections.

5.4.3.2 Temperature for determining physical state

Physical state varies with temperature. Because food products are often processed, handled and consumed at various temperatures, a complete description would require giving the physical state at several temperatures. However, for a simple description one physical state descriptor will suffice. The question is then: what temperature should it be? The following possibilities were considered in formulating the indexing rule:

- Physical state at a given point during processing
- Physical state at the point of sale
- Physical state at the point of consumption
- Physical state at room temperature (20°C, 68°F)

The following table illustrates the physical state of selected products under each possibility:

Product	During processing	Point of sale	Point of consumption	Room temperature (20°C)
Frozen broccoli	Solid	Solid	Solid	Solid
Ice cream	Liquid	Solid	Solid	Liquid
Orange juice concentrate	Liquid, high viscosity	Semisolid	N/A	Liquid, high viscosity
Canned bouillon	Liquid	Semisolid	Liquid (at 55°C)	Semisolid
Frozen soup	Liquid	Solid	Liquid	Liquid

All frozen products are solid or semisolid at the point of sale. Indexing at the point-of-sale temperature does not preserve the distinction between frozen products that remain solid when thawed and frozen products that become liquid when thawed. However, indexing uniformly at room temperature does preserve this distinction and thus gives more information. Furthermore, it is common and usual to determine physical properties at 20°C.

Thus, it was decided that for the purpose of indexing, the physical state should be determined at room temperature. This rule was chosen even though in a few instances it leads to counter-intuitive results: ice cream is not ordinarily thought of as *LIQUID, HIGH VISCOSITY*, canned bouillon is not ordinarily thought of as *SEMISOLID*.

5.4.3.3 Divided vs. Semisolid with particles

It may be difficult to decide between *DIVIDED OR DISINTEGRATED* and *SEMISOLID WITH SOLID PIECES*. The decision depends on the degree to which the particles are bound together. The following examples should help the indexer or searcher in making such decisions:

Product	Indexed
Beef cubes Chopped peanuts Cut green beans	Clearly *DIVIDED OR DISINTEGRATED*
Cut green bean salad Cole slaw	Still *DIVIDED OR DISINTEGRATED* (but borderline)
Chicken salad bound with mayonnaise	*SEMISOLID WITH SOLID PIECES* (but borderline)
Chunky peanut butter	Clearly *SEMISOLID WITH SOLID PIECES*

5.4.3.4 *WHOLE, NATURAL SHAPE* applied to an anatomical part

The descriptor *WHOLE, NATURAL SHAPE* applies to the plant or animal part indexed in Facet C (Part of Plant or Animal). This may be the entire plant or animal (e.g., *WHOLE ANIMAL*) or a whole part thereof (e.g., *SKELETAL MEAT PART*, *LIVER*, *LEAF*, *FRUIT*).

A chicken leg is a whole *SKELETAL MEAT PART* and is indexed in facet E by *WHOLE, NATURAL SHAPE*. A cut-up chicken (a whole chicken divided into whole parts) is an assembly of whole parts and is also indexed by *WHOLE, NATURAL

SHAPE*. The distinction between a chicken leg and an entire chicken is made in Facet C: *WHOLE ANIMAL* vs. *SKELETAL MEAT PART*.

5.4.3.5 Size considerations

Size distinctions are explicit under *WHOLE, SHAPE ACHIEVED BY FORMING* and under most of *DIVIDED OR DISINTEGRATED*. However, for products that are *WHOLE, NATURAL SHAPE* or *DIVIDED INTO HALVES, QUARTERS OR SEGMENTS*, size distinctions are implied by the food.

When searching for flow characteristics of food products, remember that a product consisting of small whole units (e.g. poppy seeds) flows like medium ground meal, since the particle size is the same. Likewise, a product consisting of intact micro-organisms (e.g., yeast cells) resembles finely ground flour. An exhaustive Boolean search for products with the flow characteristics of a meal needs to be posed in following manner:

MEDIUM GROUND or [*SEED OR KERNEL* and (*POPPY* or *SAFFLOWER* or *MILLET* or … other plants with very small seeds)]

5.4.3.6 Packing medium and physical state

Many products consist of a food and a packing medium. For example, a can of peas contains peas in water. A rule of thumb is to ask what part of the product was analysed: the peas themselves or the combination peas + water? In the first case, the physical state of the food proper (peas) would be indexed without regard to the packing medium. The packing medium (water) will be indexed separately in Facet K (Packing Medium). In this example, the physical state descriptor is *WHOLE, NATURAL SHAPE*; the packing medium will be indexed *PACKED IN WATER*.

On the other hand, canned vegetable soup containing peas is a product in which the liquid component is an integral part of the food; without the liquid, there is no soup. The descriptors for physical state and packing medium would be *LIQUID, HIGH VISCOSITY, WITH SMALL PARTICLES* and *NO PACKING MEDIUM USED*, respectively.

Some products contain a liquid, semiliquid or semisolid component that facilitates packing but is at the same time an integral part meant for consumption. Components used in this way are gravies, gelatines and some syrups. Such components should be indexed as packing media. For example, "sliced peaches in heavy syrup" is indexed by *PACKED IN HEAVILY SWEETENED LIQUID*. If a liquid, semiliquid or semisolid is indexed as a packing medium, it is disregarded in the determination of the physical state. Note that the packing medium can be indexed by its own combination of facet terms, including facet E.

In a Boolean search for all products consisting of solid parts in liquids, the query formulation would be as follows:

LIQUID, LOW VISCOSITY, WITH SOLID PIECES or *LIQUID, HIGH VISCOSITY, WITH SOLID PIECES* or *PACKED IN EDIBLE MEDIUM*

See the examples in the chapter for Facet K (Packing Medium).

5.4.4 PHYSICAL STATE NOT KNOWN

Facet E includes the descriptor *PHYSICAL STATE, SHAPE OR FORM NOT KNOWN*, which may be need when indexing from a label or recipe or when the product cannot be examined at room temperature. There is no descriptor for "no physical state, shape or form because every product has a physical state, shape or form. Similarly for "other", the top-level descriptors exhaust all the possibilities.

5.4.5 TREATMENT OF MIXTURES IN FACET E

The following descriptors are provided for specific mixtures:

WHOLE AND PIECES
LIQUID, LOW VISCOSITY, WITH SMALL PARTICLES
LIQUID, LOW VISCOSITY, WITH SOLID PARTICLES
LIQUID, HIGH VISCOSITY, WITH SMALL PARTICLES
LIQUID, HIGH VISCOSITY, WITH SOLID PARTICLES
PHYSICAL STATE, SHAPE OR FORM, MULTIPLE
SEMILIQUID WITH SOLID PIECES
*SEMISOLID WITH SOLID PIECES

Choose descriptors with "solid pieces" over "small particles" if both appear in the food. For other mixtures, use the broader term that includes all components.

5.5 FACET F – EXTENT OF HEAT TREATMENT

5.5.1 PROCESSING OPERATIONS

Facet F – Extent of Heat Treatment
Facet G – Cooking Method
Facet H – Treatment Applied
Facet J – Preservation Method

Facets F through J designate selected **processing operations**, which modify the food product in terms of:

- Flavour, texture and other functional characteristics
- Nutritional value
- Shelf life

The descriptors in Facet F – Extent of Heat Treatment are very broad. The descriptors in Facet G (Cooking Method) add the specificity of a method to the broad cooking characteristics in Facet F. Facet H (Treatment Applied) includes specific descriptors for a wide range of operations. Facet J (Preservation Method) includes processes that mainly serve as preservation techniques.

Often a processing operation affects more than one characteristic of the food product. Such an operation may require several descriptors, each reflecting the viewpoint of a particular facet. Examples:

- A product that is sterilised by heat is also fully cooked. Thus the descriptors *FULLY HEAT-TREATED* (facet F) and *STERILIZED BY HEAT* (facet J) are used.
- A product that is smoked for preservation has also had its taste changed. Thus the descriptors *SMOKED BY SMOKE INFILTRATION* (facet H) and *PRESERVED BY SMOKING* (facet J) are used.

Because each facet is considered independently of the others, all of the viewpoints will be included. This ensures complete retrieval for any descriptor. For example, *FULLY HEAT-TREATED* (facet F) intended for preparation or *SMOKED BY SMOKE INFILTRATION* (facet H) intended for preservation retrieves all products so treated regardless of the purpose of the treatment.

The facets in this group (F to J) do not cover all processing operations. Others are implied by descriptors in Facet C – Part of Plant or Animal (which may imply such operations as hulling or extracting), Facet E – Physical State, Shape of Form (which may imply cutting, grinding or forming) and Facets K to N – Packing and Packaging.

5.5.2 DEFINITION OF EXTENT OF HEAT TREATMENT

This facet is used to broadly characterise a food product based on the extent of heat applied. Heat treatment affects the flavour and textural characteristics of a food as well as consumer preparation time. Heat treatment causes chemical changes and/or reduction of enzyme and microbial activity and affects the safety and shelf life of food. Specifics of preparation are covered by Facets G (Cooking Method) and H (Treatment Applied).

5.5.3 STRUCTURE OF FACET F

The major subdivisions of the facet are given in Table 5.5.

Table 5.5 Facet F – Extent of Heat Treatment

EXTENT OF HEAT TREATMENT NOT KNOWN
HEAT-TREATED
FULLY HEAT-TREATED
PARTIALLY HEAT-TREATED
HEAT-TREATED, MULTIPLE COMPONENTS, DIFFERENT DEGREES OF TREATMENT
NOT HEAT-TREATED

5.5.4 USE OF FACET F IN INDEXING AND SEARCHING

The general rule for indexing using facet F – Extent of Heat Treatment is:

Choose one descriptor from facet F.

The only aspect of cooking considered in this facet is the application of heat. Many products are heated to effect changes. For others, the heating may be a by-product of the processing (e.g., grain being heated during grinding or during oil extraction). Any significant application of heat induces changes in the food, especially in nutritional and safety characteristics. Therefore, the degree of heating should be indicated by using descriptors *PARTIALLY HEAT-TREATED* or *FULLY HEAT-TREATED*, as appropriate. The descriptors of Facet F are defined as follows:

- A food product is *NOT HEAT-TREATED* when no heat was applied or when the heat applied was insignificant.
- A food product is *HEAT-TREATED* when it is known that heat has been applied to the product but it is not known if the product has been partially or fully heat-treated.
- A food product is *PARTIALLY HEAT-TREATED* when heat was applied for a time sufficient to partially change some characteristics, especially flavour or texture. This often decreases consumer preparation time. Partial cooking also causes some chemical changes and/or reduction of enzyme and microbial activity. In a product having multiple components requiring different cooking times, partial cooking achieves a "degree of doneness" such that time for completion is the same for all components. A component such as a piecrust may not have been cooked at all. Products labelled "quick cooking" are often *PARTIALLY HEAT-TREATED*.

- A food product is *FULLY HEAT-TREATED* when heat was applied for a time sufficient to fully change some characteristics, especially flavour or texture. The cooking process also causes significant chemical changes and destruction of enzyme and microbial activity. The product is offered for consumption without a requirement for further cooking.

The following examples further illustrate how the is facet is used:

Food product	Extent Of Heat Treatment
Cookie dough	*NOT HEAT-TREATED*
Cookies	*FULLY HEAT-TREATED*
TV dinner, frozen	*PARTIALLY HEAT-TREATED*
Pasteurised milk	*PARTIALLY HEAT-TREATED*
Cold-pressed oil	*NOT HEAT-TREATED*
Hot-pressed oil	*PARTIALLY HEAT-TREATED*
Sugar	*FULLY HEAT-TREATED*

5.5.5 EXTENT OF HEAT TREATMENT NOT KNOWN, NOT DONE

This facet includes the descriptor *EXTENT OF HEAT TREATMENT NOT KNOWN*. Not done is *NOT HEAT-TREATED*. There is no descriptor for "Other extent of heat treatment" because every product is either raw, partially cooked or fully cooked.

5.5.6 TREATMENT OF MIXTURES IN FACET F

The only type of product to which one might wish to apply more than one descriptor from this facet is a product with multiple components that vary in degree of cooking. Such a product is indexed by *HEAT-TREATED, MULTIPLE COMPONENTS, DIFFERENT DEGREES OF TREATMENT*. This term is used for foods containing several different components, each of which may have had a different extent of heat treatment. An example would be a cheeseburger with a fully cooked bun and meat but a partially cooked slice of cheese and possible raw tomato and lettuce.

5.6 FACET G – COOKING METHOD

The descriptors in this facet add specificity of method to the broad characteristics *FULLY HEAT-TREATED* and *PARTIALLY HEAT-TREATED* indexed in Facet F – Extent of heat treatment.

5.6.1 DEFINITION OF COOKING METHOD

Cooking method is defined as the method by which a food is cooked, reheated or held warm. Cooking means raising the temperature of a food by heat or microwaves to convert it from a raw or partially cooked state to a partially or fully cooked state.

The physical and biochemical changes in the food and its components as well as nutrient retention and palatability depend not only on the degree of cooking as indexed in Facet F (Extent of Heat Treatment), but also on the specific cooking method used. Cooking method is not indexed for products where heating serves mainly for preservation (e.g., pasteurising milk, canning). It also is not indexed for manufactured products where heating is inherent in the product type (e.g., heating processed cheese in its manufacture, boiling sugar syrup to make confectionery, drum-drying breakfast cereal under heat), as the heating method is part of an industrial process and is most often not known to the compiler. These products and those not subject to heat treatment should be indexed by *COOKING METHOD NOT APPLICABLE*. However, if the cooking method is known (e.g. potato crisps/chips are *COOKED WITH ADDED FAT OR OIL*; bread is most often *BAKED*), then the appropriate descriptors should be used, as cooking method has implications in food safety. Multiple descriptors are permitted in indexing.

5.6.2 STRUCTURE OF FACET G

The major subdivisions of the facet are given in Table 5.6.

Table 5.6 Facet G – Cooking Method

COOKED BY DRY HEAT
COOKED BY MICROWAVE
COOKED BY MOIST HEAT
COOKED IN STEAM
COOKED IN WATER OR WATER-BASED LIQUID
COOKED WITH FAT OR OIL
COOKED WITH ADDED FAT OR OIL
COOKED WITH INHERENT FAT OR OIL
METHOD OF HEATING CONTAINER
REHEATED
SCALDED OR BLANCHED
COOKING METHOD NOT APPLICABLE
COOKING METHOD NOT KNOWN

5.6.3 USE OF FACET G IN INDEXING AND SEARCHING

The general rule for indexing using facet G – Cooking Method is:

Choose at least one descriptor from facet G.

Every cooking method for which information is readily available from a label, recipe or other food description should be indexed. A cooking method is indexed no matter where it was applied: in the home, in a store, by a vendor, in a restaurant or in a food industry.

It is understood that the use of multiple terms may cause some confusion as to where a cooking method was applied (e.g., in the industry or at home) and as to the sequence of cooking methods. However, the assumption is made that what happens to a food is more important than where or in what sequence it happens.

5.6.4 COOKING METHOD NOT APPLICABLE, NOT KNOWN

Facet G includes terms for:

- COOKING METHOD NOT APPLICABLE

  Used for foods that have not been cooked or partially cooked before consumption or for manufactured foods that are otherwise excluded from indexing with cooking method (see above).

- COOKING METHOD NOT KNOWN

  Used for foods that have been cooked but for which information about the cooking method is not readily available.

5.6.5 TREATMENT OF MIXTURES IN FACET G

For multiple-ingredient foods, the cooking methods applied to the food as a whole or to any indexed ingredient (cf. Facet H) are indexed. Therefore, lasagne would be *BAKED OR ROASTED*; but it would also be indexed by *BOILED AND DRAINED* (for the lasagne noodles), *SIMMERED, POACHED OR STEWED* (for the sauce), and possibly *COOKED WITH INHERENT FAT* (for meat ingredients).

5.7 FACET H – TREATMENT APPLIED

5.7.1 DEFINITION OF TREATMENT APPLIED

Treatment Applied is defined as the treatment or processes applied to a food product or by indexed ingredient of the food product. The processes include adding, substituting or removing components or modifying the food or a component (e.g., through fermentation). Multiple values may be assigned when indexing.

5.7.2 STRUCTURE OF FACET H

The major subdivisions of the facet are given in Table 5.7.

Table 5.7 Facet H – Treatment Applied

COMPONENT REMOVED
COMPONENT SUBSTITUTED
FOOD MODIFIED
INGREDIENT ADDED
CARBOHYDRATE OR RELATED COMPOUND ADDED
COATED OR COVERED
COLOR ADDED
FAT OR OIL ADDED
FILLED OR STUFFED
FLAVORING OR TASTE INGREDIENT ADDED
FOOD ADDED
FOOD ADDITIVE ADDED, EUROPEAN COMMUNITY/CODEX ALIMENTARIUS
FOOD ADDITIVE ADDED, USA
LEAVENING AGENT ADDED
NUTRIENT OR DIETARY SUBSTANCE ADDED
PHOSPHATE ADDED
PROTEIN ADDED
WATER ADDED OR REMOVED
NO TREATMENT APPLIED
TREATMENT APPLIED NOT KNOWN

5.7.3 USE OF FACET H IN INDEXING AND SEARCHING

The general rule for indexing using facet H – Treatment Applied is:

Choose at least one descriptor from facet H.

All applicable descriptors from this facet must be assigned, even if they are implied by descriptors from other facets. For example, a cheese indexed with the descriptor *NATURAL CHEESE* (Facet A – Product Type) is also indexed by *LACTIC ACID-OTHER AGENT FERMENTED* in Facet H. A product that is indexed by

PRESERVED BY SMOKING (Facet J – Preservation Method) is also indexed here by *SMOKED BY SMOKE INFILTRATION*. To ensure that no important descriptor is overlooked, the indexer must systematically examine the tree structure (systematic display), using the following procedure:

- Consider the five main subdivisions and select all that apply.
- Within the subdivisions that are applicable, examine and use all appropriate specific descriptors.
- If all the treatments listed can be ruled out, use the descriptor *NO TREATMENT APPLIED*.
- If the information available is not sufficient to index any treatment but also not sufficient to rule out all treatments, use the descriptor *TREATMENT APPLIED NOT KNOWN*.

Information for indexing may be found in label statements, recipes, general knowledge and inferences drawn from these sources. Some treatments can be positively identified and indexed. Other treatments cannot be identified but also cannot be ruled out. Still other treatments can be ruled out. This indexing by Treatment descriptors is sometimes incomplete. Subsequent retrieval depends on the information used in indexing, as well as its source and extent.

5.7.3.1 Indexing ingredients

For simple indexing, the sole or main ingredient is indexed in Facet B (Food Source). In some applications of the LanguaL thesaurus, the entire list of other ingredients is indexed in Facet H – Treatment Applied. In other applications, descriptors from Facet H should be used only when the treatment has a significant effect on the product at hand.

Secondary ingredients are indexed according to rules which are based on the order of predominance by weight (not counting water) as seen from the label statement, formulation or recipe and/or from the amount of the ingredient as percentage of total product weight. The Scope Notes provided with the terms in the LanguaL thesaurus give rules for indexing at a medium level of completeness:

These rules are based on the significance of the treatment on the safety and nutritional value of the food product. A rule given for a broad descriptor, such as *SUGAR OR SUGAR SYRUP ADDED*, holds for all its narrower terms, such as *DEXTROSE ADDED*, unless otherwise stated.

5.7.3.2 Simple Indexing vs. Full Ingredient Indexing

For simple indexing, the treatments considered are those applied to the product as a whole plus those applied to any indexed ingredient. For example, if a product has hydrogenated fat as a second ingredient, it is indexed by *FAT OR OIL ADDED* and *HYDROGENATED*.

In the case of Full Ingredient Indexing, only treatments applied to the product as a whole are indexed here (see chapter 4.3). Treatments applied to the ingredients are indexed at the ingredient level.

5.7.4 TREATMENT APPLIED NOT DONE, NOT KNOWN

The following descriptors are included in Facet H:

NO TREATMENT APPLIED
Used when none of the treatments listed and defined in this facet pertain to the food product (i.e., all listed treatments can be ruled out with reasonable certainty).

*****TREATMENT APPLIED NOT KNOWN*
Used when the information available is not adequate to index any treatment but also not adequate to rule out all treatments. Use of this descriptor indicates that the indexer has considered all the treatments listed.

There is no descriptor for "treatment applied, other". A treatment not falling in one of the five major subdivisions is not of interest and should not be indexed here.

5.7.5 TREATMENT OF MIXTURES IN FACET H

Multiple individual characteristics, as many as needed, should be indexed.

5.8 FACET J – PRESERVATION METHOD

5.8.1 DEFINITION OF PRESERVATION METHOD

Preservation Method is defined as the method(s) or technique(s) contributing to the prevention or retardation of enzymatic or microbial spoilage of a food product. Index all methods for which information is available, even if a corresponding descriptor has already been used in Facet H (Treatment Applied). Except for *INGREDIENT PRESERVED BY HEAT TREATMENT* and *INGREDIENT PRESERVED BY IRRADIATION*, the descriptors refer to the finished food.

5.8.2 STRUCTURE OF FACET J

The major subdivisions of the facet are given in Table 5.8.

Table 5.8 Facet J – Preservation Method

PRESERVED BY ADDING SPICES OR EXTRACTS
PRESERVED BY CHEMICALS
PRESERVED BY ADDING CHEMICALS
PRESERVED BY TREATMENT WITH CHEMICALS
PRESERVED BY CHILLING OR FREEZING
PRESERVED BY CHILLING
PRESERVED BY FREEZING
PRESERVED BY PRESERVED BY SOUS VIDE
PRESERVED BY FERMENTATION
PRESERVED BY FILTRATION
PRESERVED BY HEAT TREATMENT
BLANCHED
INGREDIENT PRESERVED BY HEAT TREATMENT
PASTEURISED BY HEAT
STERILISED BY HEAT
PRESERVED BY IRRADIATION
PRESERVED BY REDUCING WATER ACTIVITY
DEHYDRATED OR DRIED
PRESERVED BY ADDING SUGAR
PRESERVED BY SALTING
PRESERVED BY SMOKING
PRESERVED BY STORAGE IN MODIFIED OR CONTROLLED ATMOSPHERE
STERILIZED BY ULTRA HIGH PRESSURE
NO PRESERVATION METHOD USED
PRESERVED BY OTHER METHOD
PRESERVATION METHOD NOT KNOWN

5.8.3 USE OF FACET J IN INDEXING AND SEARCHING

The general rule for indexing using facet J – Preservation Method is:

Choose at least one descriptor from facet J.

Preservation, a complex area, is not easily separated from other aspects of food technology covered in Facets F (Extent of Heat Treatment), H (Treatment Applied) and Facets K through N (Packing and Packaging). Preservation usually involves several processes that often affect other characteristics of the food product. These processes fall into several major classes and include the following.

- Treating the food product in order to:
  - modify it,
  - destroy enzymes and microbes,
  - prevent enzymatic and/or microbial growth or activity (related to facets F – Extent of Heat Treatment and H – Treatment Applied).
- Packaging (related to facets K – Packing Medium and M – Container or Wrapping)
- Storage and handling (an aspect not covered elsewhere in the LanguaL thesaurus and often implied rather than explicitly indexed).

The method for preserving the food for sale and subsequent storage by the consumer or a food service establishment is indexed. This is done even if the food is in a consumption-ready state. For example, a pizza that was sold and stored in a frozen state but must be heated to eat is indexed by *FROZEN*. The indexer must select all preservation methods known. For example, the food product "canned smoked oysters" is indexed by *STERILIZED BY HEAT*, as well as *PRESERVED BY SMOKING*.

The following rules apply to indexing preservation method(s) used for ingredients:

- When an ingredient is preserved by a chemical that subsequently becomes part of the finished food and continues to be effective in the food, then the chemical preservation appears on the food label. In this case, index the food product by *PRESERVED BY CHEMICALS* or the appropriate narrower term. Otherwise do not index: in such a case the chemical is an incidental additive that does not need to be declared and is most likely so diluted in the final product that it is not effective.
- When an ingredient is treated to reduce microbes and/or enzymes as part of making the food, thus reducing microbes/enzymes in the finished food itself (e.g., cheese made from pasteurised milk), then use *INGREDIENT PRESERVED BY HEAT TREATMENT* or *INGREDIENT PRESERVED BY IRRADIATION*.
- When an ingredient is preserved until it is used but preservation is no longer effective in the finished food (e.g., pudding made with dry milk, food made from previously frozen ingredients), then do not index in Facet J.

5.8.4 PRESERVATION METHOD NOT KNOWN, NOT DONE, OTHER

This facet includes:

PRESERVATION METHOD NOT KNOWN
Used when nothing is known about the preservation method.

NO PRESERVATION METHOD USED
Used when a food product is not treated to prevent or retard enzymatic or microbial spoilage.

PRESERVED BY OTHER METHOD
Used only when a preservation method does not fall under any of the major categories of preservation.

5.8.5 TREATMENT OF MIXTURES IN FACET J

Index all known methods of preservation applied to the product.

5.9 FACET K – PACKING MEDIUM

5.9.1 PACKING AND PACKAGING

Facet K – Packing Medium
Facet M – Container or Wrapping
Facet N – Food Contact Surface

Facets K through N consider packing media (internal to the container), packing container, and the surface that the food product contacts (the container's inner surface, sometimes modified by a coating).

5.9.2 DEFINITION OF PACKING MEDIUM

Packing medium is defined as the medium in which the food is packed for preservation or handling, or the medium surrounding homemade foods (e.g., peaches cooked in sugar syrup). The packing medium may provide a controlled environment for the food. It may also serve to improve palatability and consumer appeal.

Modern preservation technologies like freezing (e.g., deep-frozen products) or irradiation (e.g., spices) or combined technologies (e.g., irradiation plus freezing) do not require any packing medium for preservation. The packing medium is important in the case of "traditional" preservation methods where a medium conveys heat energy to all parts of the food (e.g., canning).

5.9.3 STRUCTURE OF FACET K

The major subdivisions of the facet are given in Table 5.9.

Table 5.9 Facet K – Packing Medium

PACKED IN EDIBLE MEDIUM
PACKED IN BROTH
PACKED IN CREAM OR MILK
PACKED IN FAT OR OIL
PACKED IN FRUIT JUICE
PACKED IN GELATIN
PACKED IN GRAVY OR SAUCE
PACKED IN INK
PACKED IN SALT BRINE
PACKED IN SWEETENED LIQUID
PACKED IN VEGETABLE JUICE
PACKED IN VINEGAR
PACKED IN WATER
PACKED IN GAS OTHER THAN AIR
PACKED WITH AEROSOL PROPELLANT
VACUUM-PACKED

5.9.4 USE OF FACET K IN INDEXING AND SEARCHING

The general rule for indexing using facet K – Packing Medium is:

Choose at least one descriptor from facet K.

Descriptors in this facet are used for products that consist of a food and a packing medium. A packing medium is a gas, liquid or semisolid that surrounds or covers solid parts or that fills free space in a container.

Usually the packing medium can be separated from the food itself without changing the basic character of the food as indexed in Facet A (Product Type). For example, peas without water are still peas and peach halves without syrup are still peach halves.

On the other hand, in vegetable soup the water or broth cannot be separated without changing the basic character of the food. Without water or broth, there is no soup. Even if the vegetable component consists primarily of whole peas, the Product Type descriptor is *SOUP* and the packing medium is indexed *NO PACKING MEDIUM USED*.

Some products contain a liquid, semiliquid or semisolid component that facilitates packing but is also consumed. In many cases, it is clear that either the product to be indexed is separable into a main food and a packing medium or that it is an inseparable integral product. Other cases are not as clear-cut. For example, gravy surrounding beef in a can facilitates packing but is also meant for consumption. The question arises: Is this "beef packed in gravy" an integral food product consisting of two components consumed together or a food plus packing medium? Other examples are "spaghetti in tomato sauce" and "macaroni with cheese sauce". Indexing becomes a matter of emphasis as illustrated in the following examples:

Beef with gravy	Packed in gravy or sauce
Sardines in mustard sauce	Packed in gravy or sauce
Spaghetti with tomato sauce	Integral food product
Beef stew	Integral food product
Gravy with beef	Integral food product
Macaroni with cheese sauce	Integral food product

The rule of thumb is to ask what part of the product was analysed: e.g. the peas or peach halves alone or in combination with the water/syrup. The decision on how to deal with the packing medium affects the indexing in Facet E (Physical State, Shape or Form). Note that for "macaroni with cheese sauce" the Facet E descriptor would be *SEMISOLID WITH SOLID PIECES*, since the sauce binds with the macaroni.

Some products have as their first ingredient a component often used as a packing medium. For example, in "gravy with beef", gravy is the first ingredient; the product type is thus indexed as *GRAVY OR SAUCE*, and the Packing Medium descriptor is *NO PACKING MEDIUM USED*.

5.9.5 PACKING MEDIUM NOT KNOWN, NOT DONE, OTHER

Facet K includes:

PACKING MEDIUM NOT KNOWN

NO PACKING MEDIUM USED
Examples: soup in a can; tomato paste in a tube; apple juice in a bottle. *NO PACKING MEDIUM USED* also indexes products that are merely wrapped or not packed at all. If the headspace is filled with a gas other than air, use the appropriate descriptor for the gas. If a vacuum higher than 26 in. Exists, use the descriptor *VACUUM PACKED*.

PACKING MEDIUM, OTHER

5.9.6 TREATMENT OF MIXTURES IN FACET K

The following mixture descriptors are provided for indexing:

PACKED IN MIXTURE OF GASSES

PACKED IN VINEGAR AND OIL

PACKED IN VINEGAR WITH SUGAR

If there are several media (peaches packed in syrup with nitrogen in the headspace), index all packing media that are known.

5.10 FACET M – CONTAINER OR WRAPPING

5.10.1 DEFINITION OF CONTAINER OR WRAPPING

The type of container or wrapping is defined by the container material, the container form, and the material used for the liner, lid(s) or end(s).

Table 5.10 Facet M – Container or Wrapping

CONTAINER OR WRAPPING BY FORM
AMPOULE
BAG, SACK OR POUCH
BOX
CAN, BOTTLE OR JAR
CAPSULE
DRUM (CONTAINER)
ENVELOPE
MULTICONTAINER PACKAGE
PAIL
TUBE
VIAL
WRAPPER, MATERIAL UNSPECIFIED
CONTAINER OR WRAPPING BY MATERIAL
CERAMIC OR EARTHENWARE CONTAINER
EDIBLE CONTAINER
GLASS CONTAINER
LAMINATE CONTAINER
METAL CONTAINER
NATURAL POLYMER
PAPERBOARD OR PAPER CONTAINER
PLASTIC CONTAINER
TEXTILE OR FABRIC CONTAINER
WAX CONTAINER
WOOD CONTAINER
CONTAINER OR WRAPPING NOT KNOWN
CONTAINER OR WRAPPING, OTHER
SEALING/CLOSING ELEMENT
ADHESIVE
CLOSING CAP OR LID
SEAL/GASKET
STOPPER

5.10.2 STRUCTURE OF FACET M

Because of the large number of characteristics about containers to be considered, description is complicated. Container characteristics might include the following:

- Structure of the main container: material, form, construction method, size

- Lid(s), end(s), crown (cork)
- Material of inner liner
- Material of outer liner or wrapper
- Coating materials used for any of the above
- Other materials used: sealant, adhesives, printing ink

Moreover, composite materials may be used, and some products have more than one container. To simplify the description, container type is described in Facet M and food contact surfaces in Facet N of the thesaurus.

There are two major subdivisions of Facet M: *CONTAINER OR WRAPPING BY FORM* and *CONTAINER OR WRAPPING BY MATERIAL*, but it is also possible to describe the container or wrapping according to sealing/closing elements. The major subdivisions of the facet are given in Table 5.10.

Note that the form of a container or wrapping does not imply its material (e.g., a "bottle" may be made either of glass or plastic). The "canning" procedure no longer strictly implies a metal container; thus "Canned beets" (indexed with the descriptor *STERILIZED BY HEAT* in Facet J) are marketed in both metal containers and glass jars. Within the section *CONTAINER OR WRAPPING BY MATERIAL*, common combinations may be further classified by shapes and/or types of lid or liner.

5.10.3 USE OF FACET M IN INDEXING AND SEARCHING

The general rule for indexing using facet M – Container or Wrapping is:

Choose at least one descriptor from facet M.

For most products, the primary container is easily recognised. For more complex situations, the following instructions apply.

If a product is packed in multiple containers, **index all known containers**. Example: an apple pie packaged in an aluminium pie tin enclosed in a paperboard box is indexed with both *ALUMINUM TRAY OR PAN* and *PAPERBOARD CONTAINER*. An Edam cheese packed in a wax shell and plastic wrapped is described with *WAX CONTAINER* and *PLASTIC WRAPPER*. Paperboard containers with liners and paper bags with liners are specifically included as descriptors (e.g., cereal box with laminate liner or cheese backed in a paperboard box with aluminium foil liner wrapped around the cheese).

Some food products have an **outside surface** that serves some of the functions of a container. Such a surface is not considered a container. Examples include sausages where the casing is an integral part of the product and products with an edible protective surface (e.g., cucumbers with wax coating).

5.10.4 CONTAINER OR WRAPPING NOT KNOWN, NOT DONE, OTHER

Facet M includes the following:

CONTAINER OR WRAPPING NOT KNOWN

Used only when indexing a product from a description that gives no information about the container

NO CONTAINER OR WRAPPING USED

CONTAINER OR WRAPPING, OTHER, e.g. husk or leaf wrapping.

5.10.5 Treatment of Mixtures in Facet M

Index all the known containers.

5.11 FACET N – FOOD CONTACT SURFACE

5.11.1 DEFINITION OF FOOD CONTACT SURFACE

The Food Contact Surface is the specific container material in direct contact with the food. Multiple values may be assigned when indexing.

5.11.2 STRUCTURE OF FACET N

The major subdivisions of the facet are given in Table 5.11.

Table 5.11 Facet N – Food Contact Surface

FOOD CONTACT SURFACE FROM HUMAN-MADE MATERIAL
CERAMIC
COATING ENAMEL
GLASS
METAL
PAPER OR PAPERBOARD
PLASTIC
TEXTILE OR FABRIC
WAX
FOOD CONTACT SURFACE FROM NATURAL MATERIAL
ASH
CORK
EDIBLE CASING
EGG SHELL, FOOD CONTACT SURFACE
HUSK, FOOD CONTACT SURFACE
LEAF, FOOD CONTACT SURFACE
MOLLUSC SHELL, FOOD CONTACT SURFACE
NATURAL-BASED POLYMER
WOOD
FOOD CONTACT SURFACE NOT KNOWN
FOOD CONTACT SURFACE, OTHER
NO FOOD CONTACT SURFACE PRESENT

5.11.3 USE OF FACET N IN INDEXING AND SEARCHING

The general rule for indexing using facet N – Food Contact Surface is:

Choose at least one descriptor from facet N.

All material in direct contact with the food must be indexed. If the container indexed in Facet M (Container or Wrapping) is coated, the coating material is the food contact surface. Otherwise, the food contact surface is the container material, which is indexed using descriptors from Facet N, although it may seem redundant.

Example:

Facet M	**Facet N**
ALUMINUM CAN, DRUM OR BARREL	*ALUMINUM* (if not coated)

The N descriptor may be more specific than the M descriptor, for example:

Facet M	**Facet N**
PLASTIC WRAPPER	*POLYETHYLENE*

Other container parts, including lid(s), end(s), crown and window (or their coatings) must also be indexed.

5.11.4 Food Contact Surface not known, not done, other

Facet N includes:

FOOD CONTACT SURFACE NOT KNOWN

NO FOOD CONTACT SURFACE PRESENT

FOOD CONTACT SURFACE, OTHER

5.11.5 Treatment of Mixtures in Facet N

Index all materials with which the food comes in contact.

5.12 FACET P – CONSUMER GROUP/DIETARY USE/LABEL CLAIM

5.12.1 DEFINITION OF CONSUMER GROUP/DIETARY USE/LABEL CLAIM

This facet describes the intended audience or consumer group, human or animal, for the production and marketing of the food product. Also described is the dietary use of the food in cases where the food has special characteristics, claims or uses.

If the food is intended for individuals with particular dietary needs and if label or labelling claims are made, this is described with special dietary use terms derived from actual food labels. Multiple descriptors may be used from all three categories (consumer group, special dietary use, label or labelling claim). Included in these descriptors are labelling terms proposed by FDA and USDA in response to the Nutrition Labelling and Education Act of 1990. These terms are identified by a note "U.S. proposed" at the end of the corresponding Scope Note.

5.12.2 STRUCTURE OF FACET P

The major subdivisions of the facet are given in Table 5.12.

Table 5.12 Facet P – Consumer Group/Dietary Use/Label Claim

CONSUMER GROUP
ANIMAL FOOD
HUMAN FOOD
CONSUMER GROUP NOT APPLICABLE
CONSUMER GROUP NOT KNOWN
DIETARY CLAIM OR USE
ARTIFICIAL INGREDIENT-RELATED CLAIM OR USE
COLOUR-RELATED CLAIM OR USE
FLAVOUR- OR TASTE-RELATED CLAIM OR USE
GENERAL LABEL CLAIM
HEALTH-RELATED CLAIM OR USE
NUTRITION-RELATED CLAIM OR USE
ORGANIC FOOD CLAIM OR USE
OTHER INGREDIENT- OR CONSTITUENT-RELATED CLAIM OR USE
OTHER SPECIAL CLAIM OR USE
PRESERVATION-RELATED CLAIM OR USE
PROCESSING-RELATED CLAIM OR USE
RELIGION- OR CUSTOMS-RELATED CLAIM OR USE
SWEETENER-RELATED CLAIM OR USE
FOOD ALLERGEN LABELLING CLAIM

5.12.3 USE OF FACET P IN INDEXING AND SEARCHING

The general rule for indexing using facet P – Consumer Group/Dietary Use/Label Claim is:

Choose at least one descriptor from facet P.

Use descriptors from the three categories (consumer group, dietary claim or use, food allergen labelling claim) separately. In the category *CONSUMER GROUP*, foods produced and marketed specifically for infants or toddlers (age up to 2 years) are indexed by *INFANT OR TODDLER FOOD*. All other foods are indexed under *HUMAN FOOD, NO AGE SPECIFICATION*. Industrial ingredients (e.g. additives) would be indexed as *CONSUMER GROUP NOT APPLICABLE*.

The descriptors in the category * DIETARY CLAIM OR USE* are used either for foods intended for special dietary use or for foods that have special characteristics indicated in the name or labelling. Such claims would include "low calorie", low cholesterol", "diet" or "light", etc. Prior to 1992, this category of descriptors was limited to food for adult humans. However, the category is now used in conjunction with any appropriate *CONSUMER GROUP* descriptor(s). For example, "low sugar baby food" would be indexed by *INFANT OR TODDLER FOOD* as well as by *LOW SUGAR FOOD*. Another example might be "low calorie dog food", which would be indexed by *DOG FOOD* and *LOW CALORIE FOOD*. General label claim descriptors (e.g. "free", "fresh", "light") can be used when indexing food products for which such label or labelling information is available. "Labelling" includes all labels and other written, printed or graphic material that appears on a product's container or wrapping, as well as any such material accompanying a product.

The descriptors in the category *FOOD ALLERGEN LABELLING CLAIM* were introduced in 2008 to make LanguaL comply with international regulations and GS1 GSDN. Examples are. * CEREALS CONTAINING GLUTEN AND PRODUCTS THEREOF*, *EGGS AND PRODUCTS THEREOF*, *SULPHUR DIOXIDE AND SULPHITES*.

5.12.4 CONSUMER GROUP/DIETARY USE/LABEL CLAIM NOT KNOWN, NOT DONE, OTHER

Facet P includes:

CONSUMER GROUP NOT KNOWN

CONSUMER GROUP NOT APPLICABLE

OTHER SPECIAL CLAIM OR USE used when a claim is made that is not found in the present list of descriptors.

The thesaurus has no term for "consumer group, other". If a food is neither *HUMAN FOOD* nor *ANIMAL FOOD* (e.g. food additive), then index *CONSUMER GROUP NOT APPLICABLE*. There is no facet term for “Dietary Use/Label Claim unknown” because this part of the facet should be used only when appropriate.

5.12.5 TREATMENT OF MIXTURES IN FACET P

There are no mixture terms in this facet. Multiple descriptors may be used in all three groups.

5.13 FACET R – GEOGRAPHIC PLACES AND REGIONS

5.13.1 DEFINITION OF GEOGRAPHIC PLACES AND REGIONS

The Geographic Places and Regions facet indicates the area of origin of a food product. In certain applications, the facet may also be employed to index the area of processing and the area of consumption.

5.13.2 STRUCTURE OF FACET R

The major subdivisions of the facet are given in Table 5.13.

Table 5.13 Facet R – Geographic Places and Regions

CLIMATIC ZONE
CONTINENTS, REGIONS AND COUNTRIES
AFRICA
ANTARCTICA
ASIA
ATLANTIC OCEAN ISLANDS
AUSTRALIA
CENTRAL AMERICA
EUROPE
INDIAN OCEAN ISLANDS
NORTH AMERICA
PACIFIC OCEAN ISLANDS
SOUTH AMERICA
FISHING AREAS
AQUACULTURE
FAO STATISTICAL AREAS FOR FISHERY PURPOSES
FRESHWATER FISHING AREA
SALT WATER FISHING AREA
GEOPOLITICAL DESIGNATION
CODEX ALIMENTARIUS COMMISSION COUNTRIES
EUROPEAN UNION
ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD)
GEOGRAPHIC PLACE OR REGION NOT KNOWN

5.13.3 USE OF FACET R IN INDEXING AND SEARCHING

The general rule for indexing using facet R – Geographic Places and Regions is:

Index the area of origin of a food product only when this is appropriate.

In certain applications (e.g. FDA International Interface Standard for Food Data Elements and Sample Queries), the facet is also employed to index the area of processing and the area of consumption.

The facet terms are arranged from general to more specific (e.g., *NORTH AMERICA* > *UNITED STATES* > * MIDDLE ATLANTIC STATES* > *DELAWARE* > *KENT COUNTY*). It is also possible to indicate a geopolitical designation (e.g., *CODEX ALIMENTARIUS COMMISSION COUNTRIES*, *EUROPEAN UNION*) or a climatic zone (e.g., *SEMIARID CLIMATIC ZONE*, *TROPICAL WET CLIMATIC ZONE*)

Descriptors from Facet R should be used only when the area of origin of a food product has a significant effect on the product at hand.

5.13.4 Geographic Places and Regions not known, other

There is no facet term for “Geographic place or region unknown” because this facet should be used only when appropriate. There is no facet term for “Geographic place or region, other” because the facet terms cover all possibilities on Earth.

5.13.5 Treatment of Mixtures in Facet R

There are no mixture terms in this facet.

5.14 FACET Z – ADJUNCT CHARACTERISTICS OF FOOD

This facet provides a location for groups of index terms that are neither extensive nor important enough to warrant a separate facet at the present time.

5.14.1 DEFINITION OF ADJUNCT CHARACTERISTICS OF FOOD

This facet contains additional structured groups of miscellaneous terms useful in describing foods.

5.14.2 STRUCTURE OF FACET Z

The major subdivisions of the facet are given in Table 5.14.

Table 5.14 Facet Z – Adjunct Characteristics of Food

ADJUNCT CHARACTERISTICS OF MEAT, POULTRY OR FISH
COLOR OF FISH FLESH
COLOR OF POULTRY MEAT
CUT OF MEAT
EXTENT OF FAT TRIM
GRADE OF MEAT
PARTICLE SIZE IN SOLID FORMED PRODUCTS
BIOTECHNOLOGICALLY DERIVED FOOD
DEGREE OF PLANT MATURITY
FORMULATED MIX
BEVERAGE BASE
DRY MIX
HACCP GUIDE
MATERIAL OF CONTACT PRIOR TO PACKAGING
PRESENCE OF CASING OR RIND
TYPE OF RIND OR CRUST
TYPE OF SAUSAGE CASING
PRESENCE OF PACKING MEDIUM
PRODUCTION ENVIRONMENT
AGRICULTURAL PRODUCTION ENVIRONMENT
GROWING CONDITION
PREPARATION ESTABLISHMENT
STATUS OF FOOD NAME

5.14.3 USE OF FACET Z IN INDEXING AND SEARCHING

The general rule for indexing using facet Z – Adjunct Characteristics of Food is:

Choose descriptors from facet Z only when appropriate.

The cut of meat, the grade of meat, the colour of poultry meat and the colour of fish flesh descriptors are used for indexing only when meat or fish flesh is the first or only ingredient of a food product. One term from each applicable group may be used.

Descriptors of degree of plant maturity are used for indexing only when ripeness is stated in the food name or label.

All other descriptors are used as needed.

5.14.4 Adjunct Characteristics of Food not known, Not used

NOT KNOWN or *NOT USED* terms are specific to some categories of descriptors.

5.14.5 Treatment of Mixtures in Facet Z

Mixture terms are specific to most groups of terms.

LanguaL stands for “**Langua** A**l**imentaria” or “language of food". It is an automated method for describing, capturing and retrieving data about food. The work on LanguaL was started in the late 1970’s by the Center for Food Safety and Applied Nutrition (CFSAN) of the United States Food and Drug Administration (FDA) as an on¬going co-operative effort of specialists in food technology, information science and nutrition. Since then, LanguaL has been developed in collaboration with the US National Cancer Institute (NCI), and, more recently, its European partners, notably in France, Denmark, Switzerland and Hungary. Since 1996, the European LanguaL Technical Committee has administered the thesaurus.

This report presents the details of the present version, LanguaL 2008 Thesaurus, according to international thesaurus standards.

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