Part I. Introduction to the vocabulary and general rules about its use.

1. Functions of a food vocabulary in the Center. Relationship to Center Programs.
2. Structure of the Factored Food Vocabulary.
3. Relationship to other vocabularies. EDRO, Nutrient Data Base.
4. Uses of the vocabulary. Relate to #1.
5. Development of this vocabulary. Include sources. Forms in which the vocabulary exists.
6. Updating the vocabulary.
9. Mixtures and multiple-value food products.

Part II. Individual factors and their use in indexing and searching.

A
F

Part III. Elaboration of scope notes for individual descriptors. Search notes.

A
F

Part IV. Background notes. Notes on major expansions of the vocabulary and individual factors that could be considered.
2. Structure of the Factored Food Vocabulary

The Factored Food Vocabulary provides a standardized language for the description of food products from the points of view that are of interest to the Center. Its structure is based on two main ideas:

1. A food product can be described by a combination of several characteristics, each of which may serve as a retrieval term, or descriptor, for the food product.

2. The characteristics can be brought together in a meaningful classification relating them to each other.

2.1 Describing food products by a combination of several characteristics.

Consider the food product textured vegetable protein, derived from soybean meal, colored with caramel coloring, and encased in a plastic bag. It might be of interest to several Center programs from different points of view:

<table>
<thead>
<tr>
<th>Program interest</th>
<th>Data needed</th>
<th>Product characteristic to be retrieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>All soy products</td>
<td>Product has a specific plant as its sole source or its principal component or ingredient</td>
</tr>
<tr>
<td>Food Safety</td>
<td>All products not fully cooked</td>
<td>Product is specified as being partially cooked or raw, as distinguished from fully cooked</td>
</tr>
<tr>
<td>Biological Contamination</td>
<td>All flour or meal products</td>
<td>Product has a designated physical form which is susceptible to contamination</td>
</tr>
<tr>
<td>Direct Food Additive</td>
<td>All products with colors added</td>
<td>Product has a specific ingredient added</td>
</tr>
<tr>
<td>Indirect Food Additive</td>
<td>All products packaged in plastic film</td>
<td>Product has a specified container and food contact surface</td>
</tr>
</tbody>
</table>

This example illustrates the following important food product...
characteristics:

A  Product type
B  Food origin
C  Physical state, shape or form
D  Processing operations
E  Packing or packaging
F  User group

Each characteristic is called a factor and the descriptive terms under it are factor terms or factor values. The factors included in the vocabulary were selected for their importance to Center Programs. They are listed with more detail in Figure 2/1 and illustrated through the examples in Figure 2/2 and 2/3.

The sequence of factors was chosen to facilitate writing and reading food product descriptions and also to aid in comprehension of the vocabulary. After characterizing the food product as a whole (Factors A, B1-B2 and C), the factor sequence follows stages of processing (D1-D4), Packing and packaging (E1-E3), and consumption (F). Each factor answers a question:

? To what food group does the product belong?

This question is answered by the appropriate value from A. Product type.

? What is the origin of the food product?

A food product can be specified by an appropriate combination of factor values from B1. Food source and B2. Part of plant or animal. A detailed product description can specify all ingredients; a simplified product description may specify only the first ingredient.

? What are the Physical characteristics?

A value from C. Physical state, shape or form is used to answer this question. The physical characteristics of food products may be inherent (*example*) or may be the result of processing (*example*). Both of these affect heat transfer and food safety.

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

The factors primarily concerned with processing are D1. Degree of Preparation, D2. Cooking method, D3. Treatment applied, and D4. Preservation method. In addition, Preliminary Processing may be implied by B2. Part of plant or animal (e.g., hulling or extracting) and by C. Physical state, shape or form.
(e.g., divided or disintegrated). Final processing may also be implied by C. Physical state, shape or form (e.g., forming, molding, extruding).

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

The packing characteristics are found in E1. Packing medium. Packaging description is simplified to consist only of E2. Container or wrapping and E3. Food contact surface.

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

These questions are answered by appropriate terms from F. User group/dietary characteristics.

The list of specifying factors included in the vocabulary is limited. For example, under A. Product type, ethnic characteristics are not considered. Because B1. Food source makes no provision for age or maturity, there is no distinction between beef liver and calf liver. Physical state and physical shape or form are combined into a single factor. The same is true of user groups and dietary characteristics. Certain aspects of E2. Container or wrapping could be considered as separate factors.

The specificity of the vocabulary is also limited. For example, B1. Food source does not include animal breeds. B2. Part of plant or animal does not include specific cuts of meat. D3. Preservation methods does not include individual antimicrobial agents or enzyme inhibitors.

Due to its flexible structure the vocabulary can be amended by adding new viewpoints for food description or by including more detail within factors.

The basic food vocabulary consists of factor terms, which are used to build food product descriptions. Examples are shown in figures 2/2 and 2/3.

The vocabulary has been clarified by including precombined terms (PCT's), which are food product names to which factor terms have been assigned. These are not to be used for indexing. They are included for either of these reasons:

(1) The precombined term explains or illustrates the use of the factor, e.g., corned beef hash as an example of a food whose physical state is *Semisolid with discrete particles*.

(2) For some foods it is difficult for an indexer to select the proper combination of factor terms. For example, it
might be obvious that "Rhine wine" is a *Table wine*, but the indexer might not realize that *Alcohol fermented* should be used in D3. Treatment applied to describe the fermentation.

For precombined terms the vocabulary always shows the factor values appropriate for A. Product type, B1. Food Source, B2. Part of Plant or animal and C. Physical state, shape or form. Additional descriptors from other factors are shown as needed to index the product information. For an example of PCT's, see Figure 2/3.

2.2 Hierarchy

Equally as important as the identification of meaningful characteristics is the arrangement of factor 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. Or one might search specifically for *Vitamin A added*, more broadly for *Vitamins added*, or, still more broadly, for *Nutrients and/or dietary supplements added*. These are all examples of hierarchical relationships among factor terms.

Hierarchical relationships are extremely important for searching. Hierarchy is also a useful tool for displaying the vocabulary in a logical way so that it can be easily comprehended by both searcher and indexer. And finally it underlies the aggregation of numerical values when the food vocabulary is used in compiling data.

For these reasons all of the factors were fully structured. Care was taken to include all useful hierarchical relationships. Corresponding to its many uses, for instance, field corn appears under several broader terms:

under *Grain*
under *Plant used for Producing starch*
under *Plant used for Producing sugar*
and under *Plant used for Producing oil or fat*

Except in A. Product type, a descriptor may be placed wherever in the hierarchy it describes a useful subset of a factor term. In the hierarchy of A Product type, however, a descriptor may appear only once; if that descriptor seems appropriate in more than one context (as in the example of field corn, above), a choice must be made as to which is the more important. (See Factor A. Product type for the reasons for this restriction and the example, *Chocolate candy*. )
Broad terms can be used to describe very general groups of food products, such as frozen vegetables. Such a general description can be made more specific by using narrower terms and/or adding terms from additional factors, as seen in Figure 2/2.

The hierarchical relationships are complemented by additional cross references among factor terms, e.g., *Plant used for Producing Protein extract or concentrate* -

<table>
<thead>
<tr>
<th>Narrower term</th>
<th><em>Alfalfa</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrower term</td>
<td><em>Soybean</em></td>
</tr>
<tr>
<td>Related term</td>
<td><em>Field corn</em></td>
</tr>
<tr>
<td>Related term</td>
<td><em>Sesame</em></td>
</tr>
</tbody>
</table>

This indicates that any search for Plant Protein sources should employ *Alfalfa* and *Soybean* and a thorough search should use in addition *Field corn* and *Sesame*.

2.3 Scope notes

The language of the food field is not always precise. Moreover, a factored vocabulary contains many general 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.

2.4 Lead-in vocabulary (entry vocabulary)

For many of the factor terms in the vocabulary there exist synonyms. For the guidance of indexers and searchers these synonyms have been included in the lead-in vocabulary. They appear in the alphabetical lists with references to the descriptors to be used (e.g., Butterfat, use *Milkfat*).

2.5 Vocabulary displays

The vocabulary is displayed in a variety of formats, each appropriate for a specific purpose:

(1) Hierarchical (classified) displays

These displays show the logical structure of the vocabulary. They present this structure in varying levels of detail, from a broad overview to a full display including precombined terms.

(1.1) Summary outline

Lists the twelve factor headings.
(1.2) Detailed outline

Lists the twelve factor headings and the first level of subordinate terms. This display provides an overview of the conceptual structure of the vocabulary.

(1.3) Full hierarchy, factor terms only

This display is needed, in conjunction with the alphabetical index, for indexing and query formulation. It can be used as a checklist to identify all factor terms applicable to the product or query at hand. It can also be used to view in their logical context factor terms identified through the alphabetical index.

The display can be printed at four different levels of generality and can even be custom-tailored for an individually selected vocabulary.

(1.4) Full hierarchy, factor value and Precombined terms

This display is consulted when further clarification about the use of a factor value is needed. It gives for each factor value the Precombined terms of which the factor value is a component.

(2) Alphabetical lists

The alphabetical lists include factor values, lead-in terms, and Precombined terms in a single alphabetical array. Broader, narrower and related terms and scope notes may also be included.

(3) Display of Precombined terms.

This display gives the factor values for selected Precombined terms. It is useful to explain the vocabulary structure.
### STRUCTURE (6/18/86)

**Figure 2/1. Factors for the description of food products.**

<table>
<thead>
<tr>
<th>A. Product type</th>
<th>Derived from a combination of consumption, functional and manufacturing characteristics.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Food ingredient</td>
<td>Species of plant or animal, or chemical food source.</td>
</tr>
<tr>
<td>B1. Food source</td>
<td></td>
</tr>
<tr>
<td>B2. Part of plant or animal</td>
<td></td>
</tr>
<tr>
<td>C. Physical state, shape or form</td>
<td></td>
</tr>
<tr>
<td>D. Processing operations</td>
<td></td>
</tr>
<tr>
<td>D1. Degree of Preparation</td>
<td>Not cooked, raw; partially cooked; fully cooked.</td>
</tr>
<tr>
<td>D2. Cooking method</td>
<td>Cooked by dry or moist heat; cooked with fat; cooked by microwave.</td>
</tr>
<tr>
<td>D3. Treatment applied</td>
<td>Additional processing steps, including adding, substituting, or removing components.</td>
</tr>
<tr>
<td>D4. Preservation method</td>
<td>Primary preservation method.</td>
</tr>
<tr>
<td>E. Packing or Packaging</td>
<td></td>
</tr>
<tr>
<td>E1. Packing medium</td>
<td></td>
</tr>
<tr>
<td>E2. Container, wrapping</td>
<td>Container material, form, and possibly other characteristics, e.g., Glass container with aluminum lid.</td>
</tr>
<tr>
<td>E3. Food contact surface</td>
<td>The surface(s) with which the food is in contact.</td>
</tr>
<tr>
<td>F. User group/dietary characteristics</td>
<td>Human or animal: special dietary characteristics.</td>
</tr>
</tbody>
</table>
## Assignment of Factor Terms

<table>
<thead>
<tr>
<th>Food Product Name</th>
<th>Factor Term Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen vegetables</td>
<td>$\text{A: Vegetable or vegetable product}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B1: Plant, vegetable}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B2: }$</td>
</tr>
<tr>
<td></td>
<td>$\text{C: }$</td>
</tr>
<tr>
<td>Frozen leafy vegetables</td>
<td>$\text{A: Vegetable or vegetable product}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B1: Leafy vegetable}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B2: Leaf}$</td>
</tr>
<tr>
<td></td>
<td>$\text{C: }$</td>
</tr>
<tr>
<td>Quick frozen leafy vegetables</td>
<td>$\text{A: Vegetable or vegetable product}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B1: Leafy vegetable}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B2: Leaf}$</td>
</tr>
<tr>
<td></td>
<td>$\text{C: }$</td>
</tr>
<tr>
<td>Quick frozen spinach</td>
<td>$\text{A: Vegetable or vegetable product}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B1: Spinach}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B2: Leaf}$</td>
</tr>
<tr>
<td></td>
<td>$\text{C: }$</td>
</tr>
<tr>
<td>Quick frozen cut spinach, cardboard box</td>
<td>$\text{A: Vegetable or vegetable product}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B1: Spinach}$</td>
</tr>
<tr>
<td></td>
<td>$\text{B2: Leaf}$</td>
</tr>
<tr>
<td></td>
<td>$\text{C: }$</td>
</tr>
</tbody>
</table>

Continued on next Page
Figure 2/2. Assignment of factor terms (Part 2).

<table>
<thead>
<tr>
<th>Food Product Name</th>
<th>Factor Term Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen vegetables*</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Frozen leafy vegetables</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Quick frozen leafy vegetables</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Quick frozen spinach</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Quick frozen cut spinach, cardboard box</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Quick frozen cut spinach in butter sauce, cardboard box</td>
<td>Partially cooked, added</td>
</tr>
<tr>
<td></td>
<td>Quick</td>
</tr>
<tr>
<td></td>
<td>Packed Paperboard container</td>
</tr>
</tbody>
</table>

*Frozen vegetables are blanched (i.e., *Partially cooked*) before freezing.*
Figure 2/3. Example 1: Coding form for fully factored precombined term Bean Curd.

FOOD PRODUCT NAME: BEAN CURD

---

Precombined Term Source X1262 Ident. #

SCOPE NOTE

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A  FPT  Vegetable or vegetable product  CODE  A152

B1  FSU  Soybean  CODE  B1452

B2  FPP  Protein extract, concentrate or isolate  CODE  C236

C  FPS  Semisolid with smooth consistency  CODE  E119

D1  FPN  Fully cooked  CODE  F14

D2  FKM  Cooking method not applicable  CODE  G003

D3  FTR  Treatment applied not known  CODE  H001

D4  FPV  Preservation method not known  CODE  J001

E1  FPK  Packing medium not known  CODE  K03

E2  FCN  Container or wrapping not known  CODE  M001

E3  FCS  Food contact surface not known  CODE  N01

F  FUS  Human food, no age specification, regular diet  CODE  P24

---

---

---

---
Figure 2/3. Example 2: Coding form for fully factored precombined term **Beer**.

<table>
<thead>
<tr>
<th>Coding Form</th>
<th>Precombined Term</th>
<th>Source Ident.</th>
<th>X1201 Ident.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Malt beverage</td>
<td>CODE A195</td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>Barley</td>
<td>CODE B1230</td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>Germinated or sprouted seed</td>
<td>CODE C102</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Liquid, low viscosity, with no visible particles</td>
<td>CODE E123</td>
<td></td>
</tr>
<tr>
<td>D1</td>
<td>Degree of preparation not known</td>
<td>CODE F01</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>Cooking method not applicable</td>
<td>CODE G003</td>
<td></td>
</tr>
<tr>
<td>D3</td>
<td>Alcohol fermented</td>
<td>CODE H232</td>
<td></td>
</tr>
<tr>
<td>D4</td>
<td>Preserved by filtration</td>
<td>CODE J121</td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>No packing medium used</td>
<td>CODE K03</td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>Container or wrapping not known</td>
<td>CODE M001</td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td>Food contact surface not known</td>
<td>CODE N01</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Human food, no age specification, regular diet</td>
<td>CODE P24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carbonated by fermentation</td>
<td>CODE H246</td>
<td></td>
</tr>
</tbody>
</table>
8. General Rules for Indexing

This chapter discusses the general rules for using the Factored Food Vocabulary to index food products at a level of moderate detail corresponding approximately to the information available from a food product label or recipe or even an inspection of the food product. Chapter 9 will elaborate general searching rules. Indexers and searchers should read both chapters. The indexer needs to know how the results of his or her work will be used in searching. The searcher must be familiar with indexing rules in order to develop suitable search strategies.

Full information about the use of individual factors will be found in the chapters which follow. Even more specific rules for the use of individual descriptors are in their scope notes.

8.1. Always consult the hierarchical list (tree structure) when selecting descriptors. It arrays in a logical framework the choices to be considered. Consult the scope notes of unfamiliar descriptors.

Each of the eleven factors in the vocabulary designates a characteristic of food products, such as product type, food source or treatment applied. Within each factor, descriptors are arranged in hierarchic order. Each descriptor is "narrower" (i.e., more specific) than the "broader" term above it in the tree structure. The user can readily explore the full structure by scanning the top-level descriptors and following each branch to its end.

In some factors a descriptor may be in more than one place in the hierarchy. Field corn, for example, is "oil-producing", "starch-producing", and "sugar-producing", even though *Field corn* is a single factor value when used for indexing.

The hierarchy shows the indexer broader, narrower and neighboring descriptors. He can consider all candidate descriptors and select the most appropriate one at the correct level of specificity. It is particularly important to scan the hierarchic structure in factors requiring all appropriate values to be indexed. These are: D2. Treatment applied, E3. Food contact surface, and the dietary characteristics descriptors in F. User group. In *B1. Food source*, even though most plant and animal names can be located in an alphabetical index, the indexer should confirm that he has located the most specific descriptor by scanning the tree structure. For example, *Walnut* is subdivided into *English walnut* and *Black walnut*. *Corn* has *Field corn*, *Popcorn*, and *Sweet corn*, and each of these has yellow and white varieties. These may be missed in a scan of the alphabetic list.
Scope notes explain the meaning or the use of a descriptor in the context of the Factored Food Vocabulary. For example, the indexer can find out what products fall under *Cacao or chocolate product* and what products fall under *Candy*, or at what fat level a cheese should be indexed by *Fat partially removed*. Thus the indexer should consult the scope note if there is the slightest doubt about the use of an unfamiliar descriptor.

8.2. To fully describe a food product, use a descriptor from each factor, following the specific rules for that factor. In two factors - D2. Treatment applied and E3. Food contact surface - and also for the dietary characteristics in F. User Group, use all of the applicable descriptors.

The rule "at least one descriptor from each factor" ensures that the indexer does not overlook applicable descriptors. It also permits automatic checking of indexing completeness. Example:

Indexed Product: "APPLE Juice, canned (glass bottle), unsweetened"

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>E1</th>
<th>E2</th>
<th>E3</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product type</td>
<td>Food source:</td>
<td>Physical state, shape or form</td>
<td>Degree of Preparation</td>
<td>Treatment applied</td>
<td>Preservation method</td>
<td>Packing medium</td>
<td>Container or wrapping</td>
<td>Food contact surface</td>
<td>User Group</td>
</tr>
<tr>
<td>Fruit Juice</td>
<td>Apple</td>
<td>Liquid, low viscosity</td>
<td>Fully cooked</td>
<td>Single strength; Unsweetened</td>
<td>Sterilized by heat, canned</td>
<td>Glass container, aluminum lid, plastic lining</td>
<td>Glass; Plastic</td>
<td>Human food, no age specification, regular diet</td>
<td></td>
</tr>
</tbody>
</table>

A set of descriptors, specific for each factor, is provided for instances of "not known", "not used", and "other".

8.3. Use each factor independently.

When selecting a descriptor from a factor, the indexer needs to consider what that factor is intended to accomplish. He should not be concerned for the moment with descriptors assigned in other factors, even when these overlap in meaning the descriptor under consideration. Examples of overlapping descriptors:

<table>
<thead>
<tr>
<th>A</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product type</td>
<td>Treatment applied</td>
</tr>
<tr>
<td>Table wine</td>
<td>Alcohol fermented</td>
</tr>
<tr>
<td>A. Product type</td>
<td>Bakery Product, sweetened</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>D2. Treatment applied</td>
<td>Sweetened with sugar</td>
</tr>
<tr>
<td>D3. Preservation method</td>
<td>Preserved by salting</td>
</tr>
<tr>
<td>D2. Treatment applied</td>
<td>Salted</td>
</tr>
<tr>
<td>A. Product type</td>
<td>Milk or milk product</td>
</tr>
<tr>
<td>B2. Part or Portion</td>
<td>Milk</td>
</tr>
<tr>
<td>E2. Container or wrapping</td>
<td>Plastic container, rigid or semirigid, aluminum lid</td>
</tr>
<tr>
<td>E3. Food contact surface</td>
<td>Polyethylene; Aluminum</td>
</tr>
</tbody>
</table>

This rule simplifies the work of the indexer; when considering one factor, such as D2. 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.

8.4 Index as specifically as the vocabulary permits.

The objective expressed at the start of this chapter was to index at a level of moderate detail, corresponding to the information available from a food product label or a recipe. When such detail is present, it should be indexed to the extent provided by the vocabulary. To do otherwise results in loss of information that should be retrieved in searching.

Of course the amount of information available influences the specificity of indexing. For example, consider a sample product that is a bread. The factor being considered is *Part of Plant or animal*. Assume 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*. Likewise, 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*. On the other hand, if the indexer has definite information only about the skin—it was removed—but he cannot determine whether the germ is present, he can assign only the broader descriptor *Seed or kernel, skin removed*. If the indexer has no definite information either about the skin or about the germ, the best he can do is to assign the broader descriptor *Seed or kernel*.

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

Consider, for example, a product that is preserved by cryogenic freezing, which is not a descriptor. It is a kind of "quick freezing"; therefore the descriptor Quick frozen should be used. If the product is frozen by a new method such that none of the descriptors listed under *Frozen* is applicable, use the descriptor *Frozen*. If the product does not fall under any of the major subdivisions of *D3. Preservation method*, then the index term is *Preserved by other method*.

The factor heading itself is never used in indexing. If "(factor heading), other" is not a descriptor, the major subdivisions are all-inclusive and the indexer should be able to select the appropriate descriptor from them.

8.4.2 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 vocabulary;
--the product is a mixture of parts or a mixture of different size pieces and a specific descriptor for a mixture is not available.

8.5. For a mixture or other multiple-value characteristic, use the specific descriptor if available; if not, select a descriptor according to factor-specific rules.

Rules governing the indexing of these multiple-value characteristics are in Chapter --. The specific mixture terms for each factor are listed in subsection --.5 of the appropriate chapter.

Summary of the general indexing rules:

1. Always consult the hierarchical list (tree structure) when selecting descriptors. It arrays in a logical framework the choices to be considered. Consult the scope notes of unfamiliar descriptors.

2. To fully describe a food product, use a descriptor from each factor, following the specific rules for that factor. In two factors -- D2. Treatment applied and E3. Food contact surface -- and also for the dietary characteristics in F. User Group, use all of the applicable descriptors.

3. Use each factor independently.
4. Index as specifically as possible.

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

4.2 Use a broad 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 vocabulary;
---the product is a mixture of parts or a mixture of different size pieces and a specific descriptor for a mixture is not available.

5. For a mixture or other multiple-value characteristic, use the specific descriptor if available; if not, select a descriptor according to factor-specific rules.
9. MIXTURES AND OTHER MULTIPLE-VALUE FOOD PRODUCTS

In explaining the use of the vocabulary this manual generally employs examples based upon applying a single factor value to a single characteristic, since these are the ones most frequently encountered. However there are instances of multiple characteristics being combined in a single descriptor, such as *Peas and carrots*. Because the rules for handling multiple characteristics, or "mixtures", differ from one factor to another, they are summarized here for the convenience of those who use the vocabulary.

Typically a mixture consists of two to four significant components of the same kind when these are used together in a food product. Examples include mixed vegetables (e.g., *Carrots and Peas* or *Succotash*) and ground meats for meat loaf (in B1. Food source, *Cattle and swine and calf*). Treating these as multiple ingredients provides more information for later retrieval than if only one ingredient is recorded. 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. Therefore the food vocabulary includes specific descriptors for frequently-used mixtures and other multiple-value characteristics. These specific factor terms should always be used for mixtures, when available. If no mixture descriptor is available, one of the following ways of indexing should be employed:

1. In B1. Food Source, index the first (predominant) ingredient and add other ingredients as directed under *Ingredient added* (D2. Treatment Applied). This is the usual way of indexing multiple-ingredient food products.

2. Index the most specific broader term which includes the individual characteristics. This is done in B2. Part of plant or animal and in C. Physical state, shape or form. For example, a mixture consisting of leaves and roots is indexed under *Root, stem, leaf or flower*.

3. Index only the Predominant characteristic. Multiple assignment is not permitted. This is done in A, D3, E1 and E2; also for the user groups (but not dietary characteristics) in F. When indexing multiple cooking times (D1. Degree of Preparation), always use *Partially cooked*.

4. Index multiple individual characteristics, as many as needed. This is permitted only in D2. Treatment Applied, in E3. Food Contact Surface, and in F. User Group/Dietary Use for dietary characteristics.
The "mixture" descriptors are listed in full in the chapters on individual factors, along with details of indexing in these factors. They are summarized here.

A. Product Type.

A mixture of product types occurs when several products belonging to different types are combined or packaged together as in a *Sandwich* or in *Multicomponent meal*.

B1. Food source.

Specific descriptors for frequently used food source mixtures are listed in the chapter for B1. Food source. The appropriate specific mixture descriptor is used if one of the components is the first ingredient and the other component is also a significant ingredient (second, third or fourth).

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) from *Food added* (D2. Treatment applied), following the rules given there.

B2. 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 the broad term that includes the parts in the mixture.

C. Physical state, shape or form.

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

D1. Degree of Preparation.

The only type of product to which one might wish to apply more than one descriptor from this factor is a product with multiple components which vary in degree of cooking. Such a product is indexed by *Partially cooked*. See the scope note for
**Partially cooked** in manual chapter D1.

**D2. Treatment Applied.**

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

**D3. Preservation Method.**

Preservation methods are typically sequential rather than coexisting. Only the Predominant method should be indexed.

**E1. Packing Medium.**

The following specific mixture descriptors are provided:

*Packed in mixture of gases*

*Packed in vinegar and oil*

*Packed in vinegar with sugar*

Otherwise, if there are several packing media (e.g., Peaches packed in syrup with nitrogen in the headspace), the Predominant medium is indexed.

**E2. Container or Wrapping.**

Index the primary container. Any other container should be indexed only under E3. Food Contact Surface.

**E3. Food Contact Surface.**

Index all materials with which the food comes in contact.

**F. User Group/Dietary Use.**

Multiple user groups are not indexed. However, all special dietary characteristics which are applicable should be indexed.
A. Product Type

The product type is the focal point in describing or defining a food product. One says "This Product is a *Bread*" or "This product is a *Beverage*." To introduce more detail, one qualifies the food description by adding descriptors from other factors: "This is a *Bread* made from *Wheat* using the *Seed* or *Kernel* with bran and with germ. It is *Fully cooked* and it is *Human food, no age specification, regular diet*.*"

The hierarchy of product types provides a summary-level division of food products that in certain applications can be used without any other factors. For food production statistics or for registration of food manufacturing establishments, for instance, food products might be described only at this level. Even at its most specific, the product type always describes a food class, such as *Cured cheese*, *Fruit Juice*, *Salad*, or *Candy*, rather than an individual variety of food.

Product type is concerned with a food product as a whole - its manufacture and marketing - its consumption.

Use or consumption characteristics - such as the nutrient profile, the purpose of dish or drink (e.g., *Dessert*, *Alcoholic beverage*), the occasion at which the food is used (e.g., *Snack food*), and its use in preparing more complex foods (e.g., *Flavoring or seasoning*) - play key roles in defining product types.

Of equal importance are characteristics related to manufacture and marketing (e.g., *Dairy product*, *Confectionery*, *Meat or meat product*). These define product types that have in common plant or animal origin and/or manufacturing processes applied.

Food groups defined by use are similar to those defined by manufacture. Thus both aspects can be accommodated in a common classification that supports food consumption surveys and studies based on them as well as the collection of food production statistics and the registration of food manufacturing plants.

Because any product type descriptor may be associated with any plant or animal origin (see B1 Food source and B2 Part of plant or animal), the food vocabulary encourages 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 and, conversely, all products with a given origin, regardless of type.
A.1 Definition

Food group having common consumption, functional and manufacturing characteristics, e.g., *Fruit or vegetable product*; *Dairy product*; *Confectionery*; *Prepared food*.

A.2 Structure

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

- consumption characteristics, which determine the use of the food product.

- characteristics imparted by manufacturing, such as cooking, curing, extracting, concentrating, seasoning or sweetening.

- plant or animal origin (at the summary level).

Because product types are defined by applying these three different characteristics, sometimes simultaneously, the structure is not easy to determine. However, each of the characteristics can affect the use of the food product and thus collectively they give rise to use-oriented product types. In this manner the food field has evolved a consensus on broad food groups to serve the needs of consumers, industry, distributors, researchers and others.

Product types can be separated into two broad groupings based on whether the food product’s use is or is not related to the animal/plant origin of the product:

A. Product type

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
Flavor or seasoning
Food additive
Color additive
Refined or Partially refined food product

At the broadest level product types characterized 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*) (see Appendix to this section).

Characteristics imparted by manufacturing are seen in the subgroups, such as *Cured meat* and *Fruit juice*. Product analogs, such as nondairy creamer, are grouped here with their originals, because of common use characteristics.

The second broad grouping includes products whose uses are unrelated to their origins. Their definition is based predominantly on use.

A.3 Use

Since different criteria are used simultaneously to subdivide A. Product type, the resulting classes often overlap, so that a food product might be considered to belong to two classes. For example, potato chips might be considered both a vegetable product and a snack food; yet only one A. Product type 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 cherry pie is *Pie* (under *Bakery Product*) rather than *Fruit or fruit product*.

Exceptions to this general rule are noted in scope notes: a *Fruit juice* (classed 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 judgment dictates.

The presence of descriptors that denote plant or animal origin in both A. Product type and B1 Food source/B2 Part of plant or animal has important consequences for searching. For example, when searching for all products made primarily of eggs, do not use *Egg or e99 Product*; use the *Part of animal* descriptor *Egg*. 
PRODUCT TYPE (2/14/86)

This will not retrieve every *Egg or egg product* - some egg products, such as meringues, may have sugar as the first ingredient, while others may be analogs. On the other hand, *Egg* may retrieve some *Dessert* products. From the point of view of product type, *Egg or egg product* OR *Prepared egg dish* is a good query formulation; include *Egg* combined selectively with product type descriptors from Group 2, if desired.

A.4 Not known, not done, other

This factor includes:

*Product type, other*

Use very selectively; normally it should be possible to determine at least the broad category for a product.

There is no factor value for "product type not known" because it should always be possible to determine the product type, at least at a general level. There is no factor value for "no product type" because every product is of a type.

A.5 Treatment of mixtures

A mixture of product types occurs when several products belonging to different types are combined or packaged together as in a *Sandwich* or in a *Multicomponent meal*. If no factor term has been assigned for such a combination, it should be indexed as appropriate for the major component.
Appendix. Hierarchical structure of A. Product Type.

A. Product type

Meat, Poultry, seafood or related Product

Meat or meat Product
  Cured meat
  Meat Product analog
  Sausage or related Product

Poultry or Poultry Product
  Poultry Product analog
  Poultry-based sausage

Seafood or seafood Product
  Seafood Product analog

Dairy Product

Cheese or cheese Product
  Natural cheese
  Cured cheese
  Uncured cheese
  Processed cheese Product
  Cold Pack cheese Product
  Pasteurized cheese Product
  Cheese Product analog

Frozen dairy dessert

Milk or milk Product
  Cultured milk Product

Milk or milk Product analog
  Butter Product analog
  Cream Product analog
  Milk analog

Egg or egg Product

Egg Product analog

Fruit or vegetable Product

Fruit or fruit Product
  Fruit butter, jelly, preserve...
  Fruit juice

Vegetable or vegetable Product
  Vegetable Juice
  Vegetable Pickle
A. Product type (continued)

Grain or starch Product

Milled grain or starch Product
Prepared grain or starch Product
Bakery Product
  Bakery Product, sweetened
  Bakery Product, unsweetened
Breakfast cereal
Macaroni or noodle Product

Nut or nut Product

Cacao or chocolate Product

Cacao or chocolate Product analog

Beverage

Alcoholic beverage
  Distilled spirits
  Malt beverage
  Wine
Nonalcoholic beverage
  Soft drink
  Steeped beverage

Prepared food product

Dessert
Meat replacement
Multicomponent meal
Pasta dish
Pie, Pastry or Pizza
Prepared egg dish
Salad
Sandwich
Soup
Stew or hash

Snack food

Confectionery

Candy
Decoration
Icing, frosting
Sweet sauce or topping
A. Product type (continued)

Dressing, condiment, gravy or sauce

Condiment or relish
Dressing for food
Gravy or food

Sweetener

Nonnutritive sweetener
Nutritive sweetener

Flavor or seasoning

Flavoring
Salt or salt substitute
Spice or herb

Chewing gum

Food additive

Color additive

Refined or Partially refined food product
B. Food Origin

B1. Food Source
B2. Part of Plant or Animal

The B factors 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 B1 Food source descriptor (e.g., *Wheat*) with one B2 Part of Plant or animal descriptor (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 (see Chapter 7). This vocabulary 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 B2. Treatment APPLIED.

B1. Food source

B1.1 Definition

Individual plant or animal from which the food product or its major ingredient is derived; also a chemical food source.

B1.2 Structure

Food sources are divided into live food sources (i.e., plants, animals, and microorganisms), and chemical food sources, which include substances such as water, salt and monosodium glutamate. The structure is shown in detail in the appendix to B1.

The two major subdivisions, *Plant used as food source* and *Animal used as food source*, are subdivided by consumer- and industry-oriented characteristics. For animals this corresponds by and large to taxonomic classification, except that invertebrates living in water are grouped with the fishes in *Fish or lower water animal* (source of seafood).
For plants, however, the consumer- and industry-oriented subdivision is quite different from 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. Other plants that are also used for producing sugar, such as *Apple* as a source of apple-blossom honey, are cross referenced. The presence or absence of a plant within a specific section of hierarchy does not impose any constraints upon its use in indexing. For example, if hearts of palm are used as a vegetable, the food source descriptor will be *Palm* even though in the hierarchy *Palm* is listed only under *Oil-Producing Plant*.

With few exceptions, species is the lowest level of the B2 Food source classification. Cultivars, breeds and strains of plants, animals and microorganisms are not detailed.

B1.3 Use

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).

A mixture of two or more similar food sources is sometimes indexed as one ingredient, e.g., if wheat and rye are listed as ingredients, the descriptor is *Wheat and rye*; see B1.5. Treatment of mixtures for a detailed explanation.

If the major ingredient is in itself a composite product, such as "bread" in bread pudding, the major ingredient of that product determines the origin descriptors (i.e., *Wheat*, combined with *Seed or kernel*). In the case of chicken broth it would be *Chicken* combined with *Water extract of Plant or animal*.

The indexer or searcher new to the vocabulary should examine the hierarchical list 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 *Sweet corn*, and, for each, 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 originating from *Sweet corn, yellow*, that descriptor — and not *Corn* — should be used. To give another example, the indexer should not use *Walnut* without first trying to ascertain the species at hand (*Black walnut*, *Butternut*, or *English walnut*).
If a specific food source is not found in the alphabetic list, scanning the hierarchic list in the appropriate section may help. If a species of plant or animal is not in the Food Vocabulary, use its name for indexing so that the vocabulary may be updated.

B1.4 Not known, not done, other

This factor includes:

*Food source not known*

Used in the rare case that the food source cannot be determined even at the highest level (animal, plant, microorganism, chemical).

There is no descriptor for "no food source" because there always is a food source. There is no descriptor for "food source, other" because the broad subdivisions (plant, animal, microorganism, chemical food source) exhaust all the possibilities.

B1.5 Mixtures

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

Field corn and rice
Cattle and swine
Cattle and swine and calf
Grapefruit and orange
Oat and soy
Peanuts with other nuts or seeds
Peas and carrots
Peas and onions
Pineapple and grapefruit
Pineapple and orange
Sodium chloride mixed with potassium chloride
Succotash
Sugar cane and field corn
Triple succotash
Wheat and corn
Wheat and oat
Wheat and rye
Wheat and soy

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. Example:

Label: Flour, corn syrup, oat flour
Indexing: Wheat and oat; 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) from *Food added* (D2. Treatment applied), following the rules given there. Example:

Label: Pineapple juice, grape juice, water
Indexing: Pineapple; Fruit added
Appendix to B1. Classification of food sources.

Plant used as food source

- Plant used for producing extract or concentrate
  - Carbohydrate-producing plant
  - Polysaccharide-producing plant
  - Sugar-producing plant
  - Oil-producing plant
  - Protein-producing plant
  - Steeped beverage-producing plant

- Spice or flavor-producing plant

- Vegetable-producing plant
  - Vegetable-producing plant, above-ground parts used
  - Vegetable-producing plant, all parts used
  - Vegetable-producing plant, root, tuber or bulb used

- Fruit-producing plant

- Grain or seed-producing plant

Animal used as food source

- Invertebrate, land
  - Fish or lower water animal
  - Reptile, amphibian
  - Poultry, game bird
  - Meat animal (i.e., mammal)

- Human as milk source

Microorganism used as food source

Chemical food ingredient
B2. Part of Plant or Animal

B2.1 Definition

The anatomical part of the plant or animal from which the food product or its major ingredient is derived, e.g., leaf, root or tuber, organ meat, milk, or egg; it also includes components of parts, such as cream, and extracts, concentrates or isolates, such as protein extract or sugar.

B2.2 Structure

This factor treats two characteristics, anatomical part and extract. The two characteristics could be in separate factors so that they could be freely combined to index such products as cod liver oil (anatomical part *Liver* and extract type *Fat or oil*). However in the more compact structure used here a decision must be made as to which of these descriptors should be used: this is explained under B2.3 Use in indexing and searching. The top-level structure, then, is as follows:

- Extract, isolate, or concentrate of plant, animal, or microorganism
- Anatomical part of plant, animal, or microorganism
  - Not an actual descriptor, but included to show structure
  - Part of plant
  - Part of animal
  - Part of microorganism
- Part not applicable (chemical food source)

Plant secretions (subsumed under extracts) are considered *Part of plant*, and *Milk* and *Egg* are considered *Part of animal*, reflecting the fact that their composition depends on the nutrient intake and physiology of the plant or animal.

The appendix to this section gives a more detailed overview.

B2.3 Use in indexing and searching

B2. Part of plant or animal completes the origin specification of the major ingredient. If the part is not an extract, use the appropriate *Part of Plant*, *Part of animal*, or *Part of microorganism* descriptor. Always verify the choice, especially the level of specificity, by consulting the tree structure.
In the case of an extract, the anatomical part from which the extract is made is usually ignored. Examples:

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Type</th>
<th>Food Source</th>
<th>Part indexed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cod liver oil</td>
<td>Refined or</td>
<td>Codfish</td>
<td>Fat or oil (Liver)</td>
</tr>
<tr>
<td>Corn oil</td>
<td>Partially</td>
<td>Field corn</td>
<td>Fat or oil (Seed/kernel)</td>
</tr>
<tr>
<td>Corn syrup</td>
<td>refined food</td>
<td>Field corn</td>
<td>Dextrose (Seed/kernel)</td>
</tr>
<tr>
<td>Cane sugar</td>
<td>Product</td>
<td>Sugar cane</td>
<td>Sucrose (Stem/stalk)</td>
</tr>
</tbody>
</table>

This rule has important consequences for searching: 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:

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Type</th>
<th>Food Source</th>
<th>Part indexed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Juice</td>
<td>Fruit Juice</td>
<td>Apple</td>
<td>Fruit or berry, peel</td>
</tr>
<tr>
<td>Grape Jelly</td>
<td>Fruit Jelly</td>
<td>Grape</td>
<td>Present, core, pit</td>
</tr>
<tr>
<td>Burgundy</td>
<td>Table wine</td>
<td>Grape</td>
<td>or seed present</td>
</tr>
<tr>
<td>Beer</td>
<td>Malt beverage</td>
<td>Barley</td>
<td>Germinated or sprouted seed</td>
</tr>
<tr>
<td>Carrot Juice</td>
<td>Vegetable Juice</td>
<td>Carrot</td>
<td>Root, tuber, bulb</td>
</tr>
<tr>
<td>Peppermint tea</td>
<td>Steeped beverage</td>
<td>Peppermint</td>
<td>Leaf</td>
</tr>
</tbody>
</table>

The *Part of Plant* to be indexed is the part that enters the process of making the juice, wine, or other extract, since the extract stays in contact with this part and substances may be extracted from all subparts, such as peels and seeds. Apple juice, for instance, is made from chopped whole apples (*Fruit or berry, Peel Present, core, pit or seed present*).
B2.4 Not known, not done, other

This factor includes:

*Part not known*.

Use 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 *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, nor for "other Part" because the top-level descriptors exhaust all the possibilities. For a nonliving (chemical) food source, use *Part not applicable (chemical food source)*.

B2.5 Mixtures.

The following specific mixture descriptors 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 plants. 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.
Appendix to B2. Part of Plant or animal

Extract, concentrate or isolate of plant or animal

Carbohydrate
Protein extract, concentrate or isolate
Fat or oil
Essential oil
Water extract of plant or animal
Alcohol extract of plant

Anatomical part of plant, animal, or microorganism+

Part of plant

Root, stem, leaves, flowers, etc. (not fruit)

Whole plant or most parts used
Plant above surface
Root, tuber, bulb

Fruit, seed

Fruit or berry
Seed or Pod

Part of animal

Animal body or body part

Whole animal or most parts used
Meat part
Organ meat
Skeletal meat part
Nonmeat part

Egg

Milk

Part of microorganism

Part not applicable (Chemical food source)

+ Explanatory heading, not a descriptor
The physical state and shape of a food product have important implications for food safety and nutrition. They directly affect heat transfer through the product in processing (e.g., warming, cooking, freezing). They also affect the product's susceptibility to permeation by chemical substances and to invasion by microorganisms. All of these are influenced by the physical state and, for solid products, by size, surface-to-volume ratio, and type of surface (unbroken skin or crust vs. exposed internal areas).

C.1 Definition

The physical state of the food product (liquid, semiliquid, semisolid, or solid). Solid food products are further subdivided by shape or form.

C.2 Structure

The physical states of food products are arranged on a continuum from the liquid to the solid state, i.e., liquid (including low-viscosity and high-viscosity liquids), semiliquid, semisolid, and solid.

C1. Physical state, shape, or form

Liquid

Liquid, low viscosity

Liquid, high viscosity

Semiliquid

Semisolid

Solid

*Liquid, low viscosity*, *Liquid, high viscosity*, *Semiliquid* and *Semisolid* are each subdivided by degree of homogeneity: some products are homogeneous liquids or semisolids, others contain solid particles in a liquid or semisolid base.

Liquid

Liquid, low viscosity

Liquid, low viscosity, with no visible particles

Liquid, low viscosity, with very small particles

Liquid, low viscosity, with discrete particles
**PHYSICAL STATE (3/29/85)**

**Liquid, high viscosity**
- Liquid, high viscosity, with no visible particles
- Liquid, high viscosity, with very small particles
- Liquid, high viscosity, with discrete particles

**Semiliquid**
- Semiliquid with smooth consistency
- Semiliquid with discrete particles

**Semisolid**
- Semisolid with smooth consistency
- Semisolid with discrete particles

*Solid* is subdivided by shape or form; no distinction is made between hard and soft, between firm and not firm, or between homogeneous and particulate structure. 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 (for example, a coconut vs. a poppy seed); this is discussed further below.

**Solid**

*Whole*
- Whole, natural shape
- Whole, shape achieved by forming

- -----, thickness <0.3 cm.
- -----, thickness 0.3 - 1.5 cm.
- -----, thickness 1.5 - 7 cm.
- -----, thickness >7 cm.

*Divided or disintegrated*

- Divided into halves, quarters or segments
  - Divided into halves
  - Divided into quarters
  - Divided into segments or wedges

- Divided into Pieces
  - Divided into Pieces, thickness >1.5 cm.
  - Divided into Pieces, thickness 0.3 - 1.5 cm.
  - Divided into Pieces, thickness <0.3 cm.
PHYSICAL STATE (3/29/85)

Disintegrated or ground

Finely ground
Medium ground

Crystal

Whole and Pieces

C3. Use in indexing and searching

The physical state of the food product is determined on a uniform temperature basis, namely at room temperature (20 degrees C., 68 degrees F.). Liquid and semiliquid products are pourable, semisolid products are spreadable or formable, and solid products (hard or soft, firm or not firm) are capable of retaining their shapes.

To determine the physical shape or form of a *Solid* product, the following procedure should be used:

- For a product that is a whole plant or animal or a whole part thereof (as indexed in B2), the descriptor is *Whole, natural shape* regardless of the size (from a beef carcass to a poppyseed).

- If the shape of a whole product is achieved by forming, e.g., molding or extrusion, the descriptor is *Whole, shape achieved by forming, 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 descriptor appropriate for the segment, regardless of size. The whole being divided may be natural or formed.

- 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, thickness...*.

- If the product is ground, i.e., if all particle dimensions are below 0.2 cm., the descriptor is *Disintegrated or ground* or the 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 the appropriate narrower term.
A number of complications arise in the use of this factor:

1. Physical state is dependent on temperature. At what temperature should the physical state of a food product be determined?

2. 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?

3. "Whole" is an ambiguous term, with different meanings in different factors.

4. Some shape descriptors do not consider size—the searcher should be aware of this.

5. 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.

C.3.1 Temperature for determining physical state

Physical state varies with temperature. Because food products are often processed, handled and consumed at various temperatures, complete description would require giving the physical state at several temperatures. For a simple description one physical state descriptor must do. The question then arises what the temperature basis should be. The following possibilities were considered in formulating the 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 20 degrees C., 68 F. (room temperature).

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

<table>
<thead>
<tr>
<th>Product</th>
<th>During processing</th>
<th>Point of sale</th>
<th>Point of consumption</th>
<th>Room temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen broccoli</td>
<td>Solid</td>
<td>Solid</td>
<td>Solid</td>
<td>Solid</td>
</tr>
<tr>
<td>Ice cream</td>
<td>Liquid</td>
<td>Solid</td>
<td>Solid</td>
<td>Liquid</td>
</tr>
</tbody>
</table>
PHYSICAL STATE (6/22/85)

<table>
<thead>
<tr>
<th>Product</th>
<th>State</th>
<th>Added State</th>
<th>Physical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange Juice</td>
<td>Liquid, high viscosity concentrate cost</td>
<td>Semisolid n.a.</td>
<td>* Liquid, high viscosity concentrate cost *</td>
</tr>
<tr>
<td>Chicken broth</td>
<td>Liquid</td>
<td>Semisolid Liquid (at 55 degrees C)</td>
<td>* Semisolid *</td>
</tr>
<tr>
<td>Frozen soup</td>
<td>Liquid</td>
<td>Solid</td>
<td>Liquid</td>
</tr>
</tbody>
</table>

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; 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 degrees C. It was decided that for the purpose of indexing, the Physical state should be determined at 20 degrees. Therefore this rule was chosen even though in a few instances it leads to counterintuitive results: ice cream is not ordinarily thought of as *Liquid, high viscosity*, chicken broth is not ordinarily thought of as semisolid. To find all products that are solid at the Point of sale, include *Frozen* in the query formulation.

C.3.2 Divided vs. semisolid with particles

It may be difficult to decide between *Divided or disintegrated* and *Semisolid with discrete particles*. 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:

- Beef cubes: Clearly *Divided or disintegrated*
- Chopped Peanuts: Clearly *Divided or disintegrated*
- Cut green beans: Clearly *Divided or disintegrated*
- Cut green bean salad: Still *Divided or disintegrated*, but borderline
- Cole slaw: Still *Divided or disintegrated*, but borderline
- Chicken salad bound with mayonnaise: *Semisolid with discrete particles*, but borderline
- Chunky Peanut butter: Clearly *Semisolid with discrete particles*
C.3.3 *Whole, natural shape* applied to an anatomical part

*Whole, natural shape* applies to the plant or animal part indexed in B2; this may be the entire plant or animal (e.g., *Whole animal*), or a whole part thereof, such as a *Skeletal meat part*, a *Liver*, a *Leaf* or a *Fruit*. A chicken leg is a whole *Skeletal meat part* and is thus indexed 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 B2: *Whole animal* vs. *Skeletal meat part*.)

C.3.4 Size considerations

Size distinctions are explicit under *Whole, shape* achieved by forming* and under most of *Divided, disintegrated*, but for products that are *Whole, natural shape* or *Divided into halves, quarters, or segments* size distinctions are merely implied by the food source. A searcher interested in the flow characteristics of food products needs to 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 microorganisms (e.g., yeast cells) resembles finely ground flour). An exhaustive search for products with the flow characteristics of a meal should be formulated as follows:

*Medium ground* OR [*Seed or kernel* AND (*Poppy* OR *Safflower* OR *Millet* OR... (other Plants with very small seeds))]

C.3.5 Packing medium and Physical state

Many products consist of a food and a *Packing medium*; for example, a can of peas contains peas and brine. The physical state of the food proper should be indexed without regard to the *Packing medium*; the *Packing medium* will be indexed separately in E1. In this example the *Physical state* descriptor is *Whole, natural shape*. The *Packing medium* is indexed *Packed in salt brine*.

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* are *Liquid, high viscosity*, with discrete 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, sauces, gelatins, and perhaps syrups. Such components should be indexed as packing media. For example, spaghetti with
meatballs in (or with) tomato sauce is indexed by *Packed in tomato sauce*. If a liquid, semiliquid, or semisolid is indexed as a packing medium, it is disregarded in the determination of the physical state. (If the application requires it, the packing medium can be indexed by its own combination of factor terms, including *Physical state, shape or form*).

A searcher interested in all products that consist of solid parts in liquids should use the query formulation:

*Liquid, low viscosity, with discrete particles* OR
*Liquid, high viscosity, with discrete particles* OR
*Packed in edible medium*

C.4 Not known, not done, other

This factor includes:

*Physical state, shape or form not known*

This may be needed when indexing from a label or recipe, or when the product cannot be examined at room temperature.

There is no factor value for "no physical state, shape, or form" because every product has a physical state, shape, or form, nor for "physical state, shape, or form, other" because the top-level descriptors exhaust all the possibilities.

C.5 Mixtures

The following descriptors for specific mixtures are provided:

Whole and Pieces
Liquid, low viscosity, with very small particles
Liquid, low viscosity, with discrete particles
Liquid, high viscosity, with very small particles
Liquid, high viscosity, with discrete particles
Semiliquid, high viscosity, with discrete particles
Semisolid, with discrete particles

For other mixtures use the broader term that includes both components.
D. Processing Operations

D1. Degree of Preparation
D2. Treatment Applied
D3. Preservation Method

The D factors designate selected processing operations which modify the food product - its flavor, texture and other functional characteristics, its nutritional value and its shelf life. The descriptors in D1, Degree of Preparation are very broad. D2, Treatment Applied includes specific descriptors for a wide range of operations. D3, Preservation method includes operations that have as their main purpose preservation.

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

(1) A product that is sterilized by heat is also fully cooked; thus, the two descriptors *Fully cooked* (D1) and *Sterilized by heat, canned* (D3).

(2) A product that is smoked for preservation also had its taste changed; thus, the two descriptors, *Smoked by smoke infiltration* (D2) and *Preserved by smoking* (D3).

Because each factor is considered independently of the others, all of the viewpoints will be included. This ensures complete retrieval under any descriptor. For example *Fully cooked* retrieves all fully cooked products whether the cooking was intended for preparation or for preservation; *Smoked by smoke infiltration* retrieves all products so treated regardless of the purpose of the treatment.

The factors in this group do not cover all processing operations. Other processing operations are implied by descriptors in D2. Part of Plant or animal (which may imply such operations as hulling or extracting), C. Physical state, shape, or form (which may imply cutting, grinding, or forming), and E. Packing and Packaging.
D1. Degree of Preparation

D1.1 Definition

Used to broadly characterize a food product based on the preparation steps performed to ready it for consumption. Specifics of preparation are covered by D2. Treatment applied.

D1.2 Structure

D1. Degree of Preparation

Degree of cooking

Formulated mix

D1.3 Use in indexing and searching

First the indexer must determine whether the product is a formulated mix. If so, *Formulated mix* or the appropriate narrower descriptor is used. In this instance *Degree of cooking* is not indexed.

Products other than formulated mixes are indexed by the appropriate descriptors under *Degree of cooking*. The only aspect of cooking considered here is the application of heat. Many products are heated for the express purpose of effecting changes in the product. For other products the heating may be a byproduct of the processing, such as grain being heated during grinding or oil during 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 *Partially cooked* or *Fully cooked*, as appropriate. The *Degree of cooking* descriptors are defined as follows:

- A food product is *Uncooked, raw* when no heat was applied or when the heat applied was insignificant.

- A food product is *Partially cooked* when heat was applied for a time sufficient to partially change some characteristics, especially flavor or texture. This often decreases consumer preparation time. Partial cooking also causes some chemical changes and reduction of enzyme activity and of microbes. 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 pie crust may not have been cooked at all. Products labeled "quick cooking" are often *Partially cooked*.

- A product is *Fully cooked* when heat was applied for a time sufficient to fully change some of its characteristics.
especially flavor or texture. The cooking process also causes significant chemical changes and destruction of enzyme activity and of microbes. The product is offered for consumption without a requirement for further cooking.

The following examples illustrate further how this factor is used:

<table>
<thead>
<tr>
<th>Food Product</th>
<th>Degree of Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cake mix</td>
<td>Formulated mix</td>
</tr>
<tr>
<td>Artificial lemonade mix</td>
<td>Beverage base</td>
</tr>
<tr>
<td>Cookie dough</td>
<td>Uncooked, raw</td>
</tr>
<tr>
<td>Cookies</td>
<td>Fully cooked</td>
</tr>
<tr>
<td>TV dinner</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Pasteurized milk</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Cold-Pressed oil</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Hot-Pressed oil</td>
<td>Uncooked, raw</td>
</tr>
<tr>
<td>Rolled oats</td>
<td>Partially cooked</td>
</tr>
<tr>
<td>Sugar</td>
<td>Fully cooked</td>
</tr>
</tbody>
</table>

D1.4 Not known, not done, other

This factor includes:

*Degree of preparation not known*

Preparation not done is *Uncooked, raw*.

There is no factor value for "Degree of preparation, other" because every product is either raw, partially cooked, or fully cooked.

D1.5 Mixtures

The only type of product to which one might wish to apply more than one descriptor from this factor is a product with multiple components that vary in degree of cooking. Such a product is indexed by *Partially cooked*. 
D2. Treatment Applied

D2.1 Definition

Used to specifically characterize a food product based on the treatments or processes applied to the product or any indexed ingredient. The processes include adding, substituting or removing components and modifying the food or component, e.g., through fermentation. Multiple values may be assigned.

D2.2 Structure

D. Treatment applied

- Component removed
- Component substituted
- Food or component modified
- Ingredient or food added
- Treatment not applied

D2.3 Use

The treatments considered are those applied to the product as a whole or 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*.

All applicable descriptors from this factor must be assigned, even if they are implied by descriptors from other factors. For example, *Natural cheese* (A. Product Type) is also indexed by *Lactic acid-other organism fermented*; a product that is indexed by *Preserved by smoking* (D3. Preservation) is also indexed by *Smoked by smoke infiltration*; a product that is indexed by *Packed in sweetened liquid* (E1. Packing Medium) is also indexed by *Sweetened with sugar* or the appropriate narrower term.

To ensure that no important descriptor is overlooked, the indexer must systematically examine the tree structure, using the following procedure:

- Consider the five main subdivisions and select all that apply.
- In the subdivisions that do apply examine the specific descriptors and use all that apply.
- If all the treatments listed can be ruled out, the descriptor is *No treatment applied*.
- If the information available is not sufficient to index any treatment but also not sufficient to rule out all treatments, the descriptor is *Treatment applied not
Information for indexing may come from label statements, recipes, general knowledge and inferences drawn from these. From this information, some treatments can be positively identified and are indexed, others cannot be identified but also cannot be ruled out, and still others can be ruled out. Thus indexing by treatment descriptors is sometimes incomplete. The recall achievable in retrieval depends upon the information used in indexing, its source and extent.

In many applications of the vocabulary, *Treatment applied* descriptors should be assigned only if their significance for the product at hand warrants it. The scope notes give rules for indexing at a medium level of completeness. These rules are based on the significance of the treatment for the safety and the nutritional value of the food product. A rule given for a broad descriptor, such as *Sweetened with sugar*, holds for all its narrower terms, such as *Corn syrup added*, unless stated otherwise. A handy reference list for the use of *Treatment applied* is given in ....; it arranges the descriptors in classified order and gives for each descriptor a condensed version of its scope note.

D2.4 Not done, not known, other

The following descriptors are included:

*No treatment applied*

Used when none of the treatments listed and defined in this factor pertains 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 sufficient to index any treatment but also not sufficient to rule out all treatments. If all the treatments listed can be ruled out, the descriptor is *No treatment applied*. Thus *Treatment applied not known* serves to indicate that the indexer has considered all the treatments.

A more specific type of descriptor is also included:

*Treatment not applied*

Used for a Product to which a treatment customary for the type of product has not been applied, or has been applied in lesser
degree than is common. An applicable descriptor from this group must be used if a corresponding statement appears on the Principal display panel (example: unsalted peanut, unsalted potato chips). This descriptor must be distinguished from "No treatment applied". This group of descriptors is unique to D2. Treatment applied. They are important because the corresponding treatments are so standard that the user gains little information by knowing they are present but much information from knowing that they are absent.

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

D2.5 Mixtures

Multiple individual characteristics - as many as needed - should be indexed.
D3. Preservation Method

D3.1 Definition

The primary method used to prevent microbial and enzymatic spoilage.

D3.2 Structure

D3. Preservation method

- Dried or dehydrated
- Preserved by fermentation
- Preserved by filtration
- Preserved by thermal processing
- Irradiated
- Preserved by addition of or treatment with chemicals
- Preserved by cold
- Preserved by storage in modified atmosphere

D3.3 Use

Preservation is a complex subject which is not easily separated from the other aspects of food technology covered in Factors D1. Degree of Preparation, D2. Treatment applied and E. Packaging and Packaging. Preservation usually involves several operations which often affect other characteristics of the food product as well. The main classes of these operations are:

- Treating the food product to modify it and/or to destroy microbes and enzymes and/or to prevent their growth or activity (relationship with D1. Degree of Preparation and D2. Treatment applied).

- Packaging (relationship with E1. Packaging medium and E2. Container or wrapping).

- Storage and handling, an aspect not covered elsewhere in the vocabulary and often implied rather than indexed explicitly.

A preservation method may consist of a combination of operations (e.g., *Sterilized by heat, canned* combines fully cooking with packing in a sterile container) or it may imply a method of storage and handling to be used subsequently, as *Pasteurized* implies refrigeration.

The indexer must select the primary preservation method. For example the descriptor for canned smoked oysters is *Sterilized by heat, canned* rather than *Preserved by smoking* even though smoking contributes to preservation. On the other hand, the descriptor for smoked ham wrapped in cloth is *Preserved by smoking*. Following general indexing rule 2, both products are indexed by *Smoked by smoke infiltration* in D2.
Process applied and by the appropriate descriptor in E2. Container or wrapping.

An implied storage and handling method is not indexed; for example, pasteurized milk is under *Pasteurized*, not under *Refrigerated*. Thus, the descriptor *Refrigerated* retrieves only products where refrigeration is the sole preservation method. To find all refrigerated products, consider also the descriptors *Pasteurized*, *Irradiated* and often *Dried or dehydrated*.

If there is a doubt as to which is the primary preservation method, choose the method that cannot be expressed through one of the other factors.

For processes listed both under D3. Preservation and under D2. Treatment applied, the usage of the descriptor under D3. Preservation is more restrictive; the D3 descriptor *Preserved by smoking* finds only the products for which smoking is the primary preservation method; the D2 descriptor *Smoked by smoke infiltration* finds all products that were treated with smoke.

D3.4 Not known, not done, other.

This factor includes:

*Preservation method not known*

Used when nothing is known about the preservation method, if any.

*No preservation method used*

Used when a food product is not treated to prevent or retard microbial or enzymatic spoilage. Wax coating is considered packaging and not preservation.

*Preserved by other method*

Used only when the preservation method does not fall under any of the major categories of preservation. Wax coating is considered packaging and not preservation.

D3.5 Mixtures

Preservation methods are typically sequential, rather than coexistent. Only the predominant method should be indexed.
E. Packing and Packaging

E1. Packing Medium
E2. Container or wrapping
E3. Food contact surface

The E factors deal with the roles of packing media (internal to the container), the container itself, and the food contact surface (the container's inner surface, sometimes modified by a coating). The complexities of container description and the simplified scheme chosen for this vocabulary are discussed in Section E2.2, Container or wrapping. Structure.

E1. Packing Medium

E1.1 Definition

The medium in which the food is packed for preservation and handling and/or for palatability and consumer appeal. The Packing medium provides a controlled environment for the food.

E1.2 Structure

Foods are packed either in gases (other than air) or in edible liquids or semisolids. Packing under vacuum is a closely related technic which also provides a controlled environment for the food.

E1.3 Use in indexing and searching

The descriptors in this factor 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 proper without changing the basic character of the food as indexed in A. Product Type. For example, peas without brine are still peas and peach halves without syrup are still peach halves.

On the other hand, in a 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 at the same time an integral part meant for consumption. Components used in this way are gravies, sauces, gelatins, and perhaps syrups. Such components should be indexed as packing media. For example, spaghetti with meatballs in (or with) tomato sauce is indexed by *Packed in tomato sauce*.

The decision on how to deal with the packing medium affects the indexing in C. Physical state, shape and form; see the discussion there.

E1.4 Not known, not done, other

This factor includes:

*Packing medium not known*

*No packing medium used*

Examples: soup in a can; tomato paste in a tube; apple juice in a bottle. (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, the descriptor is *Vacuum Packed*. *No packing medium used* also indexes products that are merely wrapped or not packed at all.

*Packing medium, other*.

E1.5 Treatment of mixtures

The following specific mixture descriptors are provided:

*Packed in mixture of gases*

*Packed in vinegar and oil*

*Packed in vinegar with sugar*

Otherwise, if there are several media (e.g., Peaches Packed in syrup with nitrogen in the headspace), the Predominant medium is indexed.
E2. Container or Wrapping

E2.1 Definition

Primary container type as defined by the main container material, the container form, and the materials of liner, lids, and ends.

E2.2 Structure

The description of containers is very complex because of the large number of characteristics to be considered:

Main container structure
- Material
- Form
- Method of construction
- Size

Lid, ends, or crown (cork)
- Material
- Form
- Method of seal

Inner liner material

Outer liner/wrapper material

Coating materials used for any of the above

Other materials used
- Sealants
- Adhesives
- Printing ink

The materials may be composite materials. Some products have multiple containers.

In the food vocabulary much of this complexity had to be abandoned in favor of a simpler, less detailed description. This simplified description consists of an indication of the primary container type (factor E2) and of all the food contact surfaces (factor E3).

E2 Container or wrapping subdivides the most prevalent container types based on two characteristics. The first subdivision is by material:
Metal container
Glass container
Ceramic or earthenware container
Plastic container
Laminate container
Fiberboard or paper container
Wood container
Textile or fabric container

Within material, containers are subdivided by shape, such as can, tube, tray, and/or type of lid and/or type of liner. If a container shape is not specifically listed under a material, index under the broader term, e.g., aluminum box under Aluminum container*.

E2.3 Use

For most products the primary container is easily recognized. The following instructions deal with complex situations:

If a product is packed in multiple containers, index the innermost (primary) container. Example: For Edam cheese packed in a wax shell and wrapped in plastic the descriptor is Wax container*. Exception: Fiberboard containers with liners and paper bags with liners are specifically included as descriptors (e.g., cereal box with laminate liner or cheese packed in a box with aluminum foil liner wrapped around the cheese.)

Some food products have an outside surface that fulfills some of the functions of a container; such a surface is not considered a container. Examples: sausage, the casing of which is an integral part of the product; a product with an edible protective surface. On the other hand the wax shell around Edam cheese is not an integral part of the product and is therefore considered part of the packaging.

E2.4 Not known, not done, other

This factor includes:

*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*
E2.5 Mixtures

Index the primary container. Any other container should be indexed under food contact surface.
E3. Food Contact Surface

E3.1 Definition

The specific container materials in direct contact with the food. Multiple values can be assigned.

E3.2 Structure

The descriptors cover the following classes of materials:

- Metal
- Glass and ceramic
- Plastic
- Enamel
- Fiberboard or paper, cork, wood or textile
- Wax

E3.3 Use

All materials in direct contact with the food must be indexed. If the main container indexed in E2 is coated, the coating material is the food contact surface. Otherwise the food contact surface is the container material, which should therefore be indexed in E3, even though it may seem redundant. Example:

E2. Aluminum can, drum or barrel
E3. Aluminum (if not coated)

The E3 descriptor may be more specific than the E2 descriptor. Example:

E2. Plastic wrapper
E3. Polyethylene

Other container parts, including lid, end, crown, and window, are in contact with the food and the materials they are made of (or their coatings) must also be indexed.

E3.4 Not known, not done, other

This factor includes:

- Food contact surface not known
- No food contact surface present
- Food contact surface, other

E3.5 Mixtures

Index all materials with which the food comes in contact.
F. User Group/Dietary Use

F.1 Definition

User Group, human or animal, for which the food product is produced and marketed.

F.2 Structure

There are two major subdivisions:

*Animal food*

- Feed for food animals
- Food for nonfood animals

*Human food*

- Human food, no age specification, regular diet
- Human food, no age specification, special diet
- Human food, low calorie
- ...etc.
- Infant or Junior food, regular infant diet
- Infant or Junior food, special infant diet

*Human food, no age specification, special diet*, is further subdivided to accommodate dietary label claims.

F.3 Use in indexing and searching

Foods produced and marketed specifically for infants or juniors (age up to 1 year) are so indexed; all other foods are indexed under "No age specification".

The dietary use descriptors, such as *Human food, low calorie*, are used for foods which are selected by individuals because of the label claims. These claims may be stated as "Low calorie", "Artificially sweetened", "Sugar free", "Low cholesterol", "Reduced sodium", "Caffeine free", "Diabetic", etc., or by the word "Diet" or "Dietetic". The individuals may adhere to otherwise regular diets or may be actually consuming special diets because of particular dietary needs which exist by reason of a physical, physiological or pathological condition (21 CFR 105.3(A)(1)(i)). Foods fall in the special diet category if the label bears special dietary claims pertaining to conditions such as overweight, diabetes, lactose intolerance, or allergic hypersensitivity.
F.4 Not known, not done, other

This factor includes:

*User group not known*

There is no factor for "No user group", which is clearly not meaningful, nor for "User group, other", because *Human food* and *Animal food* exhaust the scope of this vocabulary.

F.5 Mixtures

Multiple user groups are not indexed. However, all special dietary characteristics which are applicable should be indexed.