INTRODUCTION

The Codex Standard for Follow-Up Formula was adopted by the Codex Alimentarius Commission at its 17th Session in 1987. An amendment to the Labelling Section was adopted in 1989 by the 18th Session. This standard has been submitted to all Member Nations and Associate Members of FAO and WHO for acceptance in accordance with the General Principles of the Codex Alimentarius.

CODEX STANDARD FOR FOLLOW-UP FORMULA
CODEX STAN 156-1987 (amended 1989)

1. SCOPE

This standard applies to the composition and labelling of follow-up formula.

It does not apply to foods covered by the Codex Standard for Infant Formula (CODEX STAN 72-1981).

2. DESCRIPTION

2.1 Definitions

2.1.1 *Follow-up formula* means a food intended for use as a liquid part of the weaning diet for the infant from the 6th month on and for young children.

2.1.2 The term *infant* means a person of not more than 12 months of age.

2.1.3 The term *young children* means persons from the age of more than 12 months up to the age of three years (36 months).

2.1.4 The term *calorie* means a kilocalorie (kcal). 1 kilojoule (kJ) is equivalent to 0.239 calories (kcal).

2.2 *Follow-up formula* is a food prepared from the milk of cows or other animals and/or other constituents of animal and/or plant origin, which have been proved to be suitable for infants from the 6th month on and for young children.

2.3 *Follow-up formula* is a food processed by physical means only so as to prevent spoilage and contamination under all normal conditions of handling, storage and distribution.

2.4 *Follow-up formula*, when in liquid form, is suitable for use either directly or diluted with water before feeding, as appropriate. In powdered form it requires water for preparation. The product shall be nutritionally adequate to contribute to normal growth and development when used in accordance with its directions for use.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Energy Content

When prepared in accordance with the instructions for use, 100 ml of the ready-for-consumption product shall provide not less than 60 kcal (or 250 kJ) and not more than 85 kcal (or 355 kJ).
3.2 Nutrient Content

Follow-up formula shall contain the following nutrients at minimum and maximum levels indicated below:

3.2.1 Protein

3.2.1.1 Not less than 3.0 g per 100 available calories (or 0.7 g per 100 available kilojoules) of protein of nutritional quality equivalent to that of casein or a greater quantity of other protein in inverse proportion to its nutritional quality. The quality of the protein shall not be less than 85% of that of casein. The total quantity of protein shall not be more than 5.5 g per 100 available calories (or 1.3 g per 100 available kilojoules).

3.2.1.2 Essential amino acids may be added to follow-up formula only to improve its nutritional value. Essential amino acids may be added to improve protein quality, only in amounts necessary for that purpose. Only L forms of amino acids shall be used.

3.2.2 Fat

3.2.2.1 Not less than 3 g and not more than 6 g per 100 calories (0.7 and 1.4 g per 100 available kilojoules).

3.2.2.2 The level of linoleic acid (in the form of a glyceride) shall not be less than 300 mg per 100 calories (or 71.7 mg per 100 available kilojoules).

3.2.3 Carbohydrates

The product shall contain nutritionally available carbohydrates suitable for the feeding of the older infant and the young child in such quantities as to adjust the product to the energy density in accordance with the requirements set out in Section 3.1.

---

1 Protein quality shall be determined provisionally using the PER method as laid down in the section dealing with methods of analysis.
### Vitamins and Minerals

<table>
<thead>
<tr>
<th></th>
<th>Amounts per 100 available calories</th>
<th>Amounts per 100 available kilojoules</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3.2.4 Vitamins other than Vitamin E</strong></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>250 I.U. or 75 µg expressed as retinol</td>
<td>750 I.U. or 225 µg expressed as retinol</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>40 I.U. or 1 µg</td>
<td>120 I.U. or 3 µg</td>
</tr>
<tr>
<td>Ascorbic Acid (Vitamin C)</td>
<td>8 mg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Thiamine (Vitamin B₁)</td>
<td>40 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Riboflavin (Vitamin B₂)</td>
<td>60 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Nicotinamide</td>
<td>250 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Vitamin B₆²</td>
<td>45 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Folic acid</td>
<td>4 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>300 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Vitamin B₁₂</td>
<td>0.15 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Vitamin K₁</td>
<td>4 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td>Biotin (Vitamin H)</td>
<td>1.5 µg</td>
<td>N.S.</td>
</tr>
<tr>
<td><strong>3.2.5 Vitamin E (α-tocopherol compounds)</strong></td>
<td>N.S.</td>
<td>0.7 I.U./g linoleic acid³, but in no case less than 0.7 I.U./100 available calories</td>
</tr>
</tbody>
</table>

| **3.2.6 Minerals** | | | |
| Sodium (Na)          | 20 mg | 85 mg | 5 mg | 21 mg |
| Potassium (K)        | 80 mg | N.S. | 20 mg | N.S. |
| Chloride (Cl)        | 55 mg | N.S. | 14 mg | N.S. |
| Calcium (Ca)³        | 90 mg | N.S. | 22 mg | N.S. |
| Phosphorus (P)⁵      | 60 mg | N.S. | 14 mg | N.S. |
| Magnesium (Mg)       | 6 mg | N.S. | 1.4 mg | N.S. |

¹ N.S. = Not specified
² Formulas should contain a minimum of 15 µg Vitamin B₆ per gramme of protein. See Section 3.2.1.1.
³ Or per g polyunsaturated fatty acids, expressed as linoleic acid.
⁴ The Ca:P ratio shall be not less than 1.2 and not more than 2.0.
⁵ The Ca:P ratio shall be not less than 1.2 and not more than 2.0
3.3 Ingredients

3.3.1 Essential Ingredients

3.3.1.1 Follow-up formula shall be prepared from the milk of cows or of other animals and/or other protein products of animal and/or plant origin which have been proved suitable for infants from the 6th month on and for young children and from other suitable ingredients necessary to achieve the essential composition of the product as set out in Sections 3.1 and 3.2 above.

3.3.1.2 Follow-up formula based on milk shall be prepared from ingredients as set out in Section 3.3.1.1 above except that a minimum of 3 g per 100 available Calories (or 0.7 g per 100 kilojoules) of protein shall be derived from whole or skimmed milk as such, or with minor modification that does not substantially impair the vitamin or mineral content of the milk and which represents a minimum of 90% of the total protein.

3.3.2 Optional Ingredients

3.3.2.1 In addition to the vitamins and minerals listed under 3.2.4 to 3.2.6, other nutrients may be added when required to ensure that the product is suitable to form part of a mixed feeding scheme intended for use from the 6th month on.

3.3.2.2 The usefulness of these nutrients shall be scientifically shown.

3.3.2.3 When any of these nutrients is added, the food shall contain significant amounts of these nutrients, based on the requirements of infants from the 6th month on and young children.

3.4 Purity Requirements

3.4.1 General

All ingredients shall be clean, of good quality, safe and suitable for ingestion by infants from the 6th month on and young children. They shall conform with their normal quality requirements, such as colour, flavour and odour.

---

1 N.S. = Not specified
3.4.2 Vitamin Compounds and Mineral Salts

3.4.2.1 Vitamin compounds and mineral salts used in accordance with Sections 3.3.1 and 3.3.2 should be selected from the Advisory Lists for Mineral Salts and Vitamin Compounds for Use in Foods for Infants and Children approved by the Codex Alimentarius Commission (CAC/GL 10-1979).

3.4.2.2 The amounts of sodium derived from vitamin and mineral ingredients shall be within the limit for sodium in Section 3.2.6.

3.5 Consistency and Particle Size

When prepared according to the directions for use, the product shall be free of lumps and of large, coarse particles.

3.6 Specific Prohibition

The product and its components shall not have been treated by ionizing radiation.

4. FOOD ADDITIVES

The following additives are permitted:

Maximun Level in 100 ml of Product Ready-for-Consumption

4.1 Thickening Agents

4.1.1 Guar gum  } 0.1 g
4.1.2 Locust bean gum  

4.1.3 Distarch phosphate  } 0.5 g singly or in combination in soy-based products only
4.1.4 Acetylated distarch phosphate  } combination in hydrolyzed protein and/or amino acid-based products only
4.1.5 Phosphated distarch phosphate  
4.1.6 Acetylated distarch adipate  } 2.5 g singly or in combination in hydrolyzed protein and/or amino acid-based liquid products only
4.1.7 Carrageenan  } 0.03 g singly or in combination in milk and soy-based products only  
4.1.8 Pectins  1 g
4.2 Emulsifiers

4.2.1 Lecithin                0.5 g
4.2.2 Mono- and Diglycerides      0.4 g

4.3 pH-Adjusting Agents

4.3.1 Sodium hydrogen carbonate
4.3.2 Sodium carbonate
4.3.3 Sodium citrate
4.3.4 Potassium hydrogen carbonate
4.3.5 Potassium carbonate     Limited by Good Manufacturing Practice
4.3.6 Potassium citrate     Limited by Good Manufacturing Practice
4.3.7 Sodium hydroxide     within the limits for sodium in Section 3.2.6
4.3.8 Potassium hydroxide   within the limits for sodium in Section 3.2.6
4.3.9 Calcium hydroxide                     }
4.3.10 L (+) Lactic acid               }
4.3.11 L (+) Lactic acid               }
producing cultures               }
4.3.12 Citric acid                          }

4.4 Antioxidants

4.4.1 Mixed tocopherols               } 3 mg singly or in combination
4.4.2 α-Tocopherol                   }
4.4.3 L-Ascorbyl palmitate       5 mg singly or in combination, expressed as ascorbic acid (see Section 3.2.6)
4.4.4 L-Ascorbic acid and its Na, Ca salts

4.5 Flavours

4.5.1 Natural Fruit Extracts GMP
4.5.2 Vanilla extract GMP
4.5.3 Ethyl vanillin 5 mg
4.5.4 Vanillin 5 mg

4.6 Carry-Over Principle

Section 3 of the "Principle Relating to the Carry-Over of Food Additives into Foods" as set forth in Codex Alimentarius Volume 1, shall apply.
5. CONTAMINANTS

5.1 Pesticide Residues

The product shall be prepared with special care under good manufacturing practices, so that residues of those pesticides which may be required in the production, storage or processing of the raw materials or the finished food ingredient do not remain, or, if technically unavoidable, are reduced to the maximum extent possible.

5.2 Other Contaminants

The product shall be free from residues of hormones and antibiotics, as determined by means of agreed methods of analysis, and practically free from other contaminants, especially pharmacologically active substances.

6. HYGIENE

6.1 To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

6.2 When tested by appropriate methods of sampling and examination, the product:

   (a) shall be free from pathogenic microorganisms;

   (b) shall not contain any substances originating from microorganisms in amounts which may represent a hazard to health; and

   (c) shall not contain any other poisonous or deleterious substances in amounts which may represent a hazard to health.

6.3 The product shall be prepared, packed and held under sanitary conditions and should comply with the relevant provisions of the Recommended International Code of Hygienic Practice for Foods for Infants and Children (CAC/RCP 21-1979).

7. PACKAGING

7.1 The product shall be packed in containers which will safeguard the hygienic and other qualities of the food. When in liquid form, the product shall be packed in hermetically sealed containers; nitrogen and carbon dioxide may be used as packing media.

7.2 The containers, including packaging materials, shall be made only of substances which are safe and suitable for their intended uses. Where the Codex Alimentarius Commission has established a standard for any such substance used as packaging materials, that standard shall apply.
8. **FILL OF CONTAINERS**

In the case of products in ready-to-eat form, the fill of container shall be:

(i) not less than 80% v/v for products weighing less than 150 g (5 1/2 oz.);

(ii) not less than 85% v/v for products in the weight range 150-250 g (5 1/2 - 9 oz.); and

(iii) not less than 90% v/v for products weighing more than 250 g (9 oz.)

of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20°C which the sealed container will hold when completely filled.

9. **LABELLING**

In addition to the requirements of the Codex General Standard for the Labelling of Prepackaged Foods (CODEX STAN 1-1985 (Rev. 1-1991), Codex Alimentarius Volume 1), the following specific provisions apply:

9.1 **The Name of the Food**

9.1.1 The name of the food shall be "Follow-up Formula". In addition thereto, any appropriate designation may be used in accordance with national usage.

9.1.2 Those products which are prepared from whole or skimmed milk in accordance with Section 3.3.1.2 and where 90% or more of the protein is derived from whole or skimmed milk as such, or with minor modification that does not substantially impair the vitamin and mineral content of the milk, may be labelled "Follow-up Formula based on milk".

9.1.3 All sources of protein shall be clearly shown on the label in close proximity to the name of the food in descending order of proportion by weight.

9.1.4 A product which contains neither milk nor any milk derivative may be labelled "contains no milk or milk products" or an equivalent phrase.

9.2 **List of Ingredients**

The declaration of the list of ingredients shall be in accordance with Sections 4.2.1, 4.2.2 and 4.2.3 of the Codex General Standard for the Labelling of Prepackaged Foods except that in the case of added vitamins and added minerals, these ingredients shall be arranged as separate groups for vitamins and minerals, respectively, and within these groups the vitamins and minerals need not be listed in descending order of proportion.

9.3 **Declaration of Nutritive Value**

The declaration of nutrition information shall contain the following information in the following order:

(a) The amount of energy, expressed in Calories (kcal) and/or kilojoules (kJ) per 100 g of the food as sold as well as per specified quantity of the food as suggested for consumption.
(b) The number of grammes of protein, carbohydrate and fat per 100 g of the food as sold as well as per specified quantity of the food as suggested for consumption. In addition, the declaration per 100 calories (or per 100 kilojoules) is permitted.

(c) The total quantity of each vitamin, mineral and any optional ingredient, as listed in Section 3.3.2 of this standard per 100 g of the food as sold as well as per specified quantity of the food as suggested for consumption. In addition, the declaration per 100 calories (or per 100 kilojoules) is permitted.

9.4 Date Marking and Storage Instructions

In addition to the declaration of date marking and storage instructions in accordance with Sections 4.7.1 and 4.7.2 of the Codex General Standard for the Labelling of Prepackaged Foods, the following provisions apply:

9.4.1 Storage of Opened Food

Storage instructions of opened packages of a food for special dietary uses shall be included on the label if necessary to ensure that the opened product maintains its wholesomeness and nutritive value. A warning should be included on the label if the food is not capable of being stored after opening or is not capable of being stored in the container after opening.

9.5 Information for Utilization

9.5.1 Directions as to the preparation and use of the food, and its storage and keeping after the container has been opened shall appear on the label.

9.5.2 The labelling of a Follow-up Formula shall include a statement that Follow-up Formula shall not be introduced before the 6th month of life.

9.5.3 Information that infants and children fed Follow-up Formula shall receive other foods in addition to the food shall appear on the label.

9.6 Additional Requirements

The products covered by this standard are not breast-milk substitutes and shall not be presented as such.

10. METHODS OF ANALYSIS AND SAMPLING