TECHNICAL REPORT

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The food classification and description system FoodEx2 (revision 2)

European Food Safety Authority

Abstract

FoodEx2 is a comprehensive food classification and description system aimed at covering the need to describe food in data collections across different food safety domains. After its first release in 2011, the system was broadly tested in various practical situations, allowing its evaluation and the identification of areas for improvement. As a consequence of this testing phase, FoodEx2 was reviewed and revised in order to match the needs expressed by the different users. In particular, the terminology was significantly expanded in the sections on raw commodities and natural sources, new hierarchies were added and the relationship between the terms and the most important facets was streamlined. This technical report, mainly aimed to data providers to EFSA, describes the revision of the system and also provides guidance for the harmonised use of the system and the quality control of the codes. Revision 2 of FoodEx2 replaces the revision 1.

Key words: food classification, food description, food groups, food categories, core list, extended list, facets

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Summary

The ability to capture all the useful details of food groups in exposure assessments by EFSA is a crucial requirement for the process of risk assessment. For this reason, a project aimed at developing a new food classification was launched and, at the end of 2011, EFSA released a new food classification and description system (named FoodEx2 revision 1). This system is a flexible combination of classifications and descriptions, including different hierarchies for different food safety domains; the system also includes facets. In the three years after its publication, FoodEx2 was intensively tested with regard to the collection of food consumption and chemical occurrence data and this involved several Member State organisations that operate in data collection. The testing phase highlighted strengths and weaknesses of the classification system and provided suggestions for improvement. Based on the outcome of this testing phase, a major revision of the system was undertaken.

The terminology was significantly expanded, particularly in the area of raw commodities and natural sources. Furthermore, efforts were put into simplifying the coding aspect of the system by removing inconsistencies and ambiguities, and fixing the logic behind the relationship between the terms in the hierarchical tree of the system and the base terms and facets.

The major actions with regard to the logic of the system involved the creation of a specific reporting hierarchy, the revision of different facets, such as part-nature, process, source and source-commodities, and the creation of part-nature-based generic terms in order to discourage the use of hierarchy terms in cases where information is lacking.

Other improvements were also made to the system, in particular:

- a better definition of raw commodities, derivatives of raw commodities/ingredients and composite food and of the relationship between these types of food and the process facet descriptors;
- the definition of an order of priority for process descriptors for use in cases of processed derivatives of raw commodities/ingredients with multiple processes;
- the definition of an order of priority for characterising ingredients in cases of composite foods with multiple characterising ingredients;
- the introduction of a specific facet for descriptors from regulatory food lists that cannot be included in a specific hierarchy;
- the definition of an approach for dealing with raw commodities or derivatives of raw commodities/ingredients with minor ingredients applied (such as coating or flavouring);
- the definition of an approach for dealing with raw commodities or derivatives of raw commodities/ingredients of mixed origin;
- the definition of two new types of food list terms (‘generic term’ and ‘non-specific term’) in addition to the standard ones (‘hierarchy term’, ‘core term’, ‘extended term’ and ‘facet descriptor’);
- the creation of two new domain-specific hierarchies, the veterinary drug residues hierarchy and the botanicals hierarchy.

In conjunction with the review of the system, a guide for the use of the system has also been prepared. The sections covering this guide present the rules for standardised coding and provide tips for the easier use of FoodEx2.

Finally, a series of quality checks for the performed coding are suggested as standard practice; they cover the most commonly found problems and help to guarantee a good and standardised level of coding across the different organisations involved in data collection.

FoodEx2 revision 2 replaces FoodEx2 revision 1. Some possible improvements not falling under the scope of the present revision (in particular, the improvement of support tools) were identified and will be considered in future activities regarding FoodEx2.

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1. Introduction

1.1. Background and Terms of Reference as provided by the requestor

1.1.1. Background

Collecting, collating, analysing and summarising data on food consumption and chemical and biological hazards occurrence are core tasks of EFSA as stated in Regulation (EC) No 178/2002[1]. An additional core task is serving as a central repository for pan-European data to undertake exposure assessments. EFSA has consequently launched a series of harmonisation activities in the area of food consumption and chemical occurrence data collection to facilitate the collection of high quality data for use in EFSA exposure assessments.

They include:

- In the domain of food consumption data, the launch of the EU Menu process, after the initial establishment of the EFSA Comprehensive European Food Consumption Database (CEFCD), supporting the Member States (MS) with a series of procurements projects;
- In the domain of chemical occurrence, within the framework of the development of the Standard Sample Description (SSD) - the EFSA standard for receipt of occurrence data - and electronic data transmission in SSD format, the following documents were published: "Guidance on standard sample description for food and feed"[2],"Guidance on data exchange"[3] and "Use of the EFSA standard sample description for the reporting of data on the control of pesticide residues in food and feed according to Regulation (EC) No 396/2005"[4]. A series of Article 36 grants were also launched to support the implementation of the SSD and the electronic data transmission from all European data providers to EFSA;
- The extension of the SSD to the "Standard Sample Description ver. 2.0" (SSD2)[5], covering additional data collection domains such as biological agents in food and animals, antimicrobial resistance and food additives;
- In the domain of food classification, the development of a first food classification system (initially referred to as FoodEx[6], now as FoodEx1) to link food consumption and occurrence data from several databases for use in dietary exposure assessments within EFSA's remit;
- The revision and extension of FoodEx1 leading to the development of FoodEx2, a comprehensive "Food classification system for exposure assessment"[7] applicable across different EFSA domains, in particular food consumption, chemical contaminants, pesticide residues, zoonoses and food composition. FoodEx2 food classification is used to collect food consumption data within the framework of the EU Menu process and in the SSD2. A series of 11 pilot projects was launched with EU Member States (in 2012 and 2013) to test the implementation of FoodEx2 in the domain of chemical occurrence (M-2012-0120); additionally, one project tested the implementation of FoodEx2 in the food composition domain (M-2011-0266) and eight projects tested the implementation of FoodEx2 in the food

[1] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (as last amended). OJ L 31, 1.2.2002, p. 1–24.

[2] EFSA (European Food Safety Authority), 2010. Standard sample description for food and feed. EFSA Journal 2010;8(1):1457, 54 pp. doi:10.2903/j.efsa.2010.1457

[3] EFSA (European Food Safety Authority), 2010 Guidance on Data Exchange. EFSA Journal 2010; 8(11):1895, 50 pp. doi:10.2903/j.efsa.2010.1895

[4] EFSA (European Food Safety Authority), 2013. Use of the EFSA Standard Sample Description for the reporting of data on the control of pesticide residues in food and feed according to Regulation (EC) No 396/2005 (Revision 2). EFSA Journal 2013;11(1):3076, 54 pp. doi:10.2903/j.efsa.2013.3076

[5] EFSA (European Food Safety Authority), 2013. Standard Sample Description ver. 2.0. EFSA Journal 2013;11(10):3424, 114 pp. doi:10.2903/j.efsa.2013.3424

[6] EFSA (European Food Safety Authority), 2011. Evaluation of the FoodEx, the food classification system applied to the development of the EFSA Comprehensive European Food Consumption Database. EFSA Journal 2011; 9(3):1970, 27 pp. doi:10.2903/j.efsa.2011.1970

[7] EFSA (European Food Safety Authority), 2011. Report on the development of a food classification and description system for exposure assessment and guidance on its implementation and use. EFSA Journal 2011;9(12):2489, 84 pp. doi:10.2903/j.efsa.2011.2489

consumption domain (M-2011-0156); a procurement project has been launched to re-code according to FoodEx2 the existing data in the EFSA food consumption and chemical occurrence databases (M-2013-0278); a procurement has also been launched to support the conversion in Standard Sample Description (SSD) reporting format of analytical results received by EFSA that are not in compliance with the SSD reporting format; the activities of this procurement include the generation of the FoodEx2 code identifying the food (M-2013-0130); finally, a procurement has been launched to pilot the implementation of the SSD2 in the frame of the electronic transmission of harmonised data to EFSA (M-2013-0254). In support to the coding activities, a support tool named 'FoodEx2 browser' was developed internally and made available on the EFSA website[8]

Specifically, the pilot projects on FoodEx2, conducted within the framework of different mandates (M-2012-0120, M-2013-0278), provided many comments and suggestions for improvement and highlighted the need for continuous training to the EU Member States on the use of the system.

1.1.2. Terms of reference

Identifying and applying amendments to the system based on the gained experience and the received suggestions;

1. Amending and refining FoodEx2 draft revision 1 (EFSA, 2011b), based on the comments and suggestions received by the pilot projects and by the internal users in EFSA; in particular, the comments and proposals shall be evaluated, decisions shall be made on their implementation and FoodEx2 will to be updated accordingly; the amendments will be discussed as a project team; in particular
    a. Amendments to the parts of FoodEx2 relevant for Pesticides (Pesticide hierarchy incorporating the new list of commodities for updating Annex 1 to Regulation (EC) No 396/2005, agreed by the Standing Committee of the European Commission on the Food Chain and Animal Health (SCFCAH) in February 2014[9]) will be agreed between the Evidence Management Unit of EFSA (DATA) and PRAS (Pesticides Unit of EFSA);
    b. Amendments to the parts of FoodEx2 relevant for occurrence of chemical or microbiological hazards and food consumption will be agreed between different specialists in the DATA unit; the relevant data collection networks will be informed;
2. Revising and completing the rules for the correct use of FoodEx2, taking into account the amendments to the system and the suggestions from the pilot projects; the activity will be performed by the project team;
3. Describing the updated system in a technical report, summarising the changes applied and also including a section on the rules for the use of FoodEx2; the technical report will be circulated for information to the networks involved in data collection on food; this task will result in the release of FoodEx2 rev.2.

1.2. Additional information

The report on the development of a Food Classification and Description System for exposure assessment and guidance on its implementation and use (EFSA, 2011a), suggested that *'Implementation of the new system should follow a tiered approach including an initial period for comments by future users, a pilot phase and a final refinement phase. An active process involving all potential users of the system in refining and completing it is encouraged. This process could involve establishing new ad-hoc hierarchies for domains presently not explicitly addressed'*. The present report summarises the outcome of this process in the three years since the publication of the first revision of FoodEx2. Most of the activities actually performed are listed in the mandate, summarised in the background section (section 1.1.1).

[8] Tool available online at http://www.efsa.europa.eu/en/datexfoodclass/docs/foodex2browsingtool.zip

[9] Meeting report available at http://ec.europa.eu/food/plant/standing_committees/sc_phytopharmaceuticals/docs/sum_2014022425_pppl_en.pdf; agenda point B06.

While these updating activities were being carried out and after the mandate was issued, other FoodEx2-related projects were launched; in particular,

- seven additional projects in the food consumption domain (M-2012-0344);
- nineteen projects for the re-coding in FoodEx2 of national datasets on chemical occurrence and food consumption present in the EFSA databases (M-2014-0028).

These projects also contributed to identifying improvements for the system, such as inconsistencies or missing terms.

Additionally, in view of the process for developing the EFSA Data Warehouse, the list of plants from the 'Compendium of botanicals reported to contain naturally occurring substances of possible concern for human health when used in food and food supplements' (EFSA, 2012) also had to be integrated into FoodEx2.

Finally, in collaboration with the Nutrition Division of the Food and Agriculture Organization (FAO) of the United Nations under the framework of the FAO/WHO GIFT (Global Individual Food Consumption Data Tool), several raw commodities and a comprehensive list of fish as source animals were proposed for addition and added to the system.

2. Data and Methodologies

2.1. Data

The starting point for the current revision was FoodEx2 revision 1, as published at the end of 2011 (EFSA, 2011b). An intermediate updated working version of the system including some 'quick fixes' of problems identified after publishing the first release was made available on the EFSA website in September 2012[10].

2.1.1. Basic concepts of FoodEx2 and a roadmap for its implementation

The basic principles of the FoodEx2 system are those defined by the EFSA Working Group on the food classification and description system (EFSA, 2011a). FoodEx2 is a food classification system that also has a broad possibility of collecting elements of description. The hierarchical structure of food groups (the 'classification', i.e. the division of all food items into classes) follows the classical definition of categorisation:

- groups must be clearly defined (it should be clear to the coder which food items the group refers to);
- groups must be mutually exclusive (if a food items fits in one group, it should not fit into other groups as well);
- groups must be collectively exhaustive (for any possible food item, there should be a suitable food group in the classification).

Other major characteristics of FoodEx2 are:

- **Flexibility in the names of the food groups.** The name of any food group may be interpreted by different people in slightly different ways, because of the intrinsic ambiguity of language; therefore, the system is based on codes that are independent of languages. However, the 'scope' of the entry, that is the meaning of the code explaining which food items are covered by the code and which are not, must be accurately described. Once the scope of each entry is clearly defined by scope notes, common names/aliases and scientific names (when applicable), the names attributed to the codes in different languages become only a support. They are tentative and may be refined, provided that the scope of the food group remains unchanged.

[10] Catalogue available online at http://www.efsa.europa.eu/en/datexfoodclass/docs/foodex2browsingtool.zip together with a browsing tool to navigate the system and create codes.

- **Basic food list and facets.** FoodEx2 includes a list of food groups and different facets. Facets are collections of single descriptors from defined points of view applicable to specific food items; examples of facets are source, packaging material and production method.
- **Detailed food groups are the basis of the system.** Narrow food groups have a more general applicability than aggregated ones. Indeed, narrowly defined groups are very often equally recognised in different domains, while aggregated groups most often serve the purposes of one domain but not of others. For example, 'pig fat tissue' is a narrow food group used in all hierarchies while 'pig meat food' is an aggregated group used in the zoonoses hierarchy but not in the exposure hierarchy.
- **Different aggregated groups in different domains.** Given a list of narrowly defined food groups, which may be considered common across different food safety domains, these groups can be aggregated differently in broader categories depending on the domain. For example, fresh meat is organised by type of commodity in the reporting hierarchy and by animal species in the zoonoses hierarchy.
- **Different types of terms in the basic food list.** The basic food list includes hierarchy terms (aggregated groups), core terms (the minimum level of detail for coding) and extended terms (those more detailed than the core terms). The use of hierarchy terms in coding is strongly discouraged.
- **Exposure hierarchy.** Dietary exposure is calculated using a food consumption database; in general, food consumption data are common to all domains, as in the case of the Comprehensive European Food Consumption Database of EFSA. A specific hierarchy, including a minimum or preferred level of detail for coding food consumption, is present in FoodEx2. Occurrence data for intake assessments must be coded with terms recognised (i.e. present) in this hierarchy.
- **Implicit facets.** Terms in the basic food list, in particular core and extended terms, implicitly entail some facet descriptors, such as those from the source facet and the part-nature facet. These facets with their descriptors are defined as 'implicit facets' and are associated with the term, without the need to insert them at the time of coding.
- **Added facets.** Terms in the basic food list, in particular core and extended terms, may be further described by the addition of facet descriptors not implicitly included in the base term. The combination of basic food list terms and facets increases the level of detail without the need for creating new basic food list terms.
- **State of food attribute.** A specific attribute of each list term (state of food, with field name = Statef) describes the type of food defined in the group. Four attributes were initially foreseen: r = raw commodity, d = derivative of raw commodity, s = simple composite and c = aggregated composite. Two additional values of the state of food attribute are for facet descriptors (f) and heterogeneous hierarchy groups (g).

The 'Report on the development of a food classification and description system for exposure assessment and guidance on its implementation and use' (EFSA, 2011a) also made some recommendations suggesting the steps required for the implementation of the food classification system. They are:

- The implementation of the new system should follow a tiered approach, including an initial period for future users to make comments, a pilot phase and a final refinement phase. An active process, involving all potential users of the system, for the refinement and completion of the new system is encouraged. This process could involve establishing new ad hoc hierarchies for domains presently not explicitly addressed.
- Specific user-friendly software tools need to be developed for the practical use of the system. The tools must allow browsing through the hierarchies and down to the extended list in order to find the correct or best-fitting term for a particular food. Even more important is the development of an intelligent function that can search the entire system to allow choosing between alternative terms.

- The completed system could be implemented at national level in different ways, either by interfacing with it or by fully adopting it. Interfacing must be established through appropriate translation tables. Translation tables could also be established for other international data reporting systems. Translation of descriptors and scope notes into national languages is a key element for the dissemination of the system in individual countries. Potential ways of supporting or promoting this fundamental activity should be investigated.
- It is strongly recommended that coding is always performed at the most detailed possible level, including the use of facets, in order to keep as much of the information available at the time of coding as possible in the food databases. Appropriate recommendations should be developed for each specific data collection regarding the kind of information to collect about the food nature and characteristics.
- It is recommended that an implementation–maintenance technical working group is set up, involving all relevant stakeholders. Ideally, the technical working group should deal with all the standard terminologies (catalogues) of the Standard Sample Description (SSD). Procedures should be developed to allow the active contribution of all stakeholders in this process.
- It is also recommended that the food classification be complemented with the most recent feed classification, as provided by Regulation (EU) No 575/2011 (and following modifications). It is suggested that the food and feed lists are kept separately, by adopting unambiguous names (referring to the specific use for food or feed). The process facet descriptors can be integrated into the list for food.
- The success of the system will depend on ongoing support. Procedures should be developed to allow active contributions from all stakeholders and the link to legislative needs in the different food safety domains at European Union level.

2.1.2. Additional sources of data for the FoodEx2 revision

In the area of raw commodities of plant origin, the main source of data for the revision of the system was Commission Regulation (EU) No 752/2014[11], which updates the list of plant and animal products to which Maximum Residue Limits (MRLs) for pesticides apply. This list was largely revised and expanded with respect to the previous version (the one already integrated in FoodEx2 revision 1) and, therefore, had a relevant impact on the present revision (revision 2) of the system.

The plants referred to in the compendium of botanicals reported to contain naturally occurring substances of possible concern for human health when used in food and food supplements (EFSA, 2012) were also introduced, starting from the draft of 10 February 2015 of version 3 of the compendium (M-2012-0145).

The Aquatic Sciences and Fisheries Information System (ASFIS) list of species for fishery statistics purposes, published online by the FAO Fisheries and Aquaculture Statistics and Information Service[12], was used to update the list of fish species in the section of FoodEx2 dedicated to live animals (this update is reflected in the 'source' facet). The ASFIS list elements are tagged by a three-letter code and a taxonomic code. The taxonomic code has the structure described in Table 1.

Table 1: Structure of the taxonomic code in the ASFIS list of species for fishery statistics purposes

	Main grouping	Order or other high taxonomic level	Family	Genus	Species
Digits	1st digit	2nd and 3rd digits	4th and 5th digits	6th to 8th digits	9th and 10th digits
Example	1	75	04	003	01

[11] Commission Regulation (EU) No 752/2014 of 24 June 2014 replacing Annex I to Regulation (EC) No 396/2005 of the European Parliament and of the Council (text with EEA relevance). OJ L 208, 15.7.2014, p. 1–71.

[12] Food and Agriculture Organization of the United Nations (FAO), Fisheries and Aquaculture Department, ASFIS List of Species for Fishery Statistics Purposes. Accessed online at http://www.fao.org/fishery/collection/asfis/en on 2 February 2015.

It was observed that the ASFIS list includes the order and family for all terms, while the genus is reported as a separate entry in only some cases. In order to better structure the list in FoodEx2, all order, family and genus names were created as separate 'parent' entries when missing.

It was also observed that the taxonomical organisation of entries cannot be combined in the same classification structure as the entries related to the environments where fish live (i.e. the distinction between freshwater, diadromous and marine fish). This is because the different orders, families and even genera include fish from different groups. The fish list is therefore organised taxonomically, and information on the type of water habitat is provided by an FAO code from the International Standard Statistical Classification for Aquatic Animals and Plants (ISSCAAP)[13], as explained later in this section.

Other sources of information consulted with regard to fish classification were the lists of commercial designation, published by the EU Member States (MSs) in compliance with Council Regulation (EC) No 104/2000 of 17 December 1999[14], on the common organisation of fishery and aquaculture product markets.

The grouping in the section 'fish meat' was revised according to the relevant ISSCAAP groups. ISCAAP divides the aquatic animals and plants into 50 groups on the basis of taxonomic, ecological and economic factors. The ISSCAAP groups are shown in Table 2.

In particular, the groups where the code starts with '1' comprise freshwater fish, those starting with '2' consist of diadromous fish and those starting with '3' comprise marine fish.

Table 2: ISSCAAP[(a)] groups of species

Code	Group of species
11	Carps, barbels and other cyprinids
12	Tilapias and other cichlids
13	Miscellaneous freshwater fishes
21	Sturgeons, paddlefishes
22	River eels
23	Salmons, trouts, smelts
24	Shads
25	Miscellaneous diadromous fishes
31	Flounders, halibuts, soles
32	Cods, hakes, haddocks
33	Miscellaneous coastal fishes
34	Miscellaneous demersal fishes
35	Herrings, sardines, anchovies
36	Tunas, bonitos, billfishes
37	Miscellaneous pelagic fishes
38	Sharks, rays, chimaeras
39	Marine fishes not identified
41	Freshwater crustaceans
42	Crabs, sea-spiders
43	Lobsters, spiny-rock lobsters
44	King crabs, squat-lobsters
45	Shrimps, prawns
46	Krill, planktonic crustaceans
47	Miscellaneous marine crustaceans
51	Freshwater molluscs
52	Abalones, winkles, conchs
53	Oysters
54	Mussels
55	Scallops, pectens
56	Clams, cockles, arkshells
57	Squids, cuttlefishes, octopuses
58	Miscellaneous marine molluscs

[13] Food and Agriculture Organization of the United Nations (FAO), Fisheries and Aquaculture Department, ISSCAAP categories. Available online: ftp://ftp.fao.org/FI/STAT/DATA/ASFIS_structure.pdf; accessed on 2 February 2015.

[14] Council Regulation (EC) No 104/2000 of 17 December 1999 on the common organisation of the markets in fishery and aquaculture products. OJ L 17, 21.1.2000, p. 22–52

Code	Group of species
61	Blue-whales, fin-whales
62	Sperm-whales, pilot-whales
63	Eared seals, hair seals, walruses
64	Miscellaneous aquatic mammals
71	Frogs and other amphibians
72	Turtles
73	Crocodiles and alligators
74	Sea-squirts and other tunicates
75	Horseshoe crabs and other arachnoids
76	Sea-urchins and other echinoderms
77	Miscellaneous aquatic invertebrates
81	Pearls, mother-of-pearl, shells
82	Corals
83	Sponges
91	Brown seaweeds
92	Red seaweeds
93	Green seaweeds
94	Miscellaneous aquatic plants

(a): ISSCAAP is the FAO 'International Standard Statistical Classification for Aquatic Animals and Plants'.

2.2. Methodologies

2.2.1. Tools

The tools used for managing the catalogues were Microsoft Excel ® and a browsing tool developed in Java for this purpose by staff of the DATA Unit.

2.2.2. Revision process

Two processes for updating the food classification system were performed in parallel:

1) the management of terms (missing terms, double terms and better specification of terms) based on the suggestions from different sources;

2) updating the logic governing the relationship between the terms in the master hierarchy of the system and the revision of the structure on the basis of this updated logic.

In particular, while the first process was performed continuously on an ad hoc basis, considerable efforts were dedicated to the second process. The building logic of the system was checked for consistency with regard to the type and order of application of the implicit facets defining the single food groups. For different clusters of food groups a different logic was used. In some cases, the starting point was the source (animal or plant), which was then further detailed by applying different natures or treatments. In other cases, the starting point was the nature (type of food), which could then be further detailed by applying different sources and treatments or, in some other cases, the treatment was the priority for defining the structure of terms.

Another important finding arising from the initial use of FoodEx2 was that, quite often, a lack of information led to the use of generic terms. However, the available generic terms were mostly aggregated groups including foods of different nature. This was not an ideal situation in view of exposure assessments; therefore, the need for generic terms with improved homogeneity was considered and implemented in FoodEx2.

Taking into account the challenges just described, the possibility of applying a standardised logic to the construction of the structure of the classification was investigated.

After considering different options, a logic with good applicability across the system was identified. This logic gives priority, with regard to determining the food groups, to the 'type of food', expressed by the facet 'part-nature' (also referred to simply as 'nature'). For a specific nature-based food group, different food sub-groups can be identified depending on the source (e.g. a specific plant or animal).

Each of the food groups defined by 'nature' and 'source' may be further split into lower level sub-groups based on the application of different processes. This logical sequence is further explained in the sections describing the system.

The revision of the system resulted in the following sequence of actions:

- the revision of the 'process' facet;
- the revision of the 'part-nature' facet;
- the creation of generic food classification groups based on different natures, for use when information is missing;
- the definition of the relevance and order of applicability of different processes with regard to generating groups of processed derivatives;
- the re-ordering of the existing groups for processed food, based on the above definition, and the eventual addition of missing groups; in many areas, the groups were already organised as expected;
- fitting the existing detailed food groups into the defined skeleton of the revised structure; as above, many clusters of the structure did not require changes because they were already compliant with the defined logic;
- fitting the structures based on generic terms into the high-level aggregated structures in the different hierarchies.

FoodEx2 revision 2 replaces FoodEx2 revision1 (EFSA, 2011b).

3. The updated revision (revision 2) of FoodEx2

The revision of FoodEx2 aimed to exploit the principles defined for the system (EFSA, 2011a), while improving the ease of coding and the coverage of the different food items encountered in the use of the classification. During this process, some of the existing concepts were refined and a few additional concepts were proposed. The following sections explain the findings and proposals that have emerged from the revision process.

3.1. Additional concepts in FoodEx2 revision 2

While working on the implementation and refinement of FoodEx2, different aspects of the building logic of the system were considered and some new concepts (or clarification of existing concepts) were introduced into the system.

3.1.1. Input hierarchies versus output hierarchies

Hierarchies may be used to organise foods for data reporting (generation and storage of data in a database; these may be defined as input hierarchies) or for data analysis (grouping in meaningful classes when analysing the data and creating summary tables or documents; these may be defined as output hierarchies).

The needs of these two perspectives may be quite different; trying to unify them may not be advantageous. The analysis groups are driven by diverse needs depending on specific hazards or contexts (including regulatory frameworks). It would be advantageous if the list used for reporting data was systematic and objectively related to the nature of the food, and favoured the collection of rich, unambiguous detail. Additionally, the inheritance of the implicit facets requires a well-defined and homogeneous schema of relationships between the food groups.

When FoodEx2 introduced the concept of multiple hierarchies for different domains, there was more focus on a data analysis perspective; therefore, no hierarchy was built with a focus on the collection of data in a multi-domain environment or on the inheritance of facet descriptors.

While revising the system, adding the implicit facets and establishing their inheritance schema across the structure, the necessity to focus on data reporting and to create a systematic logic not conditioned by 'output' needs became evident. Therefore, a specific emphasis on the reporting structure (first of all, the 'master hierarchy' where the inheritance of the facets is defined) was deemed necessary. Based on the revised logic of the master hierarchy, a 'reporting hierarchy' was also conceived with the purpose of facilitating the collection of data with the correct coding and the appropriate level of detail in a multi-domain context, such as national databases, for example the collection of chemical occurrence data. The intention was not to change the role or status of specific input–output hierarchies, such as the exposure hierarchy, the zoonoses hierarchy or the pesticides hierarchy, but to provide an additional multi-domain support for data collection.

3.1.2. Raw commodities, derivatives and composite food

The concepts of raw commodities, derivatives and composite food have been embedded in FoodEx2 since the beginning. However, they were essentially managed as attributes allowing the types of food groups to be distinguished. The revision of the system using, as a starting point, the facet describing nature (F02, part-nature) distinguishes between raw commodities, derivatives and composites. The definition of these three classes is intuitive, but it is useful to formalise it. Table 3 provides the definition of these three types of food groups in FoodEx2.

Table 3: Principal types of food groups in FoodEx2 based on the nature of the included food items; heterogeneous hierarchy groups and facets are not considered here

Type of food group	Definition	State attribute (Statef)
Raw primary commodities (RPCs)	Pieces physically separated from a live source after harvesting (plants) or slaughtering (animals); the separation may also be less invasive, such as picking fruit or collecting milk or eggs. No 'process' changing the 'nature' has been applied. Processes assumed, in the context of this classification, not to change the nature of food (e.g. freezing) can be applied	r
RPC derivatives/ingredients	Food products obtained from raw commodities (or chemical/microbiological sources) by applying processes that change the 'nature' of food	d
Composite food	Food products obtained by more commodities and/or derivatives through processes that always involve recipes (association of different ingredients)	s, c

As shown in Table 3, these three types of food group represent three different levels in the food chain and involve an increased level of food processing, moving from raw commodities to derivatives to composite food. Therefore, processing (the complete facet process is reported in Table A2 of Appendix A) has a critical role in defining whether a specific food item should be considered a raw commodity, a derivative or a composite. The attribution of the different food groups to one of these categories is already included in the system. While the definitions of raw commodity and composite food are quite straight forward, the decision on which derivatives of raw commodities to have in the list, and which to simply describe with added facet descriptors, was more complex. The choice was made based on different considerations, since a unique objective rule to discriminate between derivatives requiring and those not requiring a separate group was not found. The objective was to guarantee a separate group to all food items often needing a separate evaluation or use, while keeping the system structure limited and manageable.

The simplest rule would be that any treatment changes the nature of a raw commodity and creates a derivative (this approach is centred on differences). However, this would require the creation of a very large number of derived food groups. As an example, 10 possible treatments would create 1 000 derivatives from only 100 raw commodities.

At the other extreme, an alternative solution would be not to create any derived food groups and to record all treatments as facets applied to the raw commodities (this approach is centred on the raw commodity).

Neither approach was considered optimal. The first approach would result in the system becoming too large, complex and difficult to use, and the second would result in important groups of derivatives or ingredients, commonly used in risk assessment or in recipes, not being present in the food list and, therefore, such groups would regularly need to be created ad hoc for data analysis. For this reason, an approach, based on identifying the most relevant treatments for creating new natures and creating specific food groups for derivatives based on only these treatments, was preferred.

The definition of the relevance of treatments was arbitrary, but based on food science and observations of the market. The aspects that were considered were an expected change in composition (subtraction, addition or chemical transformation of macro- or microcomponents), the traditional use by the consumer, and the usual distinction between products on the shelf at the point of sale. Additionally, the expected differences in chemical and microbiological contamination were also considered. Table 4 summarises the processes identified as the most relevant for changing the nature of foods from raw commodity to derivative/ingredient in some aggregated food groups, and the new natures (food groups, hierarchy branches) created by these processes in all the aggregated food groups where they apply.

Table 4: Processes identified as the most relevant in some aggregated food groups, and new natures (food groups, hierarchy branches) created by them. Most of the listed processes have a repetitive pattern of applicability across different major aggregated food groups

Code[(a)]	Process	Applied to	Leading to
A0CRH	Seasoning	Meat, milk	Sausages and other charcuterie products, cheese
A07KD	Curing	Meat, milk	Sausages and other charcuterie products, cheese
A0C6F	Ripening	Meat, milk	Sausages and other charcuterie products, cheese
A07JP	Preserving by salt	Vegetables, meat, fish, seafood	Salt preserves
A07JQ	Preserving by sugars	Fruit, chestnuts. Candying is included	Sugar preserves, candied materials and similar
A07KG	Drying (dehydration)	Meat, fish, seafood, milk, egg, vegetables, legumes, fruit. Spices and infusion materials are considered default	Dried food
A07JT	Marinating	Meat, fish, seafood	Marinated meat, fish or seafood
A07KC	Pickling	Vegetables	Pickled vegetables
A0CQZ	Fermentation	Milk, vegetables, meat	Fermented milk products, fermented vegetables, sausages and other charcuterie products, cheese
A0BYP	Canning/jarring	Vegetable, fruit, meat, fish, seafood	Preserves
A07JV	Smoking	Meat, fish, seafood	Smoked meat, fish or seafood

(a): FoodEx2 codes for the 'process' facet descriptors.

Table 5 shows other processes that have been identified as the most relevant for creating new natures in specific food groups, but these processes do not have a repetitive pattern of applicability across major aggregated food groups.

Table 5: Processes that have been identified as the most relevant in specific food groups and new natures (food groups, hierarchy branches) created by them

Code[(a)]	Process	Applied to	Leading to
A0C00	Winemaking	Grape and other fruits	Wine and similar
A0C01	Beer production	Malted cereals	Beer
A0C6E	Cheesemaking	Milk	Cheese
A07MH	Churning	Milk, cream	Butter
A0C02	Oil production	Oil fruits and oilseeds	Oils and fats
A0C03	Grain milling	Cereal grains and similar	Flours, groats, etc.
A0C0B	Grain milling—starch production	Cereal grains and similar starch sources	Starch
A0C04	Sugar production	Sugar plants	Sugar
A0C6N	Pulping/mashing	Fruit, vegetables	Fruit/vegetable purée
A07GG	Cooking in water	Eggs	Hardened egg products
A07GR	Frying	Potatoes	Fries, chips and other potato snacks
A07GX	Baking	Cereal milling products and other ingredients	Bakery products
A07GY	Roasting (baking with fat)	Potatoes	Roasted potatoes
A07HC	Toasting	Coffee beans	Toasted coffee
A07HJ	Caramelization/browning	Sugar	Caramel
A0CRL	Mixing	Creation of compound food	Recipes (composite food)
A07MA	Filling	Filled branches of unfilled bases	Filled pasta, filled bakery products
A07LF	Extrusion	Cereals, snack production	Extruded snacks and breakfast cereals
A07LG	Flaking	Cereals	Cereal flakes
A07LH	Flattening/rolling	Cereals	Rolled cereals

Code[(a)]	Process	Applied to	Leading to
A07LL	Puffing/expanding	Cereals	Puffed cereals
A0C0G	Gelling	Milk, water	Desserts, jellies
A07MF	Distillation	Fruits or sugary/starchy sources	Alcohol and related products
A0EJP	Separation (in liquid phase)	Milk	Cream
A07MK	Brewing/infusion	Infusion materials, cacao, coffee etc.	Hot drinks
A07LN	Juicing	Fruit, vegetables	Fruit and vegetable juices and nectars
A07MJ	Extraction	Meat, fish, yeast, infusion materials	Extracts
A07KF	Concentration/evaporation	Milk, juices from vegetable and fruit	Concentrates
A07ML	Crystallisation	Natural sources of purified ingredients	All 'purified ingredients' such as the protein- and carbohydrate-based ones, salt

(a): FoodEx2 codes for the 'process' facet descriptors.

3.1.3. Ranking of processes for reporting processed derivatives of raw commodities

As regards the practical use of FoodEx2, it is very often the case that more than one of the treatments listed in Table 4 is applied. Therefore, this gives rise to the question of which process-related food group to choose and which processes to add with facet descriptors. If, for example, a fish is smoked, marinated and canned, then three options would be possible, as follows:

1) choose the food group 'marinated fish' and add the facets 'smoking' and 'canning;
2) choose the food group 'smoked fish' and add the facets 'canning' and 'marinating';
3) choose the food group 'canned fish' and add the facets 'smoking' and 'marinating'.

The coding of the same food item could, therefore, be done in three different ways. In order to avoid such ambiguity, an order for the application of processes (i.e. an order of priority of the related food groups) was defined. This order is arbitrarily defined, based on considerations of frequency of reporting, perceptions of users and position at the point of sale. The sequence aims to keep distinctions between food groups considered relevant and with some common treatments.

The order is shown in decreasing priority (top-down approach) in Table 6, and is reflected in the processed/preserved sections of FoodEx2 with adaptations depending on the high-level food group (meat, vegetables, fish, etc.).

The choice of the food group used for coding is based on a top-down approach where the first applicable group, starting from the top and moving down, is used as the base term and any additional treatments are added as facet descriptors.

Based on this approach, the decision on the choice of groups is, in most cases, automatic. For example, pickled cucumbers in a glass jar belong to the group pickled vegetables and the jarring is added as a facet descriptor.

Canned haricots do not fall into any of the groups until the canned vegetables group is selected; therefore, they are coded in the canned vegetables group.

In the case of fish, marinated fish belongs to the marinated group, and if it is also packed or jarred, these are added as facet descriptors; as another example, smoked sprats in a can belong to the canned fish group and smoking is added as a facet descriptor.

Table 6: Top-down order of priorities for assigning processed/preserved food groups used when choosing the base term in cases where multiple treatments have been applied

Food group	Underlying processing	Priority
Purée/textured/structured XXXXX[a]	Cooking/blanching/separation of parts and mashing or structuring. Eventually associated to canning or packing	HIGH ↓
Marinated/pickled/fermented XXXXX	Marinating/pickling/fermenting and eventual canning or packing	↓
XXXXX in vinegar or brine	Pickling/marinating with acid/salt solution and eventual canning or packing	↓
XXXXX in alcohol or spirits	Preservation with alcohol and eventual canning or packing	↓
Salted XXXXX	Preserving by salt	↓
Candied or sugar-preserved XXXXX	Preserving by sugar	↓
Dried XXXXX	Drying	↓
Canned/jarred XXXXX	Packing in glass or can or equivalent closed package and thermal treating as needed for preservation	↓
Smoked XXXXX	Smoking	LOW

[a] XXXXX replaces the generic name of sections in the classification where the top-down approach applies (e.g. vegetables, meat, fish).

3.1.4. Ranking of composite food groups based on the 'major ingredient'

A situation similar to the one described in the previous section (presence of multiple treatments, each leading to a different nature = different food group) is also observed for composite food (food with recipes based on multiple characterising ingredients).

In composite food with multiple characterising ingredients, the different groups are defined by the concept of the principal characterising ingredient. However, while this concept is clear in all cases when one of the ingredients is clearly predominant, in practice a large proportion of recipes have many important ingredients in quantitative balance. When coding these food items, it is difficult to define the principal characterising ingredient and, therefore, to choose one food group based on it.

Therefore, it is important to have a rule supporting this choice to avoid, as much as possible, differences in interpretation in such uncertain cases. Setting a rule does not limit the information, because once a base term has been chosen the other important ingredients can be added as characterising ingredients.

A rule based on a defined criterion was therefore chosen to simplify the choice of the code through a top-down approach, as in the case of processed food. Obviously, the criterion is pragmatic and is based on nutrient source and interpreting the intention of the consumer responsible for the food choice. The scope for such an interpretation is large; some dishes are chosen as a source of proteins, some as sources of energy and some because they are a good source of minerals and vitamins. The highest priority was given to protein sources in their possible alternative forms, followed by sources of carbohydrates for energy and the lowest priority was given to other types of food. However, this prioritisation is not related to any nutritional judgement and is not in order of nutritional importance; it is not an evaluation of the level of importance of these nutrients.

In conclusion, for cases where the major ingredient of a composite is not clearly identified, a top-down priority approach for the choice of the base term was built into the food list, following the criteria listed in Table 7.

Table 7: Top-down order of priorities for the choice of food groups for composite dishes (and similar cases). This pre-defined order facilitates the choice of the base term in cases where there are multiple characterising ingredients, none of which has a clear predominance

Food group	Assumed intention when choosing the food	Priority

Meat based	Source of protein	HIGH ↓
Fish based	Alternative source of protein	↓
Cheese or dairy based	Source of protein and fat	↓
Egg based	Source of protein and fat	↓
Legume based	Source of protein and carbohydrates/energy	↓
Potato based	Source of carbohydrates/energy	↓
Cereal based	Source of carbohydrates/energy	↓
Fruit based	Source of micronutrients	↓
Vegetable based	Source of micronutrients	LOW

Table 7 is used top-down, as in the case of the order of the processes which create derivatives (Table 6). However, in this case, the evaluation is not based on an objective criterion (as it is when assessing for the presence or absence of a particular treatment). The coder should search from the top of the table and identify the first group that reasonably represents the possible intention of the consumer when choosing a specific dish. There is some scope for interpretation, but the order of priorities should be helpful. For example, a meat stew with potato is listed as a meat-based dish unless the potatoes are clearly quantitatively predominant. The classification of a portion of chilli con carne is largely dependent on the recipe, but the legumes are often quantitatively predominant. The two food groups of the example are already in the system, and have been assigned to a generic parent group in accordance with the top-down rule shown in Table 7.

3.1.5. The facets 'source', 'source-commodities' and 'ingredients'

The facets 'source', 'source-commodities' and 'ingredients' relate to the distinction of the different types of food presented in section 3.1.2. The 'part-nature' facet defines the generic types of food, answering the question 'what type of food is this?'. These additional facets represent the answer to the question 'from what has this food been obtained?'. As explained previously, the generic foods may be raw commodities, derivatives of raw commodities or composite foods. Depending on which of the three types of food referred to, one of the three facets describes what the specific food was obtained from; in particular, 'source' defines the origin of raw commodities, 'source-commodities' defines the origin of derivatives and 'ingredient' defines the origin of composite food. This relationship is described in Table 8.

Table 8: Facets describing the origin of the different types of food. These facets identify different specific groups within a generic parent group

Type of food	Facet describing the origin (what is it prepared from?)	Notes and examples
Raw commodities	Source	Raw commodities, such as roots and leaves, are derived from a live plant source; for example, beetroot is obtained from the *Beta vulgaris* plant
Derivatives of raw commodities	Source-commodities	Derivatives, e.g. flour and oil, are produced from a source that is normally a raw commodity (source raw commodity); for example, wheat flour is produced from wheat grain, while sunflower oil is produced from sunflower seeds
Composite food	Ingredients	Inside a defined composite group, such as salads or risotto, the characterising ingredients define different sub-groups; for example, seafood risotto is characterised by the ingredient 'seafood'

In general terms, depending on the type of food, only the correct facet, as described in Table 8, has to be used to describe the origin of a specific food group. Raw commodities are naturally related to the source facet and no alternative interpretations are possible. For derivatives, more attention has to be paid, because there is a natural 'cascade' mechanism: derivatives are produced from a raw

commodity and the raw commodity itself is produced from a live plant. For example, rice flour is produced from the rice grain by applying a milling process and the rice grain was produced from the rice plant (*Oryza sativa*). The cascade mechanism is always traceable within the logic of the system, but the relationship described in Table 8 (listing the **direct** source for each food type) must be respected. Therefore, for rice flour, the direct source is the rice grain, not the *Oryza sativa* plant. The same idea, with a further step, also applies to composite food. White bread is made from wheat flour, which is produced from wheat grains which are obtained from the wheat plant (*Triticum aestivum*). In this case, the correct facet for describing the origin is the ingredient and, therefore, the right descriptor is the wheat flour, not the wheat grain (as source raw commodity) or the *Triticum aestivum* plant (as source).

The logic explained above has already been applied to the detailed food groups, which have implicit facets describing their origins; the same logic must be applied when describing, from generic groups, those food groups not included in the food list.

3.1.6. Implicit facets and their order of application

The concept of implicit facets has already been defined in the report on Food classification and description system for exposure assessment (EFSA, 2011a). In the initial phase of testing the system, implicit facets were progressively included in the database. However, during the revision of FoodEx2, the implicit facets assumed a particularly important role. The implicit facets are the elements most related to the logic of the system. The more organised the logic of the system the more consequential the structure of the implicit facets. As anticipated in the methodologies section describing the revision process (section 2.2.2), the need for a defined order of application of the implicit facets was identified, and its implementation was pursued across the system. The facets involved in this process were those describing the nature and type of food (the part-nature facet), the origin of the food (the source, source-commodities and ingredients facets; see section 3.1.5) and the eventual particular processing of the food (the process facet) not implicitly included in the part-nature facet. The implicit facets are descriptors of the information implicated by the definition of a food group; therefore, they may also be seen as the elements defining the group in a kind of modular structure. They are the actual building blocks of the food list.

The progressive application of these facets in a specific order does not only build a single food group, but it actually builds a tree structure, i.e. the hierarchy of the food list. These 'building' facets and their order of application are shown in Table 9.

Table 9: Facets building the structure of the food list and their order of application

Order of application	Facet	Notes and examples
1	Part-nature	Facet describing the type of food. It builds the generic groups, such as **fish meat, cereal flour and soups**
2	Source	In the case of raw commodities, the addition of a source creates a more detailed 'child' of a generic 'parent' group. For example, adding the source *Salmo trutta* to the nature **fish meat** generates **trout meat**
	Source-commodities	In the case of derivatives, the addition of a source-commodities descriptor creates a more detailed 'child' of a generic 'parent' group. For example, adding the source raw commodity rye grain to the nature **cereal flour** generates **rye flour**
	Ingredients	In the case of composite food, the addition of one or more characterising ingredients creates a more detailed 'child' of a generic 'parent' group. For example, adding the characterising ingredient potato to the nature **soups** generates **potato soup**
3	Process xyz (eventual other)	In some cases, groups are present in FoodEx2 that are generated by further

Order of application	Facet	Notes and examples
		application of a process facet. For example, the addition of the treatment mincing to **pig muscle** (already including the nature 'muscle meat' and the source 'pig') generates **minced pig muscle**

This schema is applicable to all of the different types of raw commodities. In some cases, additional groups appear between the nature-related and the nature- and source-related groups. These groups are inherited from specific legislation or legacy from previous classifications. In most of these cases, the intermediate groups already refer to sources, but in aggregated form (i.e. they include groups of sources somehow related to each other). Examples of these intermediate groups include citrus fruit and stone fruit.

The same schema also applies to derivatives of raw commodities and composites; because of the peculiarities of the derivatives and composite food groups, the implementation may be slightly different depending on the group. The number and type of legacy terms from previous classifications is higher, particularly in the composite groups where the facet expressing the origin (the ingredient facet) is, in many cases, a weaker discriminator of groups. However, efforts have also been made in this area to follow, as much as possible, the following sequence: 'type of food' → 'from what' → 'which other treatments make the difference'.

3.1.7. The part-nature facet and generic food groups

The fundamental role of the 'part-nature' facet in the construction of FoodEx2 has already been explained in sections 2.2.2 and 3.1.2. This has a very important consequence by ensuring the presence of a series of generic terms, at a low level of aggregation, in the classification.

Quite often, in practice, very generic codes are used, such as 'Vegetables and vegetable products'. The usefulness of these generic aggregated groups in data analysis is limited. While in some specific areas a code of this type may be sufficient, because it is only necessary to discriminate different types of foods (e.g. vegetables and meat products), in general, a higher level of detail is needed. However, the use of such generic aggregated terms is found in areas where a higher level of detail is, in principle, needed. There are various possible reasons for using these terms. One very common reason for the use of generic aggregated terms is the lack of a generic term for use in cases where the optimal level of detail is unknown; for example, in cases where the type of food is known (e.g. a fruit) but the source (i.e. from which plant) is unknown. In a similar case, if the first available generic term (i.e. appearing on top of the different specific fruits in the hierarchy tree) is 'fruit and fruit products', then this becomes the only possible choice.

The revision of the part-nature facet, considering its role in generating the first step of the non-aggregated FoodEx2 structure (the part of the food list ideally common to different hierarchies) provide an important opportunity to improve the coding with regard to missing information on the source.

The food list terms generated by the implicit part-nature facet alone are still generic, but are, in general, much more precise than the aggregated terms found in the top levels of the hierarchies. Therefore, they provide a solution for coding food when the source facet is unknown without using hierarchy terms (those with Statef = H that should never be used). Table A1 in Appendix A shows the terms of the part-nature facet. For each of the 'natures', a generic term in the food list is also present.

3.1.8. Integrating lists from legislation

In different domains, ad hoc food lists are found in legislation, and different aspects of data analysis and reporting refer to these lists. One of the aims of FoodEx2 since the beginning was to integrate these food lists in the classification, in order to have a unique system serving different purposes. The regulatory food lists are, in general, domain specific and, depending on how much the logic of these lists differs from each other or from the basic logic of FoodEx2 (nature–origin–treatment, in a parent–child structure), the way in which they can be integrated differs.

Two possible approaches have been identified:

1) building the logic of the regulatory list into the system (or part of it);
2) creating a specific set of facet descriptors for a specific regulatory food list.

The first approach could be used in different cases; for example, for the list of products of plant and animal origin to which pesticide MRLs apply, for the categories of food for infants and young children, for the categories of fruit drinks and fruit spreads, for the broad groups of food additives and for the list of feed materials.

The second approach has been used, so far, in two cases: for the list of microbiological criteria from Commission Regulation (EC) No 2073/2005[15] and for the food categories linked to the conditions of use of authorised food additives from Regulation (EC) of the European Parliament and of the Council No 1333/2008[16].

The approach of using facet descriptors to tag a food entry with the correct regulatory category is, in several cases, necessary, in particular:

- when the levels of detail in the regulatory list are too high or too low with respect to the common terms in the FoodEx2 list (e.g. cheeses, butter and cream made from raw milk or milk that has undergone a lower heat treatment than pasteurisation, or fishery products from fish species associated with a large amount of histidine);
- when the criteria are negative, such as not having … or not containing … (FoodEx, in general, has the approach of describing, in the list terms, what the food has and not what the food does not have, e.g. fats and oils essentially free from water (excluding anhydrous milk fat) or unflavoured pasteurised cream (excluding reduced-fat creams));
- when the categories defined in the regulatory list span different nature-based categories in FoodEx2 (e.g. processed fish and fishery products including molluscs and crustaceans, or unprocessed fruit and vegetables);
- when some criteria are inherent to the single sample instead of the generic food category defined in FoodEx2 (e.g. ready-to-eat foods able to support the growth of *Listeria monocytogenes*, other than those intended for infants and for special medical purposes).

The use of the regulatory facet descriptor easily allows domain-specific information to be provided, while still defining the food group in the standard way for the purpose of information storage and retrieval from databases such as a data warehouse.

3.1.9. How to deal with minor ingredients added to raw commodities or derivatives

During the pilot use of the system, cases of raw commodities or derivatives of raw commodities to which ingredients (mostly flavouring or decoration ingredients) had been added in relatively small amounts were identified. Examples of these food products are salted peanuts, coated almonds, fresh meat with spices prepared for grilling and many other similar food items.

If the logic of the system is rigidly adhered to, the presence of ingredients indicates the presence of a composite food. Consequently, the presence of flavouring or decorative ingredients would need the creation of either a specific composite food group or a generic aggregated composite food group. The disadvantages of these approaches would be the growth of the number of food groups (in the case of specific composite groups) or the loss of detail (in the case of aggregated composite groups). Additionally, in many cases, the characteristics of the raw commodity or derivatives being monitored are not significantly influenced by such minor ingredients; therefore, it may not be advantageous to separate these food items from the original commodity or derivative.

In FoodEx2, a solution to this problem is achieved by extending the use of the ingredient facet to cover minor ingredients. Specific composite groups have not been created, unless they already existed in the previous versions of the system. Therefore, when a specific group implicitly including the minor

[15] Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs (text with EEA relevance. OJ L 338, 22.12.2005, p. 1.
[16] Regulation (EC) No 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives (text with EEA relevance). OJ L 354, 31.12.2008, p. 16.

ingredients is not available, the standard coding for raw commodities and their derivatives should be used for the choice of the base term for the raw commodity or derivative, and information on the minor ingredients should be added using the ingredient facet. A list of examples of cases where this 'minor ingredient' approach would apply is reported in Table 10.

Table 10: List (not exhaustive) of examples of food items where the 'minor ingredient' approach applies to raw commodities or derivatives of raw commodities when a specific food group is not present in the system

Food items or groups thereof	Notes
Salted nuts and seeds	
Sweetened nuts and seeds	
Chocolate-coated nuts, seeds, fruits	
Meat prepared with some oil or spices	For marinated products, a specific derivative group exists
Fish or seafood prepared with some oil or spices	For marinated products, a specific derivative group exists
Cheese (fresh or ripened) with herbs or spices	
Oil with herbs or spices	
Butter with herbs	
Liqueurs or vinegar with herbs in the bottle	
Sugar-coated nuts, seeds and similar	
Nut mixtures with some seeds or raisins	For heterogeneous (different natures) mixes, when a homogeneous (same nature) food group predominates, the approach applies
Flour with seeds	
Pieces of meat with a bacon or suet coating	Prepared for cooking

In this newly proposed approach, no information is lost, but it is not necessary to create additional food groups just for this need.

In conclusion, the ingredient facet should be used to describe the characterising ingredients of composite food groups and should not be used to describe the origin of raw commodities or derivatives. For raw commodities or derivatives of raw commodities, the use of the ingredient facet is only allowed to express and describe the presence of minor ingredients. Minor ingredients are, in this context, defined as ingredients added in very small proportions, mostly for flavouring and/or decoration purposes.

3.1.10. How to deal with mixed raw commodities or derivatives

Other types of food items that, during the pilot use of FoodEx2, gave rise to questions regarding coding were mixed raw commodities and derivatives. These food products are not generated by recipes and a preparation process, like a classic composite food, but they are simply mixed and reach the market (or the coding officer) in a mixed form. Following the logic of the system, the presence of multiple ingredients clearly defines a composite food. However, in practice, the 'recipe' of the composite is often unknown and even establishing a standard recipe is often impossible because the mixture components are in variable proportions. Examples include milk of mixed origin, collected in already mixed form at small farms (mainly for cheese production), mixed flours and bags of mixed and washed ready-to-eat salad.

The proposed solution to this type of problem was to extend the use of the source-commodities facet to include raw commodities and allow multiple instances of a source commodity in both raw commodities and derivatives thereof. Therefore, specific composite groups were not created, unless they already existed in the system. In all cases, when a specific group for mixed raw commodities or derivatives is not present, the standard way of coding mixed raw commodities or derivatives should be used for the choice of a generic base term for the raw commodity or derivative, and information on different components of the mixture should be added through the source-commodities facet. A list of cases (not exhaustive) where this 'mixed raw commodity/derivative' approach would apply is reported in Table 11.

Table 11: List (not exhaustive) of examples of food items where the 'mixed raw commodity/derivative' approach would apply when a specific food group is not present in the system

Food items or groups thereof	Notes
Mixed milk	For example, milk for different animal species collected in mixed form in one can
Mixed lettuce	The approach of multiple use of source-commodities facet descriptors for mixed food commodities/derivatives works well on commodities/derivatives of the same nature
Mixed beans	
Mixed flours	
Mixed grains	
Mixed breakfast cereals	
Mixed nuts	

By using this new approach, no information will be lost, but it is not necessary to create additional food groups just for this need.

In conclusion, the facet source-commodities is used to describe the commodity originating a derivative food group and should not be used to describe the origin of single raw commodities or of ingredients in composite groups. For mixed raw commodities or mixed derivatives of raw commodities, the multiple use of the source-commodities facet is allowed to express and describe the presence of different raw commodities or derivatives in a mixture of raw commodities or derivatives of the same generic nature.

In some cases, it might be necessary to apply both the 'minor ingredients' and the 'mixed raw commodities/derivatives' approaches. For example, this might be necessary when minor components of the mixture are of different natures and, in this case, the predominant homogeneous components can be described by the generic group and the multiple source raw commodities, and the components not falling under the same generic group can be referred to as minor ingredients. This double approach is applicable only if the components of different natures are practically negligible. In the case of a balanced heterogeneous mixture of different raw commodities/derivatives, this approach cannot be used. In such cases, the solution should be found on a case-by-case basis and it will be necessary to use the best-fitting composite groups, such as salads, dishes, etc. In such cases, the priority order indicated in section 3.1.4 should be taken into account.

3.1.11. Additional types of terms in the basic food list

The type of term in the basic food list is recorded by the 'Corex' attribute. The principal types in revision 1 of FoodEx2 were core terms ('C'), extended terms ('E') and hierarchy terms ('H'). In revision 2 of FoodEx2, two additional types have been added: generic terms ('M') and non-specific terms ('P'). Table 12 summarises all the values available for the Corex attribute of the food list terms.

Table 12: Different types of terms in the food list and their 'Corex' attribute

Corex code[a]	Name	Description
H	Hierarchy term	These terms represent aggregated groups and are used for browsing the system and for summarising data analysis results in the different food safety domains. These terms should not be used in data collection
C	Core term	These terms represent the minimum recommended level for coding during data collection. In each section of the food list tree, the target when collecting data is to code at or below the level of the core term elements
E	Extended term	These terms provide more detail than the core term elements
M	Generic term	These terms are, in general, only related to a food nature and not to a defined origin (i.e. source, source raw commodities or characterising ingredients). The use of these terms should be strictly

Corex code[a]	Name	Description
		limited to cases when more information is not available
P	Non-specific term	These terms are intermediate aggregated groups used to facilitate the navigation in complex parts of the food list. Their use should be limited to cases where the level of core terms cannot be reached and the non-specific terms provide more detail than the generic term

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list

The reason for adding the two new types of term (M and P) is related to the need to exclude the use of hierarchy terms while coding.

The food list was conceived with the aim of including the most common food groups found during data collection in the different domains. It is comprehensive but not exhaustive; therefore, less commonly reported food groups may not be included in the food list. In such cases, the rule is to choose the appropriate parent term and specify, with added facets, the descriptors making the difference; normally, in these cases, the generic facet descriptor 'other' should also be reported and more detail can be provided in free text fields. However, in the first revision of the system, this process implied the use of a hierarchy term ('H'). In this respect, the present updated revision offers a considerable improvement, by making generic nature-based terms available; these terms have a level of aggregation much lower than most of the hierarchy terms, so they are more useful during data analysis.

Assuming that at least the type of food is always understandable by observing the food sample, the generic terms allow a non-hierarchy term to be chosen in two particular cases:

1) when the details (e.g. the source) are not known by the coder and only the observation of the food sample may provide an indication (i.e. in cases where the generic facet 'unspecified' has to be used);

2) when the details are available to the coder, but the detailed term is missing in the food list (i.e. in cases when the generic facet 'other' has to be used).

The non-specific terms are found at many points of the food list. They principally cover the following two possibilities:

1) groups of 'others'—even if the concept of 'other' should be managed differently in data reporting, by using the generic facet, it may be that various 'other' groups are defined in different domain-specific lists contributing to FoodEx2, because they are used in data reporting or even in data collection for minor food items in a broader group;

2) intermediate groups between generic terms and core terms—they provide a better way of splitting groups while navigating the system or in data analysis.

The groups of others are in the system to ensure compatibility with specific domain lists, but their use is not normally recommended in data reporting. However, the intermediate groups between generic and core terms provide some more detail than the generic terms but do not reach the level of the core list; therefore, using these terms to describe terms missing from the list or to better define food items with missing information (unspecified) is positive, because, nevertheless, they provide more detail.

In the FoodEx2 browser tool (see section 4.1), the Corex attribute (type of term) is graphically represented by a shape and colour code, where core terms are represented by a red sphere (), extended terms by a green sphere (), generic terms by a white sphere (), non-specific terms by a yellow sphere (), hierarchy terms by a blue pyramid (), and facets and other service terms by a double orange pyramid (). For some facets (e.g. part-nature and process) with a multi-level structure, the hierarchy/core/extended term convention has been adopted, by analogy with the food list, to facilitate the identification of the aggregation level of the descriptors.

3.2. Elements of the system

The principal elements of FoodEx2 are the different hierarchies and facets. The hierarchies represent different views of the basic food list and include a base of common terms and specific hierarchy groups.

In revision 2 of FoodEx2, some of the hierarchies and facets were updated and a few new elements were added. These classification elements are briefly summarised in the following sections.

Overall, eight hierarchies are present in FoodEx2 revision 2, as follows:

- master hierarchy (entire terminology, for technical use only)
- reporting hierarchy
- exposure hierarchy
- pesticide residues hierarchy
- zoonoses hierarchy
- feed hierarchy
- veterinary drugs residues hierarchy
- botanicals hierarchy.

The 32 facets are:

- F01 source
- F02 part-nature (often referred to as Nature facet)
- F03 physical-state
- F04 ingredient
- F06 surrounding-medium
- F07 fat-content
- F08 sweetening-agent
- F09 fortification-agent
- F10 qualitative-info
- F11 alcohol-content
- F12 dough-mass
- F13 cooking-method (sub-set of F28 process; it is recommended to only use F28)
- F14 final-preparation (sub-set of F28 process; it is recommended to only use F28)
- F15 preservation-technique (sub-set of F28 process; it is recommended to only use F28)
- F16 structural-treatment (sub-set of F28 process; it is recommended to only use F28)
- F17 extent-of-cooking
- F18 packaging-format
- F19 packaging-material
- F20 part-consumed-analysed
- F21 production-method
- F22 preparation-production-place
- F23 target-consumer
- F24 intended-use

- F25 risky-ingredient (presence of ingredients with specific possible microbiological risk)
- F26 generic-term
- F27 source-commodities
- F28 process
- F29 purpose-of-raising
- F30 reproductive-level
- F31 animal-age-class
- F32 gender
- F33 legislative-classes.

3.2.1. Master hierarchy

The master hierarchy is the collection of the full terminology included in FoodEx2. Compared with revision 1 of the system, many new sections have been added, so that the structure of the master hierarchy has significantly changed. However, it should be noted that the master hierarchy has a purely technical role in the system and should never be used for coding; nevertheless, in the presently available browser tool it is visible, but ideally should be in the background and only become visible and accessible for maintenance purposes. Apart from including all the terms present in FoodEx2, the master hierarchy is also used to set the implicit facets, and is structured in a way that guarantees the inheritance of the implicit facets along the food list. The major sections present in the master hierarchy are shown in Table 13.

Table 13: Top-level sections organising the terms in the master hierarchy of FoodEx2

Section[a]	Description
All lists	Root of the terminology
Food (4 400 terms)	This section includes the structure of list terms related to food with the exclusion of the specific hierarchy terms valid only in single domains. In this section of the list, the implicit facets and their inheritance are set
Feed (684 terms)	This section includes the structure of list terms related to feed materials and compound feed
Natural sources (20 972 terms, out of which 3 139 are plants and 17 787 are animals, including the most common age classes for livestock; most of the animals (17 555) are fish and seafood)	This section includes animals, plants and similar organisms. Most of them (e.g. a very comprehensive list of fish) are food sources, while some are of interest in the broader food safety domain
Non-food matrices (27 terms)	This section includes food simulants for migration from food contact materials, environmental samples and biological non-food matrices
Groups for hierarchies (476 terms)	This section includes the hierarchy terms for the different domains that are not involved in the facet inheritance schema in the food section
Facets (1 618 terms)	This section includes the facet descriptors for those facets having their own descriptors and not taking descriptors from the basic food list

(a): The reported number of terms in the different sections was updated at the end of February 2015.

Focusing, in particular, on the **food** section, the 4 400 available terms include those describing the food group types summarised in section 3.1.11. The numbers of reportable basic list terms (core or extended terms as a first choice and generic or non-specific terms in particular cases if needed) are as follows:

- 1 342 core list terms
- 2 634 extended list terms
- 173 generic terms

- 162 non-specific terms
- 4 311 total reportable food terms.

In terms of raw commodities, derivatives of raw commodities and composites, as defined in section 3.1.2, the number of available terms in the food section of FoodEx2 are as follows:

- 2 303 terms for raw commodities
- 1 190 terms for derivatives of raw commodities/ingredients
- 885 terms for composite food.

A total of 22 groups in the food section are mixed groups, including both derivatives and composites. Out of these, only six are reportable (Corex flags other than 'H').

3.2.2. Reporting hierarchy

The reporting hierarchy is a data-input-oriented hierarchy; it should facilitate the choice of the code and identify the minimum level needed for using the data.

The reportable elements of the reporting hierarchy have, in general, a unique combination of facets starting with part-nature, then source, then process, then ingredient, etc. A defined building logic for the reporting groups is a key element for simplifying the use of the system. The reporting hierarchy includes sections for food, feed and non-food materials; it is, consequently, suitable for providing a single environment for most needs, while reporting chemical substances in food. Other food safety domains entail the use of specific hierarchies but it is possible, in most cases, to find the necessary entries in the reporting hierarchy. The reporting hierarchy consists of 5 107 terms, including hierarchy terms (91 terms) and reportable terms (5 016 terms for the different domains). In the food section, 4 396 terms are available; 4 311 of these terms are reportable, while the remaining 85 are aggregated hierarchy terms. The top-level elements of the reporting hierarchy are summarised in Table 14.

Table 14: Top-level terms in the reporting hierarchy of FoodEx2; the first two levels are shown

Code	Food group	Corex[a]	Statef[b]
A0B6Z	**Food**	**H**	**g**
A0EZF	Cereal grains and similar and primary derivatives thereof	H	g
A0EZV	Cereal dough-based products	H	g
A07XJ	Garden vegetables and primary derivatives thereof	H	g
A0EZG	Legume seeds and primary derivatives thereof	H	n
A0EZN	Fruit and primary derivatives thereof	H	g
A0EZH	Nuts and primary derivatives thereof	H	g
A015E	Oilseeds and oilfruits	H	r
A00ZS	Starchy roots and tubers	M	r
A010R	Sugar plants	H	r
A0EZM	Herbs, spices and similar	H	r
A0EZP	Fruit/vegetables/plant drinks, spreads and related products	H	g
A0EZS	Mammals and birds meat and products thereof	H	g
A0EZR	Fish meat and products thereof	H	g
A0EZQ	Seafood and products thereof	H	g
A0EZT	Terrestrial animals other than mammals and birds	H	r
A0BXZ	Milk and milk products (dairy)	H	d
A031E	Eggs and egg products	H	g
A03TD	Meat and dairy imitates	H	g
A0F0J	Water, water-based beverages and related ingredients	H	g
A0F0K	Ingredients for hot drinks and infusions	H	g
A03JZ	Hot drinks and similar (coffee, cocoa, tea and herbal drinks)	M	s
A03LZ	Alcoholic beverages	H	g
A04PE	Confectionery including chocolate	H	s
A03PV	Food products for young population	H	g
A03RR	Food for particular diets	H	s
A03VA	Composite dishes	H	c

Code	Food group	Corex[a]	Statef[b]
A042N	Seasoning, sauces and condiments	H	g
A0BXX	Isolated purified ingredients (including mineral or synthetic)	H	d
A0BB9	**Feed**	**H**	**g**
A0BBA	Cereal grains and products derived thereof (feed)	P	g
A0BEB	Oil seeds, oil fruits, and products derived thereof (feed)	P	g
A0BG2	Legume seeds and products derived thereof (feed)	P	g
A0BH7	Tubers, roots, and products derived thereof (feed)	P	g
A0BJL	Other seeds and fruits, and products derived thereof (feed)	P	d
A0BKT	Forages and roughage, and products derived thereof (feed)	P	g
A0BLK	Other plants, algae and products derived thereof (feed)	P	g
A0BM9	Milk products and products derived thereof (feed)	P	g
A0BMY	Land animal products and products derived thereof (feed)	P	g
A0BNJ	Fish, other aquatic animals and products derived thereof (feed)	P	g
A0BP4	Minerals and products derived thereof (feed)	P	d
A0BRA	Fermentation (by-)products from microorganisms the cells of which have been inactivated or killed (feed)	P	d
A0BRR	Miscellaneous (feed)	P	g
A0BT0	Compound feed	P	c
A0BYQ	**Non-food matrices**	**H**	**g**
A0BA7	Food simulants (Commission Regulation (EU) No 10/2011[c])	H	g
A0C5Z	Food contact materials	H	g
A0C5Y	Environment	H	g
A0C60	Non-food animal-related matrices	C	g

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list
(b): Statef is an attribute of each FoodEx2 term indicating the level of the food group represented by the term in the food chain (e.g. raw commodity, derivative etc.)
(c): Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food. OJ L 012, 15.1.2011, p.1

The table was updated at the end of February 2015.

3.2.3. Exposure hierarchy

The exposure hierarchy is an exposure-oriented hierarchy; it is designed to facilitate the grouping of food items for exposure calculations. It is also the preferred hierarchy for reporting consumption data.

The exposure hierarchy is linked to food consumption and, therefore, it includes only the food section. The exposure hierarchy consists of 4 445 terms, including hierarchy terms (134 terms) and reportable terms (4 311 terms). It is important to note that the reportable terms in the exposure hierarchy and in the reporting hierarchy are the same, thus allowing the direct use of the codes generated by the reporting hierarchy in exposure assessments.

The exposure hierarchy is structured in six levels with 21 groups at the top level. A spreadsheet showing the six levels for each of the entries in this hierarchy is available as an Appendix to this document ('Exposure_Hierarchy_revision2.xlsx') (see Table A5 in Appendix A)

The top-level elements of the exposure hierarchy are summarised in Table 15.

Table 15: Top-level terms in the exposure hierarchy of FoodEx2; the first level is shown

Code	Food group	Corex	Statef
A000J	Grains and grain-based products	H	g
A00FJ	Vegetables and vegetable products	H	g
A00ZR	Starchy roots or tubers and products thereof, sugar plants	H	g
A011X	Legumes, nuts, oilseeds and spices	H	g
A01BS	Fruit and fruit products	H	g
A01QR	Meat and meat products	H	r
A026T	Fish, seafood, amphibians, reptiles and invertebrates	H	g
A02LR	Milk and dairy products	H	g
A031E	Eggs and egg products	H	g
A032F	Sugar and similar, confectionery and water-based sweet desserts	H	g
A036M	Animal and vegetable fats and oils and primary derivatives thereof	H	g

Code	Food group	Corex	Statef
A039K	Fruit and vegetable juices and nectars (including concentrates)	H	g
A03DJ	Water and water-based beverages	H	g
A03LZ	Alcoholic beverages	H	g
A03GG	Coffee, cocoa, tea and infusions	H	g
A03PV	Food products for young population	H	g
A03RQ	Products for non-standard diets, food imitates and food supplements	H	g
A03VA	Composite dishes	H	c
A042N	Seasoning, sauces and condiments	H	g
A046L	Major isolated ingredients, additives, flavours, baking and processing aids	H	g
A0F0S	Other ingredients	H	r

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list
(b): Statef is an attribute of each FoodEx2 term indicating the level of the food group represented by the term in the food chain (e.g. raw commodity, derivative etc.)

The table was updated at the end of February 2015.

In connection with revision 2 of FoodEx2 and the introduction of several generic terms for reporting, a total of 140 food groups were removed from the hierarchy; some of these were groups of the type 'other …', which introduced unnecessary levels in the hierarchy tree, while others were groups which were incompatible with the presence of the new generic terms. For the terms removed from the exposure hierarchy, a mapping table is provided to allow them to be re-coded with existing codes. This mapping table is shown in the file 'Foodex2-revision2-Mapping_removed_exposure_groups.xlsx', provided as an Appendix to this report (see Table A5 in Appendix A).

The exposure hierarchy gained 1 524 new terms during the revision, seven of which are hierarchy terms and 1 517 of which are reportable terms. The list of these new terms is given in the file 'Foodex2-revision2-New_exposure_groups.xlsx', also provided as an Appendix to this report (see Table A5 in Appendix A).

3.2.4. Pesticide hierarchy

The pesticide hierarchy includes the groups and examples reported in Annex I to Commission Regulation (EU) No 752/2014. As for the revision 1 of FoodEx2, a parent group with the same pesticide code as the main product of each group was created; this group is the parent of the main product, as well as of the other products to which the same MRLs apply. Using this approach, the grouping defined in the Regulation is maintained, but the parent–child relationship (where the parent group includes the children) is respected. The parent groups have the name of the principal product followed by 'and similar-'.

The pesticide hierarchy consists of 1 802 terms; all the terms are reportable according to the rules established in the pesticide domain. However, the use of detailed terms when relevant information is available is also strongly encouraged in this domain. The top-level terms of the reporting hierarchy are summarised in Table 16.

Table 16: Top-level terms in the pesticide hierarchy of FoodEx2; the first two levels are shown

Code	Food group	Corex	Statef
A04HL	**Fruits, fresh or frozen; tree nuts**	**H**	**r**
A01BT	Citrus fruits	P	r
A014C	Tree nuts	M	r
A01DG	Pome fruits	P	r
A01GE	Stone fruits	P	r
A01DT	Berries and small fruits	P	r
A01HD	Miscellaneous fruits (generic)	P	r
A04JC	**Vegetables, fresh or frozen**	**H**	**r**
A04JD	Root and tuber vegetables	H	r
A00GX	Bulb vegetables	M	r
A00HN	Fruiting vegetables	M	r
A00FK	Brassica vegetables (excluding brassica roots and brassica baby leaf crops)	H	r
A04JE	Leaf vegetables, herbs and edible flowers	H	r
A0ESR	Legume vegetables fresh (p)	H	r

Code	Food group	Corex	Statef
A04JA	Stem vegetables	H	r
A00TC	Fungi, mosses and lichens	H	r
A00VA	Algae and prokaryotes organisms	M	r
A012R	**Pulses (dried legume seeds)**	**M**	**d**
A012S	Beans (dry) and similar-	C	d
A0DCE	Lentils (dry) and similar-	C	d
A0DCD	Peas (dry) and similar-	C	d
A0DCA	Lupins (dry) and similar-	C	d
A04HD	Other pulses	C	d
A015E	**Oilseeds and oilfruits**	**H**	**r**
A015F	Oilseeds	M	r
A016L	Oil fruits	M	r
A000L	**Cereal grains (and cereal-like grains)**	**M**	**r**
A0D9Y	Barley and similar-	C	r
A04KH	Buckwheat and other pseudo-cereals and similar-	C	r
A000S	Maize and similar-	C	r
A000Y	Common millet and similar-	C	r
A000F	Oat and similar-	C	r
A001C	Rice and similar-	C	r
A0D9R	Rye and similar-	C	r
A0D9Q	Sorghum and similar-	C	r
A001M	Wheat and similar-	C	r
A001Y	Other cereals	P	r
A04JF	**Tea, coffee, herbal infusion materials, cocoa and carobs**	**H**	**r**
A04KK	Teas and similar-	C	r
A0D9J	Coffee beans and similar-	C	r
A03JA	Herbal infusion materials (generic)	H	r
A0CZM	Cocoa beans and similar-	C	r
A0CZJ	Carobs and similar-	C	r
A0CZG	**Hops and similar-**	**H**	**r**
A00YZ	Hops	C	r
A016S	**Spices**	**H**	**r**
A017X	Seed spices	M	r
A018Q	Fruit spices	M	r
A019S	Bark spices	M	r
A019Z	Root and rhizome spices	M	r
A01AK	Bud spices	M	r
A01AQ	Flower pistil spices	P	r
A01AT	Aril spices	M	r
A010R	**Sugar plants**	**H**	**r**
A0CXQ	Sugar beet roots and similar-	C	r
A0CXP	Sugar canes and similar-	C	r
A0CXM	Chicory roots and similar-	C	r
A04HB	Other sugar plants	C	r
A04HM	**Products of animal origin—terrestrial animals**	**H**	**r**
A01QR	Meat and meat products	H	r
A02LT	Milk	M	r
A031F	Whole eggs	M	r
A0CVK	Honey and other apiculture products	H	r
A02KQ	Amphibians and reptiles	M	r
A04NM	Terrestrial invertebrates	H	r
A0CTX	Wild terrestrial vertebrate animals	H	r
A04HZ	**Products of animal origin—fish, fish products and any other marine and freshwater food products**	**H**	**g**
A0CTS	Crops or part of crops exclusively used for animal feed production	H	g
A0CTR	Processed food products	H	g

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list
(b): Statef is an attribute of each FoodEx2 term indicating the level of the food group represented by the term in the food chain (e.g. raw commodity, derivative etc.)
The table was updated at the end of February 2015.

3.2.5. Biological monitoring hierarchy and facet descriptors for microbiological criteria

The biological monitoring hierarchy (also referred to in the FoodEx2 browser as the zoonoses hierarchy) reflects, within the first level group 'meat and meat product', the animal species-based grouping defined in this domain, as in revision 1 of FoodEx2. The remaining food groups are organised as in the reporting hierarchy. The biological monitoring hierarchy includes 28 categories at the top level, 156 groups at the second level, 716 at the third level, 1 521 at the fourth level, 1 366 at level 5 and 775 in subsequent levels. A total of 4 562 groups or individual food items are available, including 254 hierarchy terms and 4 308 reportable terms.

The top-level elements of the biological monitoring hierarchy are summarised in Table 17.

Table 17: Top-level terms in the biological monitoring hierarchy of FoodEx2; the first level is shown

Code	Food group	Corex	Statef
A01QR	Meat and meat products	H	r
A0EZR	Fish meat and products thereof	H	g
A0EZQ	Seafood and products thereof	H	g
A0EZT	Terrestrial animals other than mammals and birds	H	r
A0BXZ	Milk and milk products (dairy)	H	d
A031E	Eggs and egg products	H	g
A03TD	Meat and dairy imitates	H	g
A0EZF	Cereal grains and similar and primary derivatives thereof	H	g
A0EZV	Cereal dough-based products	H	g
A07XJ	Garden vegetables and primary derivatives thereof	H	g
A0EZG	Legume seeds and primary derivatives thereof	H	n
A0EZN	Fruit and primary derivatives thereof	H	g
A0EZH	Nuts and primary derivatives thereof	H	g
A015E	Oilseeds and oilfruits	H	r
A00ZS	Starchy roots and tubers	M	r
A010R	Sugar plants	H	r
A0EZM	Herbs, spices and similar	H	r
A0EZP	Fruit/vegetables/plant drinks, spreads and related products	H	g
A0F0J	Water, water-based beverages and related ingredients	H	g
A0F0K	Ingredients for hot drinks and infusions	H	g
A03JZ	Hot drinks and similar (coffee, cocoa, tea and herbal drinks)	M	s
A03LZ	Alcoholic beverages	H	g
A04PE	Confectionery including chocolate	H	s
A03PV	Food products for young population	H	g
A03RR	Food for particular diets	H	s
A03VA	Composite dishes	H	c
A042N	Seasoning, sauces and condiments	H	g
A0BXX	Isolated purified ingredients (including mineral or synthetic)	H	d

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list
(b): Statef is an attribute of each FoodEx2 term indicating the level of the food group represented by the term in the food chain (e.g. raw commodity, derivative etc.)

The table was updated at the end of February 2015.

In addition to the specific grouping for meat and meat products, facet descriptors have also been included to cover the microbiological criteria of Commission Regulation (EC) No 2073/2005. These criteria have been inserted in a section of the facet 'legislative-classes'. The list of descriptors for the microbiological criteria present in revision 2 of FoodEx2 is given in Table 18.

Table 18: Facet descriptors for the microbiological criteria of Commission Regulation (EC) No 2073/2005 [1]

Code		Descriptor
A166D	MC-1.1	Ready-to-eat foods intended for infants and ready-to-eat foods for special medical purposes
A166C	MC-1.2	Ready-to-eat foods able to support the growth of *L. monocytogenes*, other than those intended for infants and for special medical purposes
A166B	MC-1.3	Ready-to-eat foods unable to support the growth of *L. monocytogenes*, other than those intended for infants and for special medical purposes
A166A	MC-1.4	Minced meat and meat preparations intended to be eaten raw
A165Z	MC-1.5	Minced meat and meat preparations made from poultry meat intended to be eaten cooked
A165Y	MC-1.6	Minced meat and meat preparations made from species other than poultry intended to be eaten cooked
A165X	MC-1.7	Mechanically separated meat (MSM)
A165V	MC-1.8	Meat products intended to be eaten raw, excluding products where the manufacturing process or the composition of the product will eliminate the salmonella risk
A165T	MC-1.9	Meat products made from poultry meat intended to be eaten cooked
A165S	MC-1.10	Gelatine and collagen
A165R	MC-1.11	Cheeses, butter and cream made from raw milk or milk that has undergone a lower heat treatment than pasteurisation
A165Q	MC-1.12	Milk powder and whey powder
A165P	MC-1.13	Ice cream, excluding products where the manufacturing process or the composition of the product will eliminate the salmonella risk
A165N	MC-1.14	Egg products, excluding products where the manufacturing process or the composition of the product will eliminate the salmonella risk
A165M	MC-1.15	Ready-to-eat foods containing raw egg, excluding products where the manufacturing process or the composition of the product will eliminate the salmonella risk
A165L	MC-1.16	Cooked crustaceans and molluscan shellfish
A165K	MC-1.17	Live bivalve molluscs and live echinoderms, tunicates and gastropods
A165J	MC-1.18	Sprouted seeds (ready-to-eat)
A165H	MC-1.19	Pre-cut fruit and vegetables (ready-to-eat)
A165G	MC-1.20	Unpasteurised fruit and vegetable juices (ready-to-eat)
A165F	MC-1.21	Cheeses, milk powder and whey powder, as referred to in the coagulase-positive staphylococci criteria in Chapter 2.2 of this Annex[1]
A165E	MC-1.22	Dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age
A165D	MC-1.23	Dried follow-on formulae
A165C	MC-1.24	Dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age
A165B	MC-1.25	Live bivalve molluscs and live echinoderms, tunicates and gastropods
A165A	MC-1.26	Fishery products from fish species associated with a high amount of histidine
A164Z	MC-1.27	Fishery products which have undergone enzyme maturation treatment in brine, manufactured from fish species associated with a high amount of histidine
A164Y	MC-1.27a	Fish sauce produced by fermentation of fishery products
A164X	MC-1.28	Fresh poultry meat
A164V	MC-1.29	Sprouts
A164T	MC-2.1.1	Carcases of cattle, sheep, goats and horses
A164S	MC-2.1.2	Carcases of pigs
A164R	MC-2.1.3	Carcases of cattle, sheep, goats and horses (Salmonella)
A164Q	MC-2.1.4	Carcases of pigs (Salmonella)
A164P	MC-2.1.5	Poultry carcases of broilers and turkeys
A164N	MC-2.1.6	Minced meat
A164M	MC-2.1.7	Mechanically separated meat (MSM)
A164L	MC-2.1.8	Meat preparations
A164K	MC-2.2.1	Pasteurised milk and other pasteurised liquid dairy products
A164J	MC-2.2.2	Cheeses made from milk or whey that has undergone heat treatment
A164H	MC-2.2.3	Cheeses made from raw milk
A164G	MC-2.2.4	Cheeses made from milk that has undergone a lower heat treatment than pasteurisation and ripened cheeses made from milk or whey that has undergone pasteurisation or a stronger heat treatment
A164F	MC-2.2.5	Unripened soft cheeses (fresh cheeses) made from milk or whey that has undergone pasteurisation or a stronger heat treatment

Code		Descriptor
A164E	MC-2.2.6	Butter and cream made from raw milk or milk that has undergone a lower heat treatment than pasteurisation
A164D	MC-2.2.7	Milk powder and whey powder
A164C	MC-2.2.8	Ice cream and frozen dairy desserts
A164B	MC-2.2.9	Dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age
A164A	MC-2.2.10	Dried follow-on formulae
A163Z	MC-2.2.11	Dried infant formulae and dried dietary foods for special medical purposes intended for infants below six months of age
A163Y	MC-2.3.1	Egg products
A163X	MC-2.4.1	Shelled and shucked products of cooked crustaceans and molluscan shellfish
A163V	MC-2.5.1	Pre-cut fruit and vegetables (ready-to-eat)
A163T	MC-2.5.2	Unpasteurised fruit and vegetable juices (ready-to-eat)

[1] Annex to Commission Regulation (EC) No 2073/2005
The table was updated at the end of February 2015.

The Biological monitoring hierarchy and the facets for microbiological criteria allow the coding of a broad variety of samples for the biological monitoring domain.

3.2.6. Veterinary drug residues hierarchy

The veterinary drug residues hierarchy is a new hierarchy that encompasses the groups used for recording data on residues of veterinary medicinal products. In this domain, the data always refer to a specific animal, but may range between food samples and non-food animal-related samples, such as biological samples or even feed samples, environmental samples or water used in farming. The hierarchy includes 17 categories at the top level, 59 groups at the second level, 168 at the third level, 258 at the fourth level, 128 at level 5 and 27 at level 6. A total of 659 groups for food and non-food matrices are present. In this context, only terms implicitly or explicitly containing a specific animal (or group of animals) source facet descriptors are reportable.

The top-level elements of the veterinary drug residues hierarchy are summarised in Table 19.

Table 19: Top-level terms in the veterinary drug residues hierarchy of FoodEx2; the first level is shown

Code	Food group	Corex	Statef
A0C60	Non-food animal-related matrices	C	g
A0EYH	Mammal and bird meat	M	r
A01TT	Animal fresh fat tissues	M	r
A0BY5	Animal mechanically separated meat (MSM)	M	r
A04MQ	Animal offals and other slaughtering products	H	r
A026V	Fish (meat)	M	r
A02EH	Fish offal	M	r
A02FD	Crustaceans	M	r
A02GM	Molluscs	M	r
A02GN	Sea-squirts and other tunicates	C	r
A02GP	Sea urchins and other echinoderms	C	r
A02GY	Jellyfishes and similar	C	r
A0EZT	Terrestrial animals other than mammals and birds	H	r
A02LT	Milk	M	r
A031F	Whole eggs	M	r
A031Q	Liquid egg products	H	d
A033J	Honey	C	r

(a): Corex is an attribute of each FoodEx2 term indicating the role of the term in the basic food list
(b): Statef is an attribute of each FoodEx2 term indicating the level of the food group represented by the term in the food chain (e.g. raw commodity, derivative etc.)

The table was updated at the end of February 2015.

During data analysis, the aggregation of results in this domain is performed at the level of animal species or group of species, at least for the groups defined in the applicable legislation or needed for

specific analysis. For this reason, in the case of terms not implicitly including a source facet, the addition of the source facet descriptor is mandatory. By contrast, the food groups with a suitable implicit source facet descriptor are reported only by the base term, because the implicit facets are already recorded in the system.

3.2.7. Botanicals hierarchy

The botanicals hierarchy is a new hierarchy created to support EFSA's compendium of botanicals reported to contain naturally occurring substances of possible concern for human health when used in food and food supplements (EFSA, 2012). Some of the plants included in this compendium are also food source plants, whereas some are not. In this hierarchy, the plants are listed according to the taxonomy groups referred to in the compendium. The names used for the food source plants are the commonly used names also recognised in other domains. However, the scientific names are aligned to those used for reference in the compendium. Therefore, the primary name to be considered in exports from this list is the scientific name.

The hierarchy is organised into two levels: level 1 (including the families) and level 2 (including the species or, in some cases, the genus). Overall, 212 families and 2 232 species/genera, are represented by a total of 2 444 terms. The families are listed by their scientific names and are organised alphabetically; within each family, the species/genera are organised according to the alphabetical order of their scientific names (even when the shown name is the common name).

3.2.8. Facet descriptors for food additives

Because of the peculiarities of the list of food groups for food additives in Regulation (EC) No 1333/2008, it was not possible to build a specific hierarchy for food additives aggregating groups in common with other domains. In some cases, this would have needed the creation of very detailed groups and, in other cases, it would have required a complex structure of base terms and facets. For this reason, as explained in section 3.1.8, a set of facet descriptors was created in the legislative-classes facet. The use of these facet descriptors allows a sample to be assigned to a specific group for the purpose of the food additives domain, while describing the food in the standard way (e.g. through the reporting hierarchy).

The list of descriptors for the domain of food additives in revision 2 of FoodEx2 is reported in Table A3 of Appendix A.

3.2.9. Applicability and cardinality of facets

FoodEx2 includes many facets. Not all of them are equally applicable to all terms and the use of some terms is only appropriate for a subset of possible base terms. For example, the age-classes facet (e.g. Adult mammal, Hatching egg, Day-old chick) or the reproductive-level facet (e.g. Grandparent breeding animal, Parent breeding animal, Animals not for breeding) can only be used for animals and do not make sense in different contexts.

Another important aspect related to the use of facets is the so-called 'cardinality' of facets. In simple terms, cardinality means, in this context, the number of descriptors of the same facet that can be applied to a single base term.

For both applicability and cardinality of the facets, general rules are defined and some exceptions are foreseen in particular approaches to coding, as explained in other sections of this report. Facet applicability and cardinality are summarised in Table 20.

Table 20: FoodEx2 facets, their cardinality and their normal applicability; some exceptions are indicated

Facet	Cardinality	Applicability
F01 Source	Single	Normally applicable to raw commodities but, in rare cases, also applicable to derivatives of raw commodities/ingredients or composite food to better specify single generic source commodity
F02 Part-nature	Single	All
F03 Physical-state	Single	All
F04 Ingredient	Repeatable	Normally applicable to composite. In the minor ingredient approach, also to raw commodities or derivatives of raw commodities/ingredients
F06 Surrounding-medium	Repeatable	All, but, in particular, to canned products or products packed in a close packaging
F07 Fat-content	Single	All
F08 Sweetening-agent	Repeatable	All
F09 Fortification-agent	Repeatable	All
F10 Qualitative-info	Repeatable	All
F11 Alcohol-content	Single	Alcoholic beverages
F12 Dough-Mass	Repeatable	Bread and fine bakery wares
F17 Extent-of-cooking	Repeatable	All (in particular, raw commodities and composite)
F18 Packaging-format	Repeatable	All
F19 Packaging-material	Repeatable	All
F20 Part-consumed-analysed	Repeatable	All
F21 Production-method	Repeatable	Animals, plants and their primary products
F22 Preparation-production-place	Single	All
F23 Target-consumer	Repeatable	All
F24 Intended-use	Single	All
F25 Risky-ingredient	Repeatable	Composite
F26 Generic-term	Single	All
F27 Source-commodities	Single (repeatable for mixed raw commodities or derivatives)	Normally to derivatives of raw commodities/ingredients. Also to raw commodities in the mixed raw commodities approach.
F28 Process	Repeatable	All
F29 Purpose-of-raising	Repeatable	Animals
F30 Reproductive-level	Single	Animals
F31 Animal-age-class	Single Repeatable	Animals and their primary products
F32 Gender	Single	Animals and their primary products
F33 Legislative-classes	Single for each sub-list; repeatable among sub-lists	All

The table refers to terms updated at the end of February 2015.

The applicability of the facets and their cardinality shall be taken into account while coding with FoodEx2. This is also true for the users of the present version of the FoodEx2 browser that does not implement any constraint in the generation of codes.

4. Tools supporting the use of FoodEx2

4.1. FoodEx2 browser

The food classification is a catalogue of groups/terms and a set of rules for its use; therefore, it can be distributed in the form of a database table or document. However, in the case of a comprehensive system like FoodEx2, it is recommended that tools are developed to create an easy interface for the system. A browser for navigating the structures of FoodEx2 and creating the complex code of a food item was developed by EFSA (Data Unit). It was developed in Java. This tool is used 'as is' at user's own risk and no guarantee is provided regarding its functioning or maintenance.

This tool has been used by most of the individual scientists working on FoodEx2 during the different pilot projects and it has proved very useful; however, the software only has basic functionalities (navigating the system and composing a code with base term and facets).

This browser, together with the related database containing the terminology and a short instruction for use, is freely available on the EFSA website; specifically, on the DATA Unit webpage on food classification[17].

The further development of this tool was suggested by users of FoodEx2 in the MS organisations providing data to EFSA. The main points for improvement were identified as follows:

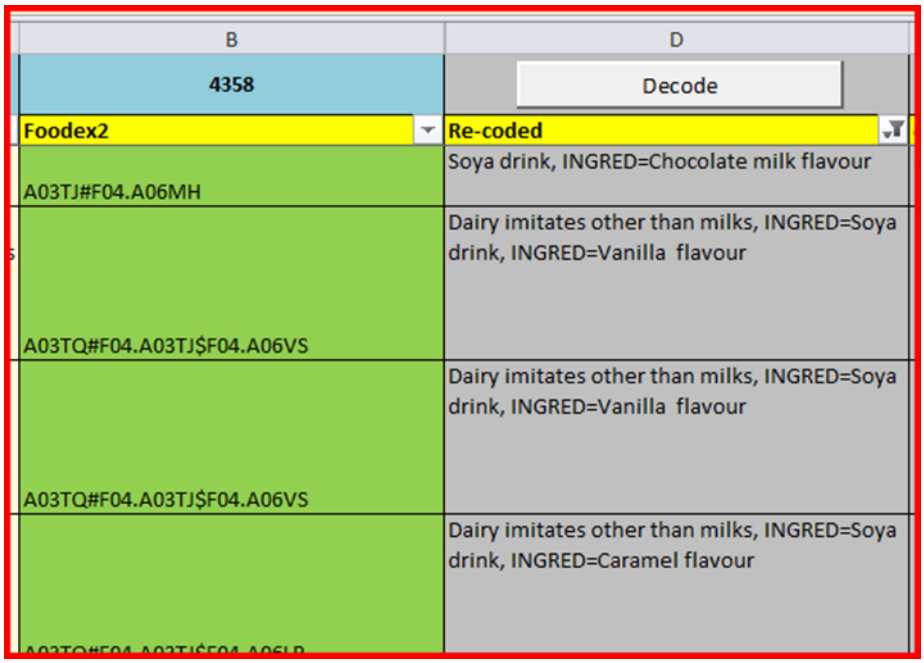
1) to extend the search function to any position in any text string and indicate where the string was found;
2) to improve the scope notes; in particular, provide hyperlinks to web-pages and pictures and make the scope notes available in the describe function;
3) to show the header and the description of the facets in the describe function;
4) to implement a real-time check of the quality of the code in the describe function of the tool;
5) to allow multiple choices of facet descriptors in one go (for facets allowing multiple instances);
6) to record the last position and settings after closing then re-opening the browser;
7) to enhance the speed of the tool (in particular before a significant increase in the number of terms);
8) to allow the creation of a database of pre-coded terms and introduce a lookup-type suggestion function when describing a new food.

The above-listed improvements will be considered in future development of the FoodEx2 browser.

4.2. Interpreting the code and checking

The code of each FoodEx2 term is a simple alphanumeric code without any particular meaning; being a code-based system, FoodEx2 is also language independent. The same FoodEx2 code, having the same meaning with respect to the represented food group, may be expressed in words in different ways depending on the language and the local traditions. The use of codes provides clear improvements in terms of flexibility, but the code of any FoodEx2 term does not provide any information about the term it refers to, even to a data manager familiar with FoodEx2. Therefore, in every case when a FoodEx2 code is evaluated (e.g. for quality check of coding), the complex codes of FoodEx2 have to be translated into a form interpreted using human language. A Microsoft Excel® spreadsheet has been developed by EFSA (DATA Unit) to perform this task; the spreadsheet translates a column of FoodEx2 codes into another column of base terms and added facets, described using the standard English names of the terms in FoodEx2. A snapshot of the tool is shown in Figure 1.

[17] Available online at http://www.efsa.europa.eu/en/datex/datexfoodclass.htm



B	D
4358	Decode
Foodex2	Re-coded
A03TJ#F04.A06MH	Soya drink, INGRED=Chocolate milk flavour
A03TQ#F04.A03TJ$F04.A06VS	Dairy imitates other than milks, INGRED=Soya drink, INGRED=Vanilla flavour
A03TQ#F04.A03TJ$F04.A06VS	Dairy imitates other than milks, INGRED=Soya drink, INGRED=Vanilla flavour
[illegible]	Dairy imitates other than milks, INGRED=Soya drink, INGRED=Caramel flavour

Figure 1: Snapshot of the spreadsheet tool interpreting FoodEx2 codes using the standard English names of the terms in FoodEx2

The tool has been tested in pilot projects and has proven to be very useful when managing FoodEx2 codes. A basic set of rules has also been implemented in the tool, which warns the user when commonly found coding mistakes are possibly present. The decoding and checking tool may significantly help to reduce the possibility of miscoding in FoodEx2.

The tool for interpreting the code and checking is provided in the file 'FoodEx2-InterpretingAndCheckingTool-2015-04-27.xlsm', provided as an Appendix to this report (see Table A5 in Appendix A)

5. Guidance for the use of FoodEx2

FoodEx2 looks complicated, because of the comprehensiveness of the catalogue, the flexibility in the use of the system and the broad scope of this classification, but getting familiar with it and using it properly is easy.

It is sufficient to understand its structure and logic and learn a few rules for its use. The purpose of the following sections is to provide the user of FoodEx2 with the information needed to become operative with minimal effort.

5.1. Fundamental definitions to learn and keep in mind

A few definitions described in the following sections (5.1.1-5.1.7) are the common basis for the use of FoodEx2. A shared knowledge of these elements is crucial for the harmonised understanding and use of the system.

5.1.1. Code for the FoodEx2 elements (terms)

Every element in the FoodEx2 terminology has a unique five-character alphanumeric code; the code has no particular meaning. Apart from an initial set of previously assigned codes, where the last digit could be a number or a letter, every code now starts with a letter, ends with a letter and has letters or numbers in the middle; for example:

A032J

This code (it is the code for 'White sugar') is unique because no other element within the FoodEx2 terminology will have the same code; the code of any element is expected to remain the same during the life of the food classification. The code is the 'name' of the food group or facet descriptor and will remain unchanged in the possible different adaptations and national versions of FoodEx2.

5.1.2. List terms—base terms

FoodEx2 includes two types of terms (i.e. records in the FoodEx2 terminology): list terms and facet descriptors.

List terms are terms defining a food group, or, in a broader sense, taking into account the expanded scope of FoodEx2, a defined matrix for data reported in the food safety domain. For the sake of simplicity, we will discuss only food groups from now on. **List terms** are the food groups appearing in the tree structure of the different hierarchies and may have different levels of aggregation. Depending on the scope of the groups, they may be reportable or not; in other words, some list terms are suitable for describing a food item, while coding data and other list terms are only suitable for browsing a hierarchy or creating a summary table for data analysis. The list terms that can be used to describe a food item are the **base terms**, because these can form the basis of a more detailed and complex FoodEx2 code for data reporting.

List terms are, in general, represented by a code as shown in the previous section; for example:

A0C75 (salmon)

Facet descriptors are elements of additional information that can be included in or added to the base terms; they are described in the next section.

5.1.3. Facets and facet descriptors

Facets are collections of descriptors, each providing different options to describe a particular aspect of a food group, such as treatments received, production method, fat content, qualitative information, etc.

Depending on the facet, a food group may have different facet descriptors for the same facet (e.g. different processes all applied to the same food) or may allow only one facet descriptor for a determined facet (e.g. the fat content may be one value or another, but only one for a given food sample). Facets descriptors may have two roles in the system, as follows:

1) implicit facets (they are known as such among FoodEx2 users but are, more precisely, implicit facet descriptors);
2) added facets (known as, more precisely, added facet descriptors).

Implicit facets are facet descriptors that always apply to a specific food group. They are already assigned in FoodEx2 and the user coding a food item does not need to enter them. As a rule, it is suggested that users **never report implicit facets in coded datasets,** because they can easily be added at the time of data analysis if needed.

Added facets are facet descriptors added to a code while coding a food item; they describe a characteristic of a specific food item, making it slightly different from others within the same food group as defined by the chosen base term.

Both types of facet are reported with the same syntax; the code includes a header defining the facet (in the form 'Fxx.') and a unique term code defining the descriptor. An example of a code for a facet is:

F04.A032J

In this example, 'F04.' means that the descriptor refers to the ingredient facet and 'A032J' refers to white sugar; therefore, the code is translated as 'ingredient = white sugar'.

Facets are never reported alone; they are always added to a base term in a complex code, as explained in the next section.

5.1.4. FoodEx2 code

The FoodEx2 code includes different pieces of coded information in a single string. It corresponds to the type 'compound data element' in the SSD2 (EFSA, 2013). The elements of the string have a defined order and number of characters; therefore, the string can be easily parsed and converted to the list of elements that constitute it.

The FoodEx2 code consists of a code for a base term (mandatory, otherwise the code is not valid) followed (optionally) by a hash character '#' and a sequence of facet codes, added at the coder's discretion (facultative) as described in section 5.1.3, separated by dollar characters ('$'). The number of added facet descriptors is, in principle, not limited; however, for practical purposes, only facets allowing a better definition of a sub-group within a food group should be added. The order of the facets after the hash character is also not rigidly defined. However, it is suggested that facets added after the hash are added alphabetically in increasing order of the headers (e.g. F03., F04., F27., F28., etc.). A typical FoodEx2 code looks like this:

A03BG#F09.A0EXH$F10.A077L$F21.A07SE

The '$' character is used only to separate facets and is not present at the end of the code. The recorded information is, in this case, rather detailed, as follows: 'nectar, orange, FORTIFICATION AGENT=Calcium, QUALITATIVE INFO=Sugar free, PRODUCTION METHOD=Organic production'. In other cases, a much simpler code might be used; for example:

A03BG

This code translates as 'nectar, orange' without any further detail. Whatever the length of the code is, it should be kept in mind that **spaces are not allowed in the FoodEx2 code**. The principal reason for this requirement is to allow the automatic management of information in the code. For the same reason, the coder is asked to always choose the best code and never to propose an alternative code in the same string, as follows: **only one FoodEx2 code can be recorded in the relevant field of the database when reporting data**.

If the coder wants to propose an alternative code, it has to be recorded in a text field of the relevant database, but should never be mixed with the chosen code (e.g. code A/code B).

While a code with only a base term is valid and may be quite common, a FoodEx2 code without a base term is not valid.

5.1.5. Raw commodities

Raw commodities are identified by the Statef flag 'r' and represent distinct parts of defined natural sources (see section 3.1.2). They are indicated as 'raw primary commodities (RPC)' in the FoodEx2 browser tool. These food groups have an implicit part-nature facet descriptor and (for detailed elements) an implicit source facet descriptor. When considering raw commodities, the coder should first of all consider the unprocessed 'raw' material, and then consider the fact that only some treatments can be applied to the raw commodities with the FoodEx2 code, namely those for which a specific derivative group has not been created in the system, in accordance with the building rules explained in section 3.1.2.

5.1.6. Derivatives of raw commodities (processed commodities)

Derivatives of raw commodities and other ingredients are identified by the Statef flag 'd' and are obtained from raw commodities or chemical/microbiological sources through specific processes (see section 3.1.2). They are indicated as 'RPC derivatives/ingredients' in the FoodEx2 browser tool. These food groups have an implicit part-nature facet descriptor and (in most cases, for detailed elements) an implicit source-commodities facet descriptor. The coder should consider this type of term in case of ingredients, without a recipe (non-composite), and in cases where products are obtained from raw commodities by applying one of the treatments listed in Table 4 (section 3.1.2).

5.1.7. Composite food

Composite food groups are identified by the Statef flags 's' or 'c' and are obtained through processes involving the association of different ingredients (see section 3.1.2). They are indicated as 'composite food simple' or 'composite food aggregated' in the FoodEx2 browser tool. These food groups have an implicit nature facet descriptor and, in many cases, a few implicit ingredient facet descriptors. The coder should consider this type of term in all cases where a recipe with different ingredients (generally ingredients of different natures) is available for a food. It should also be also considered that, in the case of minor ingredients (see section 3.1.9) or in cases of mixtures of raw commodities or derivatives of the same nature (see section 3.1.10), a simplified approach that does not consider a composite group is proposed as standard.

5.2. Never use hierarchy terms

After describing some fundamental definitions and rules, a set of instructions and tips for the use of FoodEx2 will be listed in the following sections.

The principal rule for using FoodEx2 is to

Never use hierarchy terms (blue pyramids in the browser tool)

The system is designed to collect the available and useful information about a food consumed or a sample analysed. Using aggregated hierarchy list terms has a number of disadvantages, as follows:

- the information on a specific sample is mixed with that from other samples which are quite different in nature;
- the level of detail for data analysis becomes very poor;
- no specific conclusions on the analysis of hazards or exposure can be drawn;
- aggregated groups are not equally recognised in different domains and, therefore, the possibility of performing analyses across different databases is reduced or excluded.

The need to choose detailed terms has to be communicated along the chain of data collection by the organisations responsible for collecting data. In fact, FoodEx2 coding should start at the level of the first recording of the information. Many problems with aggregated groups derive from the fact that, practically, FoodEx2 coding is often a **re-coding of pre-existing information**. If the primary system used to record the information was not equivalent to or better than FoodEx2 in terms of its capability to capture details, information will be lost at this stage. In revision 1 of FoodEx2, many nature-based generic terms were missing and sometimes the lack of information forced the use of hierarchy terms. Now that appropriate generic terms are available across the entire system, the need

for hierarchy terms is expected to be reduced to only very rare cases, provided that the information has not been lost previously. In these rare cases, it is suggested that hierarchy terms from the exposure hierarchy are used, in order to maintain compatibility with food consumption data. These rules apply, first of all, to all data collections linked to exposure assessment; however, a good description of the samples is generally desirable in all food safety domains.

Based on what was discussed in the previous paragraph, the following general strategic tip is proposed:

At the initial point where the food is recorded, either FoodEx2 or another system with the same or higher level of detail should be used

This would prevent the loss of information with respect to the level of performance of FoodEx2. Ideally, the data collection system should progressively reach the point where hierarchy terms are no longer accepted by the data collection interface, as in the case of EFSA's Data Collection Framework.

5.3. Get a good knowledge of the system

The use of FoodEx2 is not difficult, but coding is always based on a choice made by a person and is not an automatic process. Therefore, another important rule to follow is:

Know the system before using it

Before using FoodEx2, the coder should navigate through the hierarchy that will be used (in most cases, the reporting or the exposure hierarchy) and become familiar with it, in order to have an idea of what is there and where it is with a reasonable degree of approximation. This document will help the user to understand FoodEx2, but such exploring of the classification will provide even more familiarity. It is not necessary to know the system by heart, but the coder should reach the point where he/she knows that there must be a group for a specific food item and it should be, more or less, in a defined area of the tree. The same also applies to facets and facet descriptors. Only relying on textual searches or stopping at the first random finding may lead to inappropriate choices.

5.4. Choose the right starting point

The crucial choice when coding in FoodEx2 is the choice of the base term, the starting point for describing the food (e.g. the term on which to use the describe function of the browser).

Selecting the correct base term guarantees, to a large extent, a good code. As previously mentioned, in many cases, a simple base term is a sufficient code and once the base term is there, looking at which facets to add is a relatively easy task. Therefore, the initial decision is whether to select a raw commodity, a derivative or a composite food as a base term. The difference between the three types of groups has already been explained; in the next three sections, these concepts will be further discussed with some practical examples. Therefore, the first important question to address when considering a food sample is:

What type of food is this?

As already mentioned, this question refers to the nature of the food itself and should never be confused with the question of its origin. Clearly, a large number of food items are derived from agriculture or animal husbandry but, with regard to FoodEx2 classification, the question relates to whether a specific sample can be considered a raw commodity or as a derivative or a composite food. The criteria which should be considered when making this decision are described in section 3.2.1 and are further mentioned in sections 5.1.5, 5.1.6 and 5.1.7.

5.4.1. Raw commodities as a base term

A raw commodity base term must be chosen in all cases where the product is a primary, unprocessed product from agriculture or animal husbandry. Typical examples of raw commodities are those listed in Table 21. For agricultural products normally available in both fresh and dried forms, the fresh form is considered the raw commodity, while the dried form is considered a derivative; this applies to herbs, legumes and similar products. However, in the case of agricultural products which are usually imported in a dry or semi-dry form, such as spices, it was decided that it would be preferable to avoid creating a code for the fresh instance of the product (rare) and another code for the dried one (the

most common form). Spices are, therefore, considered raw commodities irrespective of the degree of drying. The actual status should be reported if it is not the standard one. Since most spices have been subjected to a process of drying, if they are fresh the facet '**F28.A0C0S** unprocessed' should be reported. The same approach also applies to infusion materials such as tea or rooibos.

Table 21: Non-exhaustive list of examples of food groups considered raw commodities in FoodEx2

Code	Food group
A00KR	Leafy vegetables
A00KY	Head lettuces
A00FV	Brussels sprouts
A00YH	Sage
A00FR	Cauliflowers
A010V	Sugar canes
A001K	Rye grain
A014H	Cashew nuts
A0BAL	Kidney bean (fresh seeds)
A015N	Turnip rape seeds
A01CS	Blood oranges
A01GN	Nectarines
A01EL	Youngberries
A0CGD	Guavas
A00QH	Carrots
A01AC	Turmeric roots
A00TG	Ceps
A00VC	Wakame
A00VP	Spirulina
A0CVG	Royal jelly
A031H	Duck eggs
A01AR	Saffron
A0CVS	Elk milk
A04HG	Cattle milk
A020Y	Bovine tail
A01YC	Goose liver
A01VA	Pig fat tissue
A0FCG	Giant river prawn
A02EL	Cod liver
A02DX	Tuna
A0FAX	Dentex
A01SP	Chicken fresh meat
A01QV	Bovine muscle
A04AV	Goat, minced meat

The table refers to terms updated at the end of February 2015.

Treatments that do not create a new nature can be applied (added facets) to raw commodities base terms, but **only those that do not create a new derivative nature** (as explained in section 3.1.2). A list of process descriptors that are normally applied directly to a raw commodity, without referring to a new derivative nature, is provided in Table 22. The list intends to cover the most common ones and is not exhaustive. Only in rare cases does a specific group applying one of these processes exist (mostly as a result of a legacy of food groups which have not been removed from the system); for example, for potatoes a specific group exists for boiled potato and baked potato. The generic process descriptors processed, preserved and semi-preserved do not refer to a specific process; therefore, they are not considered.

Table 22: Examples of processes normally directly applied to the raw commodity; specific derivative groups have generally not been created for them

Code	Process facet descriptors	Exceptions (where a derivative group exists)
A07KS, A07KT, A07KV, A07KX, A07KY, A07KZ, A07LA, A0C6N	Physical division/dimension reduction (and child descriptors) portioning, slicing, dicing and stripe-cutting, mincing/chopping/cutting, grating, grinding/milling/crushing, pulping/mashing	Some groups exist for minced meat. Milling associated with separation processes creates grain derivatives; however, specific grain milling descriptors are applicable instead. Mashing, associated with separating parts and eventual cooking, leads to purée groups existing in some groups of derivatives of plant origin
A07JB, A0BZG, A0BZL, A07JE, A07JF, A07JG, A07JH, A07JC, A07JD, A07JJ, A0CSQ	Physical decontamination treatment, aspiration, desliming, cleaning, brushing, washing, centrifugal cleaning, high pressure treating (pascalisation), microfiltering, irradiation, surface treatment with sanitising agents	
A07KN, A07KP, A07KQ, A07KR	Lowering temperature, chilling, freezing, individually quick frozen (IQF) freezing (flash/blast freezing)	
A07HR, A07HT, A07HV, A07HX, A07HY, A07HZ, A07JA	Thermal treatment (heating for preservation), low pasteurisation (thermisation), pasteurisation, high pasteurisation (extending shelf life), UHT, statical sterilisation (in batch or package), hot-filling	
A0BA1	Cooking and similar thermal preparation processes (including all the child processes, with some exceptions)	Frying/roasting for potatoes creates new derivatives; cooking eggs creates new derivatives; caramelisation/browning creates derivatives, e.g. in sugar and milk
A0BYN	Aseptic filling	
A07JK	Vacuum-packing	
A07HK	Breading	
A07HL	Battering	
A07HM	Glazing/icing	
A07HN	Sugar coating	
A07HP	Chocolate coating	
A07HQ	Nut coating	

The table refers to terms updated at the end of February 2015.

5.4.2. Derivatives of raw commodities as a base term

An RPC derivative/ingredient base term should be chosen in all cases where a product is obtained from a raw commodity using one of the processes that creates a new derivative/ingredient nature; these processes are listed in Tables 4 and 5 in section 3.2.1. The choice of a derivative/ingredient group already implicitly refers to the treatment, so this need not be mentioned in the code. Additional treatments may be added as well as other facets. Typical examples of derivatives/ingredients are listed in Table 23.

Table 23: Non-exhaustive list of examples of food groups considered raw primary commodities derivatives/ingredients in FoodEx2

Code	Food group
A019K	Chilli pepper, dried
A065N	Barley groats
A002Q	Maize flour
A004D	Chapatti flour
A00DR	Rice, popped
A00ZD	Tomato purée
A00ZK	Sauerkraut
A011D	Potato flakes
A013H	Broad beans (dry)
A01BD	Canned or jarred lentils
A017J	Rosemary, dry
A0F0M	Nut/seeds paste/emulsion/mass
A01BN	Peanut butter
A03AM	Juice, orange
A03BY	Juice concentrate, grape
A03GN	Coffee, ground, roasted
A03GR	Instant coffee powder, decaffeinated
A022S	Cured seasoned pork meat
A023N	Pastrami, pork
A022L	Animal meat dried
A02JS	Cod, dried
A0EYT	Salt-preserved fish
A02KG	Smoked herring
A02NJ	Yoghurt, sheep milk
A02QE	Cheese
A031Y	Hen egg yolk, dried
A03MY	Wine, rosé
A036N	Vegetable fats and oils, edible
A032T	Fructose
A034C	Corn syrup
A011F	Potato starch
A0EXR	Vitamin B7 (Biotin)
A0EVV	Omega-3 fatty acids
A048V	Enzymes for food manufacture

The table refers to terms updated at the end of February 2015.

5.4.3. Composite food as a base term

A composite food base term should be considered in all cases where a product is obtained by combining different ingredients using a recipe and a preparation process.

If the process produces changes in the initial ingredients, the product is always reported as a composite.

If the process simply involves mixing the ingredients, without additional significant processes, then a decision must be made regarding whether or not to use the mixed commodities/ingredients approach described in section 3.1.10, using the following criteria:

- A **mixture of raw commodities or ingredients** of the **same nature** should be coded as a raw commodity or derivative, respectively, using a generic base term (not origin-related). The components of the mixture can then be provided by using **multiple instances of the source-commodities facet** (as many instances as there are components). Examples include mixed milks, mixed leafy vegetables, mixed nuts and mixed minced meat.
- A **mixture of raw commodities or derivatives substantially of the same nature**, with one or two components of a different nature but clearly in minor amounts, is coded as in the previous case as a raw commodity or derivative, respectively, using a generic base term and

by specifying the components of the same nature with the **source-commodity facet**; the 'foreign' component(s) are also specified, but using the **ingredient** facet (in accordance with the minor ingredients approach explained in section 3.1.9). Examples include mixed leafy vegetables with some carrots, mixed nuts with some raisins and mixed nuts with some oilseeds.

- A **mixture of raw commodities or derivatives of different natures** and in balanced amounts, without a clear predominance of commodities with a specific nature (corresponding to a generic term), should be coded as a **composite**. In these cases, the best starting point should be found on a case-by-case basis. Criteria could be related to the type of use (e.g. for salads, for minestrone soup or as snacks) and then the most appropriate generic starting point can be chosen. In this case, the components of the mix are provided through ingredient facet descriptors. Examples include mixes for minestrone and ready mixes for elaborated salads.

Composite food items are found in diverse aggregated groups in the FoodEx2 hierarchies, depending on their nature and type of use. The most common food groups for composites are listed in Table 24, which refers to the reporting hierarchy. Similar groupings are also used for other hierarchies.

Table 24: Aggregated food groups of the reporting hierarchy containing composite food items. The list is not exhaustive, but the most commonly addressed groups for data reporting are listed

Code	Aggregated food group	Notes
A0EZV	Cereal dough-based products	Bread, pasta, bakery ware, etc.
A03BB	Fruit nectars (with a minimum of 25–50 % fruit)	
A024F	Sausages	
A03TD	Meat and dairy imitates	
A0F0J	Water, water-based beverages and related ingredients	With the exclusion of water, the others are mainly composite
A03JZ	Hot drinks and similar (coffee, cocoa, tea and herbal drinks)	
A03NS	Liqueurs	
A04PE	Confectionery including chocolate	
A03PV	Food products for young populations	With the exception of few derivatives
A03RR	Food for particular diets	
A03VA	Composite dishes	
A042N	Seasoning, sauces and condiments	

The table refers to terms updated at the end of February 2015.

5.5. How many facets to use?

FoodEx2 has many facets. Some of them are intended for use in all domains **(general facets),** while some others are specialised for use in specific domains **(specialised facets)**. Facets used across different domains are those already mentioned as implicit facets of the food list (part-nature, source, source-commodities and process); in addition, fat or alcohol content, fortification agent, packaging material, packaging format, production method, extent of cooking, surrounding medium, qualitative info, dough-mass, preparation-production-place, target consumer, physical state and generic term are also general facets.

Specialised facets are generally needed only in very specific contexts, such as for live animals, microbiological controls or compliance with legislative criteria. These specialised facets are 'intended-use', 'risky-ingredient', 'purpose-of-raising', 'reproductive-level', 'animal-age-class', 'gender' and 'legislative classes'.

The specialised facets are mainly expected to be used within their specific domains of applicability; the remaining domains would not normally use them.

The general facets can, in principle, be reported in different domains. However, some of them do provide quite specific information and their use is limited to defined food groups or to cases where the information is considered important for the particular product or analysis. Examples of these include fat or alcohol content, fortification agent, production method, extent of cooking, surrounding medium,

dough-mass, preparation-production-place, target consumer and physical state. Experience shows that the facet descriptors added are normally few and from a limited number of facets.

In conclusion, the potential high number of facets should not scare the coder, because the focus is on only a few of them, on a case-by-case basis. The most common use of the facets available in FoodEx2 is summarised in Table 25.

Table 25: FoodEx2 facets and common cases for their use

Facet	Cases of use
F01 Source	**Implicit**. Sometimes added
F02 Part-nature	**Implicit**. Sometimes added
F03 Physical-state	To be used rarely to distinguish between two forms of the same food
F04 Ingredient	**Very important**, but the focus is on the **characterising ingredient**
F06 Surrounding-medium	**Very important** but only for food in packages such as cans, jars or plastic containers with the presence of a surrounding medium
F07 Fat-content	Only used when this information better characterises the food (makes the difference …)
F08 Sweetening-agent	**Important** for non-sugar-sweetened sweet products
F09 Fortification-agent	**Important** for fortified food products
F10 Qualitative-info	**Very important** for different specific characteristics. Different sections inside the facet address separate aspects
F11 Alcohol-content	Only relevant in the category of alcoholic beverages, when the alcohol content is not obvious (in a reasonable range)
F12 Dough-mass	Only relevant for bakery products, when not obvious (to better characterise the food)
F13 Cooking-method	Deprecated for most cases. Part of the F28 process facet
F14 Final-preparation	Deprecated for most cases. Part of the F28 process facet
F15 Preservation-technique	Deprecated for most cases. Part of the F28 process facet
F16 Structural-treatment	Deprecated for most cases. Part of the F28 process facet
F17 Extent-of-cooking	Important for products such as grilled meat or vegetables, etc.
F18 Packaging-format	Importance defined by the purpose of the data collection
F19 Packaging-material	Importance defined by the purpose of the data collection
F20 Part-consumed-analysed	Important in some cases, to better specify the sub-part of a food that is referred to
F21 Production-method	Important in some cases (such as organic farming, aquaculture, etc.)
F22 Preparation-production-place	Importance defined by the purpose of the data collection
F23 Target-consumer	Only to be used when not obvious, or when this information makes the difference
F24 *Intended-use*	*Used only in the microbiological domain*
F25 Risky-ingredient	*Used only in the microbiological domain*
F26 Generic-term	**Very important** in all cases when a generic term is used
F27 Source-commodities	**Implicit**. In some cases added
F28 Process	**Very important**. Partly implicit, partly to be added. Only the treatments 'making the difference' have to be mentioned
F29 Purpose-of-raising	*Only relevant in the animals domain*
F30 Reproductive-level	*Only relevant in the animals domain*
F31 Animal-age-class	*Only relevant in the animals domain*
F32 Gender	*Only relevant in the animals domain*
F33 Legislative-classes	*Very important for just some legislation-oriented data collections, such as food additives data or microbiological data*

The table refers to terms updated at the end of February 2015. Specialised facets (used only in specific domains) are shown in italic.

5.6. What to do when the required list term is missing

The food list does not explicitly include all possible food groups; the most commonly encountered ones are separately listed, while the remaining ones are covered by generic food groups. Therefore, detailed information on a food item may be available but when searching the food list, a suitable detailed term may not be found. The reason for this may be that the particular food group has, so far, not been considered for inclusion or it was deemed of minor relevance. In such cases, the general rule

is to use the nearest upper level group specifying the additional information with facets if available; the facet F26.A07XE = generic term 'other' should also be added to communicate that the detailed term was not found in FoodEx2 and the description was built with facets.

In this process, the use of hierarchy terms should be avoided. If, for some reason, the use of a hierarchy term is unavoidable, it is suggested that a term valid in the exposure hierarchy is chosen. Different scenarios for missing terms are briefly discussed in the following sections.

5.6.1. A detailed raw commodity is missing but the source is available

If a raw commodity is missing, the corresponding generic term should be present. The list of live animals or plants (those used for source of the raw commodities) is, in general, more comprehensive than the list of commodities; therefore, it is likely that a suitable source to further specify a generic food group will be available. In this case, the code is built by using the generic food group as the base term then adding the suitable source with the source facet. The starting code is then as follows:

Generic base term#Source facet$Generic-term facet:other

This can be further described with other facets.

For example, let's imagine coding kangaroo fresh fat tissue. The group does not exist as such in the food list. However, kangaroo exists as source. In this case, coding starts with the nearest generic food group, 'A0F3G mammals fat tissue', and is completed by the addition of the source 'A0F2G kangaroo' (as live animal). The code is, therefore, '**A0F3G#F01.A0F2G$F26.A07XE'** (i.e. mammals fat tissue from the source kangaroo, detailed term not present in the food list).

5.6.2. A detailed raw commodity is missing and the source is also missing

If a raw commodity is missing, the corresponding generic food group should be present; however, the detailed source may not be present in the source facet although this facet is, in general, more comprehensive than the raw commodities list. In this case, the only possibility is to use the nearest generic food group, add the facet F26.A07XE = generic-term 'other' and record, in a text field, the detailed information available.

If, for example, a user wanted to code eagle eggs for some microbiological analysis, the generic food group 'A031F whole eggs' could be used; however, the source 'eagle' does not exist. In this case, the appropriate code would be '**A031F#F26.A07XE'** (i.e. whole eggs, detailed term not present in the food list) and the source = eagle should be reported in a text field.

5.6.3. A detailed derivative is missing but the source raw commodity is available

If a derivative of raw commodity is missing, the corresponding generic term should be present. The list of raw commodities (source-commodities facet) is often more comprehensive than the list of derivatives so it may be that a suitable source-commodity, which would further specify a generic derivative/ingredient food group, is available. In this case, the code is built by using the generic food group as the base term then adding the suitable source raw commodity with the source-commodities facet. The starting code is then as follows:

Generic base term#Source-commodities facet$Generic-term facet:other

This can be further described with other facets.

For example, when coding quinoa flour, the group (quinoa flour) does not exist as such in the food list. However, Quinoa grain exists as a source raw commodity. In this case, coding starts with the nearest generic food group, 'A04KS cereal and cereal-like flours', and is completed by the addition of the source-commodities facet descriptor 'A000R quinoa grain'. The code is therefore '**A04KS#F26.A07XE$F27.A000R'** (i.e. cereal and cereal-like flours, detailed term not present in the food list, source-commodities = quinoa grain).

5.6.4. A detailed derivative is missing and the source raw commodity is also missing, but the original source is available

If a derivative/ingredient is missing from the food list, the corresponding generic food group should be present; however, the detailed source raw commodity may also not be present in the source-commodities facet. In this case, the only possibility is to use the nearest generic food group, add the facet F26.A07XE = generic-term 'other' and record, in a text field, the detailed information available. However, if the original source of the missing raw commodity is available in the source facet, reporting the source in a coded form would provide some more information than simple text would. The type of commodity cannot be coded and has to be reported as text. This particular use of the source facet, to describe a derivative missing in the food list, is suggested because it does not introduce ambiguity and 'explicitly' provides information that is implicit in all other cases (through the implicit source of the raw commodity originating the derivative/ingredient).

If users wanted to code dried kangaroo meat, they would find that this derivative does not exist in the food list; even the source commodity (kangaroo meat) is missing. However, the live source animal is available ('A0F2G kangaroo' (as live animal)). In this case, the base term is the generic derivative group 'A04MP mammals or birds dried meat'. Applying the approach just described, the code becomes '**A04MP#F01.A0F2G$F26.A07XE**' (mammals or birds dried meat, source = kangaroo, detailed term not present in the food list). In this case, the type of source commodity (i.e. from kangaroo (meat)) does not need to be reported in a text field, because it is understandable from the nature. In different cases, it may be necessary to report the type of commodity (obtained from meat) in a text field. Please note that this is one of **very few cases** where the use of the source facet for food groups not representing raw commodities may be accepted.

5.6.5. A detailed derivative is missing and both the source raw commodity and the original source are also missing

If a derivative/ingredient is missing in the food list, the corresponding generic food group should be present; however, the detailed source raw commodity may also not be present in the source-commodities. In this case, the only possibility is to use the nearest generic food group, add the facet F26.A07XE = generic-term 'other' and record, in a text field, the detailed information available.

If, for example, users need to code pelican egg yolk, they would find that the generic food group 'A0F6F egg yolk' exists, but the source raw commodity 'pelican egg' does not; pelican as the source animal is also missing. In this case, the appropriate code would be '**A0F6F #F26.A07XE**' (egg yolk, detailed term not present in the food list) and the source raw commodity = pelican egg should be reported in a text field.

5.6.6. A composite group is missing

In the case of composite food groups, many generic groups are available; however, it may be that none of these groups fits perfectly to the product being coded. In these cases, criteria of similarity of use, position in the meal and expected major ingredients should be applied. Composite food groups are present in different areas of the classification tree. The choice of the correct 'branch' of the tree and, within this branch, the choice of a base term (non-hierarchy term) that is conceptually similar to the product being coded is best.

The characterising ingredients should be provided and the facet F26.A07XE = generic-term 'other' should also be added. The food should also, in this case, be described in a text field.

5.7. How to code mixed food products (raw commodities or derivatives)

Convenience food entails food products that are ready to use or easy to prepare; among these, many products are a mixture of raw commodities or ingredients. Examples of these products include bags of different types of salad ready for consumption, mixed flours already prepared for specific bakery products (e.g. flour mix for dark bread, flour mix for pizza) and mixed nuts.

Each component of such products is actually a raw commodity or a derivative/ingredient and is not processed in a way that significantly modifies it or somehow chemically combines it with other components; such products are simply mixtures. As explained in section 3.1.10, these food items are,

strictly speaking, composites; however, in some cases, such as for exposure assessments, it is more convenient to code them as raw commodities or derivatives of raw commodities/ingredients. The main reason for this preference is that composite food groups are more heterogeneous and, in general, more difficult to analyse in risk assessments.

Therefore, the coding depends on the nature of the components and their balance; in the first instance, whether the components are of the same nature or of different natures has to be evaluated.

5.7.1. How to code mixed food products of the same nature

The components of a mixed food product group are of the same nature when they share the same generic food group. The components of a salad mixture have the same nature when they are, for example, all pertaining to the group 'A00KR leafy vegetables'. If some carrot sticks are also contained, the natures are different because some of the ingredients are 'A00KR leafy vegetables', but one of the components would be classified as 'A00QF root and tuber vegetables' (excluding starchy- and sugar-).

In the first case, an appropriate code would use the generic group 'A00KR leafy vegetables' as the base term and different components would be added as multiple instances of the source-commodities facet, as follows:

common base term#source commodity1$source commodity2$source commodity3 …

For example, mixed leafy vegetables would be coded as:

A00KR#F27.A00KV$F27.A00LN$F27.A00LB$F27.A00LG

(leafy vegetables, source-commodities = Italian corn salads, source-commodities = Roman rocket, source-commodities = lollo rosso, source-commodities = radicchio).

5.7.2. How to code mixed products of different natures

In cases of mixed products of different natures, the coding depends on the balance of the components. Two cases are considered:

1) where almost all components share the same nature, the number of components of different natures is clearly minor and such components are in **reasonably negligible amounts** with respect to the other components;
2) where there is a **substantial balance** of components with different natures present in the mixture and not one component is clearly predominant over the others. Alternatively, the minority components of the mixture have different natures from the majority of other components but are present in **non-negligible** amounts.

In case 1, the coding that should be used is a variation of that described in the previous section, where the minority negligible components are reported as additional ingredients (minor ingredient). Using a mixed salad example, as above, but, in this case, considering a mixed leaf salad with an additional **very small** amount of carrots and sunflower seeds, appropriate coding would use the generic group 'A00KR leafy vegetables' as a base term and the different components would be added as multiple instances of the source-commodities facet, with the exception of carrots and sunflower seeds, added as minor ingredients:

Common base term#source commodity1$ … $minor ingredient1$ …

The code becomes:

A00KR#F04.A00QH$F04.A015L$F27.A00KV$F27.A00LN$F27.A00LB$F27.A00LG

(leafy vegetables, ingredient=Carrots, ingredient = Sunflower seeds, source-commodities = Italian corn salads, source-commodities = Roman rocket, source-commodities = lollo rosso, source-commodities = radicchio).

In case 2, this approach is not applicable and the product is considered as a composite; therefore, the base term is a composite group and the components are listed as ingredients, as follows:

Composite base term#ingredient1$ingredient2$ingredient3$ …

In the example of mixed salads, the code would be:

A042D#F04.A00QH$F04.A015L$F04.A00KV$F04.A00LN$F04.A00LB$F04.A00LG

(mixed vegetable salad, ingredient = carrots, ingredient = sunflower seeds, ingredient = Italian corn salads, ingredient=Roman rocket, ingredient = lollo rosso, ingredient = radicchio).

5.8. How to code light/diet products

Products traditionally sweetened with sugars (like soft drinks or flavoured yoghurt) may be (or actually are) present on the market as no-sugar or low-sugar alternatives. The same applies to fat content, with reduced fat alternatives of many products available on the market. These products are often referred to as 'light', 'diet' or 'zero'. As a general approach, this concept should be expressed with facets because there are many relevant food groups and creating a 'light' version for each of them would complicate the system. However, a few specific legacy food groups, from previous classifications, are present (e.g. 'A03FV diet soft drinks with fruit juice', 'A03FX diet soft drinks with flavours' and 'A044Y mayonnaise, low fat').

Different descriptors are present in the system in relation to such products, as follows:

Qualitative-info for fat

A077C	low fat (naturally or reduced)
A077D	fat free
A077H	skimmed

Fat-content

A06YH	< 0.1 % fat (and similar low fat levels)

Qualitative-info for sugars

A077K	without added sugar
A077M	low/reduced sugar
A077L	sugar free
A0B8N	low/reduced lactose
A0CQD	lactose free

Qualitative-info for energy

A0CRG	light

Process

A07MM	lactose reduction

Sweetening-agent

...	a number of descriptors for non-sugar sweeteners (like sugar alcohols and artificial sweeteners).

In order to avoid a different use of these opportunities by the different coders, a rule for reporting 'light' products is provided. This rule is based on the fact that what distinguishes these food products from the standard equivalents is the reduced caloric content.

The standard way of reporting light (or reduced calories) products is therefore by using the following code:

F10.A0CRG (light)

All the other descriptors complement this facet by better specifying, depending on the information available, the approach used to reduce calories. These additional descriptors should not be reported without also using 'A0CRG light'. Automatic addition of this facet descriptor in the FoodEx2 browser

when choosing a more detailed descriptor leading to a light product has been requested by FoodEx2 users.

Among the additional descriptors, specifying the **sweetener** used is particularly important. Please note that some words in the descriptors (e.g. reduced) refer to levels defined in specific regulations.

5.9. How to code mechanically treated products whose physical state has changed

In some cases, the physical state of a food product changes as a result of mechanical action, for example, from solid to paste or from a gel to a liquid. Two aspects have to be taken into account in a this context:

1) the possible existence of a specific food group;
2) how to express any change if this has to be done with facet descriptors.

In the first case, the specific food group should be chosen as the base term and additional information would not normally be required because the different physical status is implicit. An example of this situation is 'A02NQ yoghurt drinks, sweetened and/or flavoured'. In this example, the choice of the base term is sufficient because the fact that the product, by contrast with 'normal' yoghurt, is liquid is obvious.

The second case could involve some possible alternative coding. It might be possible to express the difference with reference to the physical state or with reference to the treatment that changed it. For example:

A0CEE	Spoonable creamy *(physical state)*
A06JG	Puree-type *(physical state)*
A0CRK	Stirring *(process)*
A07KY	Mincing/chopping/cutting *(process)*
A0C6N	Pulping/mashing *(process)*

In general, when there is any doubt, it is always better to give priority to the treatment (process facet). In this specific case (a relatively low number of such cases is expected), it is suggested that coders **report both the treatment and the new physical state.**

5.10. Decision chart

The main concepts explained in the previous sections, with respect to the choice of a base term for a FoodEx2 code and the addition of relevant facet descriptors, are summarised in graphical form in Figure 2 and Figure 3. These two flow-charts are intended to support the decision of the coder following the logic of the system and the approaches suggested.

The first flow-chart (Figure 2) shows the process leading to the choice of a base term. In the flow chart, the level of detail is not mentioned; therefore, it points to the correct 'area' of the hierarchy, where the decision between using generic or more specific terms is taken by the coder based on the information available.

The second flow-chart (Figure 3) focuses particularly on the most crucial scope-restricting facets, those answering the question: 'what is the origin of this food item?' The remaining facets are chosen and applied at the discretion of the coder if the information is available and it is meaningful for the FoodEx2 code.

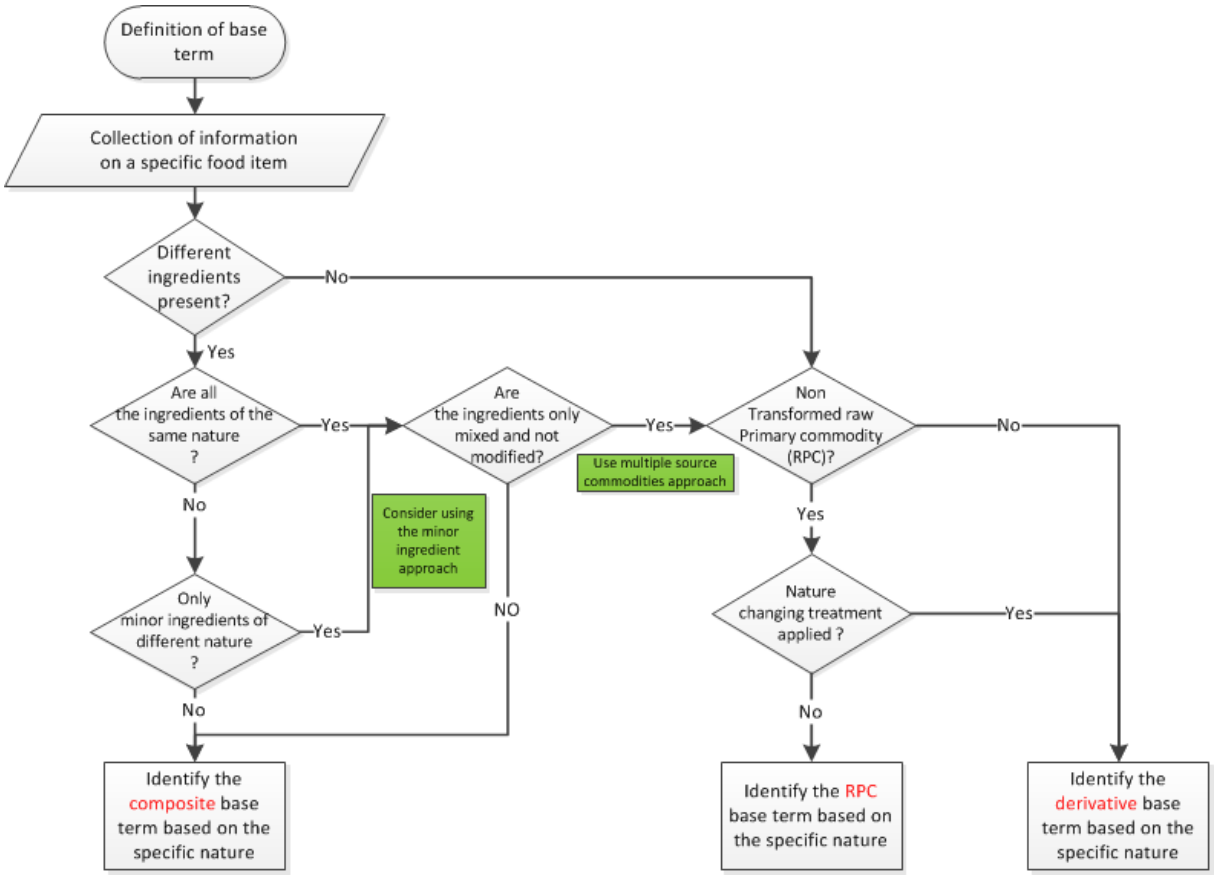


Figure 2: Decision chart for the choice of the base term for a specific food item

Figure 3: Decision chart for the addition of facets to a specific base term

With regard to the process described in Figure 3, the next sections summarise in which cases the origin of the food is specified with the source facet, in which it should be specified with the source-commodities facet and in which the ingredient facet should be used. This information has been provided in previous sections, but it is organised differently, by facet, in the following sections; this perspective is useful for checking the facets found in a code during quality control.

5.11. When to use the source facet

The source facet is, in many cases, implicit, so it does not have to be reported by the coder. However, there are also cases when the coder does have to report the source facets, as outlined below:

- **When a detailed raw commodity term implicitly containing the source is not present** in the system and it is, therefore, necessary to code with a generic term; if the actual source is present in the source facet, it is then reported as an added source facet. For example, to code 'kangaroo fresh fat tissue', which does not exist in the food list, the code should be built from a more generic term, i.e. 'A0F3G mammals fat tissue'; however, there is a possibility to better describe the food by specifying the source 'A0F2G kangaroo (as live animal)', so that the final code becomes 'A0F3G#F01.A0F2G$F26.A07XE'. It should be noted

that F26.A07XE = generic term 'other' is added to communicate that the detailed term was not found in FoodEx2 and the description was built with facets.

- **When a source is included as an implicit facet in a raw commodity base term, but the information allows specifying a more detailed source** (an existing child of the implicit source), the source facet should be added by the coder as a 'restriction', i.e. by choosing a more detailed sub-group of the existing source. For example, to code a specific type of sturgeon, such as the Adriatic sturgeon, and the system has only 'A029E Sturgeon [meat]' (including the generic source F01.A04XV 'sturgeons as live animal'), we can better specify the source by restriction choosing 'A0884 Adriatic sturgeon'. In this case, the final code would be 'A029E#F01.A0884$F26.A07XE' (i.e. base term sturgeon [meat], with source 'Adriatic sturgeon'). It should be noted that F26.A07XE = generic term 'other' is added to communicate that the detailed term was not found in FoodEx2 and the description was built with facets.

The source facet is normally never reported for derivatives/ingredients or for composite food. A case was identified when it might be useful to report the facet source in an otherwise inappropriate context, as follows:

- It may be that a **single** raw commodity is reported as **source raw commodity** of a derivative or as **characterising ingredient** of a composite and the coder knows the exact original source animal or plant of the commodity, but it is not present in the list of terms and only a generic term is available. In this case, a more precise source would be a facet of the source-commodities facet, but the 'facet of the facet' feature is not supported in the present version of the classification. Since a single source raw commodity (or a single ingredient) is reported, the eventual addition of a facet source is not ambiguous and may be assumed, by default, as referring to it. So, in this very particular case, the non-standard use of the source facet may be tolerated and even prove to be useful. For example, if the sturgeon of the previous example had been smoked, the correct code would become 'A0EYS#F27.A029E' (smoked fish, source raw commodity = sturgeon [meat]) and the information on the actual source of the sturgeon meat would be lost. However, if we also add the source facet descriptor (otherwise not allowed in a derivative), the code becomes 'A0EYS# F01.A0884$F27.A029E' (i.e. smoked fish from raw commodity sturgeon [meat], having as source the 'Adriatic surgeon'). This is possible because we have a single source raw commodity and we can define that the presence '*in derogation*' of the source facet **refers in this case to the only present source raw commodity.**

5.12. When to use the source-commodities facet

Like the source facet, the source-commodities facet is also, in many cases, implicit, so it does not need to be reported by the coder. However, as for the source facet there are cases when the coder needs to report a **single source-commodities** facet descriptor, as outlined below:

- **When a detailed derivative term implicitly containing the precise source raw commodity is not present** in the system and it is, therefore, necessary to code with a generic term. If the actual source raw commodity is present in the source-commodities facet, it can be reported as an added source-commodities facet descriptor. For example, if users try to code maize groats, they would find that, among the pre-defined groats, maize is not present. Coding this product is possible, but should start from the generic term 'A0BY1 groats' and the source raw commodity should be specified with the source-commodities facet. The final code, in this case, would be 'A0BY1# F26.A07XE$F27.A000T' (i.e. groats, from source raw commodity = maize grain). It should be noted that F26.A07XE = generic term 'other' is added to communicate that the detailed term was not found in FoodEx2 and the description was built with facets.

- **When a source raw commodity is included as implicit facet in a derivative base term, but the information allows specifying a more detailed source raw commodity** (an existing child of the implicit source raw commodity), the source-commodities facet is added by the coder as a 'restriction', i.e. by choosing a more detailed sub-group of the existing source raw commodity. For example, to code flour obtained from glutinous rice, since

only the more generic term 'rice flour' exists (having as an implicit source raw commodity 'A001D rice grain'), coding should use this term but specify, by restriction, the more precise 'A0F6M rice grain, glutinous' as a source-commodities facet descriptor. The final code becomes 'A003F#F26.A07XE$F27.A0F6M'. It should be noted that F26.A07XE = generic term 'other' is added to communicate that the detailed term was not found in FoodEx2 and the description was built with facets.

Additionally, **multiple source-commodities** facet descriptors are used to further describe a generic term in order to code a **mixed raw commodity**, as outlined in the example below:

- A mixed milk from goat, sheep and camel may be described by only the base term 'A02LT milk'. In order to keep the information on the species, the different single milks are reported as source-commodities facet descriptors. The final code would be 'A02LT#F27.A02MB$F27.A02MC$F27.A02ME' (i.e. milk, from the source commodities goat milk, sheep milk and Bactrian camel milk).

5.13. When to use the ingredient facet

The ingredient facet should normally be used to report the characterising ingredient(s) in a composite food item. This facet is not intended to provide the full qualitative recipe by mentioning all the ingredients. Its purpose is to specify those ingredients that, within a composite food group, make this food product different from the others. Normally, only one or a few descriptors are expected for the ingredient facet in a FoodEx2 code. In summary, the ingredient facet should be used in the following circumstances:

- The ingredient facet should be used **in the case of a composite food** to report the **characterising** ingredient(s). For example, to code a risotto with asparagus, we can code using the ingredient 'F04.A00RT asparagus'. The final code would be 'A041F#F04.A00RT'. In the case of ingredients used to provide a specific taste, it is normally suggested that such ingredients are reported as raw commodities (in this case as 'A00RT asparagus'), even if the ingredient might have been added as a dried form or a preparation. This is recommended because it simplifies and allows homogeneity in reporting. It has to be noted that, even if other ingredients, such as fats, milk components, etc., might be present in a product, for standard reporting they are not mentioned in the FoodEx2 code, because, in such cases, only the characterising ingredients are relevant. The eventual management of recipes is not foreseen within FoodEx2; recipes should be collected in an external database (that may be coded with FoodEx2 terms) and not recorded with the ingredient facet.
- Additionally, **a use of the ingredient facet**, other than with composite food groups, has been suggested for the description of **minor ingredients** present as flavourings or coatings in **raw commodities** or **derivatives of raw commodities/ingredients**. For example, in the case of 'candied citrus peel, chocolate-coated', the base term is 'A01PS candied fruits'; the source commodity 'A01QE citrus fruit peel' is added to specify the type; and, finally, 'chocolate' is added as a minor ingredient and 'coating' is added as a process. The final code would be 'A01PS#F04.A034G$F27.A01QE$F28.A07HP' (i.e. candied fruit having as source commodity citrus fruit peel, with treatment = chocolate coating using as minor ingredient chocolate).

5.14. Checking the quality of a set of codes

The FoodEx2 code is more than a simple code and may include a lot of useful information. For this reason, quality control of the codes should always be performed before releasing the coded databases. A series of control steps are indicated in the following sections. They should be performed by the person(s) responsible for the quality control of the data (or by the coder as a self-check) and cover some of the most commonly found issues/problems identified so far. In addition to these steps, a random check of the remaining codes is advisable, with the aim of finding less common coding errors.

The tool described in section 4.2 helps perform the suggested quality control steps. The following sections will describe the quality check of code as performed with this tool.

5.14.1. Interpret the FoodEx2 code to allow checking it

The first thing that must be done with regard to checking the code is to create an interpreted field with text explaining the meaning of the code. This is accomplished by parsing the code and interpreting the different elements based on their catalogue definitions (e.g. using a Microsoft Excel ® export of FoodEx2). The previously mentioned Excel tool supports this interpretation step. The interpreted field allows filtering and searching for specific strings and is very useful for separating coded records with similar characteristics.

While interpreting the FoodEx2 code, the Corex and Statef attributes of the base term shall also be recorded in two added service fields for each record. Finally, a further field shall record whether or not the basic term is present in the reporting hierarchy and the exposure hierarchy (e.g. in the excel tools described in section 4.2, Norep or Noexp are reported if one of the two hierarchies is absent). This last information is very important because the base term **must** be present in the exposure hierarchy in different data collections related to exposure calculations.

5.14.2. Checking for feed or food

A relatively common mistake is the use of food codes for feed; in some cases, the reverse is also true.

All the feed-related entries in FoodEx2 include, in the name, the string **'(feed)'**. For feed entries in the occurrence database, only a feed code may be used. Therefore, a cross-check for the presence of the string 'feed' in the interpreted code, and in the original food description, allows possible mistakes to be spotted, as outlined below:

- For **food coded as feed**, a filter shall be added to keep only records containing the string '(feed)' in the interpreted FoodEx2 code. Then, an additional filter shall be added to identify any records not containing the string 'feed' in any descriptive text field. The filtered records, if any remain, should be checked carefully and eventually corrected because they possibly refer to food items coded with a feed term.
- For **feed coded as food**, a filter shall be added to keep only records containing the string 'feed' in any descriptive text field. Then, an additional filter shall be added to identify records not containing the string '(feed)' in the interpreted FoodEx2 code. The filtered records, if any remain, should be corrected because they refer to feed items coded with a food term.

After finishing this step, the filters should be removed.

5.14.3. Checking hierarchy terms

Hierarchy terms (i.e. food groups with Corex = 'H') should never be used as base terms for FoodEx2 codes. Consequently, all coders should put maximum possible effort into avoiding using them. This can be checked by adding a filter for 'H' in the Corex field. Hierarchy terms may be found for the following two reasons:

- 'H' entries may have been used because sample information was missing. It is suggested that, as far as possible, assumptions (based on the knowledge of the national market) are made to allow a more detailed term to be chosen; however, in cases where this is not possible, the use of a hierarchy base term may become unavoidable. During the collection of chemical occurrence or food consumption data, entries of this type should be avoided when recording a sample; however, in very rare cases it may be that no information, other than a hierarchy term, is available. In such cases, a hierarchy term valid in the exposure hierarchy should be used; by doing this, the data might eventually be used in exposure assessments performed at the level of broad categories. If a hierarchy term is not present in the exposure hierarchy, its presence in the reporting hierarchy should be checked in the case of chemical occurrence data and, in the case of absence, the entry should be corrected. For some data collections, the use of hierarchy terms from domain-specific hierarchies may be allowed, depending on the particular reporting rules in each domain and if exposure calculations are not involved.
- Finally, 'H' entries may have been added by mistake and, in this case, they should be corrected.

After finishing this step, the filters should be removed.

5.14.4. Checking if standard derivative/ingredient groups were ignored

One of the most common mistakes made by coders with limited experience is to 'build' from a raw commodity plus a process facet descriptor, where a separate derivative-ingredient group already exists. The processes creating derivative groups are listed in section 3.1.2 (in particular, Tables 5 and 6). The most common process facet descriptors normally directly applied to raw commodities are listed in section 5.4.1 (Table 22). A complete check might involve all the possible 'wrong' combinations. For this purpose, a long and relatively complex algorithm should be used. A minimum set of checks is suggested here, but it may be further extended.

First of all, a filter for Statef = r should be activated. By doing this, only raw commodity base terms will be left in the list. Then, the presence of certain facet codes should be checked; the processes for which such a check is suggested are listed in Table 26.

Table 26: List of processes for which it is suggested that checks are performed to establish whether or not they should be applied to raw commodities

Code[(a)]	Process
A0CRH	Seasoning
A07KD	Curing
A0C6F	Ripening
A07JP	Preserving by salt
A07JQ	Preserving by sugars
A07JR	Candying
A0C03	Grain milling
A0C09	Grain milling early stages
A0C0A	Grain milling flour production
A0C0B	Starch production
A07KG	Drying (dehydration)
A07JT	Marinating
A07KC	Pickling
A0CQZ	Fermentation
A0BYP	Canning/jarring
A07JV	Smoking

(a): FoodEx2 code of the process facet descriptor.

Should any of the processes listed in Table 26 have been applied to a raw commodity base term, the code should be checked because there is a high probability that a derivative/ingredient base term exists and this should have been used instead.

After finishing this step, the filters should be removed.

5.14.5. Checking the reporting of flavoured products

Flavoured products may be ambiguous for the coder, because they may be flavoured with ingredients (e.g. strawberries) with intrinsic flavour not falling under the scope of Regulation (EC) No 1334/2008[18] or with flavourings (e.g. strawberry flavour) falling under the scope of Regulation (EC) No 1334/2008, or with both.

A check of the ingredients reported in flavoured products shall be performed using a filter in the Excel tool to identify the presence of the string '**flavo**' in the interpreted code column. In this way, all the terms containing 'flavour' or 'flavor' should be selected. The resulting restricted list must be checked against the content of the text fields describing the food entry; it should be clarified whether it is a regulated flavouring (e.g. strawberry flavour) or a food consumed as such and used as ingredient to provide a specific taste or smell (e.g. strawberries), or both. Incomplete reporting of the actual ingredients used in flavoured food products is very common.

[18] Regulation (EC) No 1334/2008 of the European Parliament and of the Council of 16 December 2008 on flavourings and certain food ingredients with flavouring properties for use in and on foods and amending Council Regulation (EEC) No 1601/91, Regulations (EC) No 2232/96 and (EC) No 110/2008 and Directive 2000/13/EC (Text with EEA relevance)

In the context of the FoodEx2 code, all ingredients contributing to the characterising flavour should be mentioned in the FoodEx2 code. If limited information is available at least the ingredient (e.g. strawberries) should be mentioned.

If incomplete reporting is found during this check the entry should be corrected by adding the food used as ingredient.

In conclusion, '**INGR = xyz flavour'** should appear as single flavouring ingredient in only those products (e.g. some soft drinks and some yoghurt types) where **only** regulated flavourings are used and there are no other food ingredients (fruit, spices, etc.) contributing to the flavour note.

After finishing this step, the filters should be removed.

5.14.6. Checking the real nature of infusions

The use of filters is recommended to identify the presence of '**infus**' in the interpreted code and then in the text fields describing the food entry. These two checks must be performed separately. The reason for these filtering steps is that it was often found that infusion ingredients (the powders or dry ingredients) were being reported as infusions (the final beverage) or vice-versa. Making this double check and comparing the code with the original information allows such mistakes to be easily spotted.

After finishing this step, the filters should be removed.

5.14.7. Checking grains with generic processing

An additional important filter should be used to check the field of the interpreted code with regard to the presence of the string '**grain**' and the string '**PROCESS=pr'**.

The effect of applying this filter is to isolate foods reported as grains (raw commodity) where a generic process has been reported. It is important to check for terms referring to grains that have been processed, in order to ensure that the processing was not invasive and did not create a new nature; for example, whether the process applied involved cleaning or milling, which would lead to derivatives (as addressed by a previous check). In the latter case (i.e. milling), derivative base terms should be chosen (e.g. flour, bran, groats, etc.). This step is specifically suggested for grains, because this problem is frequent. However, similar checks may be performed for all other raw commodities terms, as explained in the next section.

After finishing this step, the filters should be removed.

5.14.8. Checking generic processing applied to raw commodities

This step is similar to the previous one, but, instead of being focused on grains, it extends to all raw commodities.

Two filters should be applied. The first one is to filter for '**r**' in Statef (selecting only the raw commodities reported as base terms). The second filter is to identify entries in the interpreted code, as previously described, containing '**PROCESS=pr**'.

In addition, in this case, the type of process should be checked to ascertain whether or not it could be better defined and whether or not it could eventually lead to a different starting point (base term), i.e. a group for derivatives.

After finishing this step, the filters should be removed.

5.14.9. Checking ingredients applied to raw commodities or derivatives

As a rule, ingredients can be applied as facets to raw commodities or raw commodity derivatives only in the case of **minor ingredients**; for example, in the cases of raw meat with some oils and spices to facilitate grilling, and salted peanuts. In these cases, the added ingredients are in small amounts, not clearly quantified and do not change the nature of the raw commodity or derivative. In all other cases, ingredients cannot be applied to base terms not classified as composite.

However, some mistakes have been found where the ingredient facet was used instead of the source facet or was used to describe mixed raw commodities or derivatives (instead of using the source-

commodities facet). In this last circumstance, multiple source-commodities facet descriptors should be used instead. How can we identify this type of error?

It is suggested that a double filter for '**r**' or '**d**' in Statef (selecting only the raw commodities and derivatives reported as base term) is used. An additional filter should also be used in the interpreted code to filter terms containing '**INGR=**'.

In this way, all codes where an ingredient is applied to a raw commodity or a derivative are isolated and can be checked one by one, to identify possible errors. It is then easy, by checking the text fields describing the food entry field, to identify the cases where the minor ingredient approach was used (correctly) and those where ingredients were used to describe mixed products (incorrectly) or to specify a source not implicitly included in a specific base term (incorrectly).

After finishing this step, the filters should be removed.

5.14.10. Checking multiple sources applied to raw commodities

Another potential mistake is the wrong use of the source facet to describe mixed raw commodities.

As a rule, mixed raw commodities of the same generic nature should be reported with multiple **source-commodities facet descriptors**, not with multiple source facet descriptors. This is because the source facet refers to live animals or plants, whereas the source raw commodity facet covers raw commodities (i.e. the actual part of the source used). For mixed commodities, as already defined, the components should be referred to as single raw commodities. For example, in the case of mixed cow and sheep milk, the base term should be 'milk', while the components should be expressed as 'source raw commodity = cow milk' and 'source raw commodity = sheep milk'. Any incorrect use of the source facet should be identified and recoded according to this convention.

In order to identify such cases, a filter for '**r**' is used in Statef and a filter for '**SOURCE=**' in the interpreted code. The resulting list contains only raw commodities where the source facet was used and it is easy to identify the multiple use of the facet; An additional way of restricting the list is to add a further filter for the string '**mixed**' in the text fields describing the food entry.

After finishing this step, the filters should be removed.

To conclude the quality control of the FoodEx2 coding, a random check of codes not falling under any of the scenarios discussed above is advisable, with the aim of eventually finding less common problems.

6. Conclusions and recommendations

After the release in 2011 of revision 1 of FoodEx2, the system was intensively tested in different domains with the involvement of several MS organisations active in data collection. This testing phase highlighted strengths and weaknesses of the classification and provided suggestions for improvement.

Based on the outcome of the testing phase, a major revision of the system as described in this report was undertaken. A detailed guidance on the use of the system is also included in the present report.

The terminology was significantly expanded, particularly in the area of raw commodities and natural sources, and the coding was simplified by removing inconsistencies and ambiguities and fixing the logic behind the relationships between the terms in the hierarchical tree of the system.

The revision 2 of FoodEx2 is released with two support tools:

- a browser for navigating the system and creating codes, incorporating the revisions described in this report;
- a Microsoft Excel® tool for interpreting and checking the codes;

The system has a particular focus on exposure, but also supports non-exposure-related types of data collection/data analysis. The flexibility of FoodEx2 allows the presence of different hierarchies, some of which are more oriented to data collection (e.g. reporting hierarchy, veterinary drug residues hierarchy) and some more centred on data analysis and reporting (e.g. exposure hierarchy, biological monitoring hierarchy). In revision 2 of FoodEx2, apart from the full terminology (master hierarchy), seven hierarchies are included, as follows:

- the reporting hierarchy for general data collection (new hierarchy);
- the exposure hierarchy for evaluation of exposure (updated hierarchy);
- the pesticides hierarchy for reporting on pesticides residues (updated hierarchy);
- the biological monitoring hierarchy (zoonoses hierarchy) for zoonoses reporting (updated hierarchy);
- the feed hierarchy for reporting on feed materials (updated hierarchy);
- the veterinary drug residues hierarchy for reporting on residues of veterinary medicines (new hierarchy);
- the botanicals hierarchy for data collection related to EFSA's compendium of botanicals (EFSA, 2012) (new hierarchy).

The system also includes 32 facets addressing different descriptive aspects of food.

A food classification is a system in continuous evolution; changes and innovation in the food market are frequent and have an impact on food classification. The accumulating experience of using the system is also feeding continuous improvement. On the other hand, stability in the classification is a pre-condition for successful implementation. It was, therefore, recommended in revision 1 of FoodEx2 that a yearly maintenance cycle be implemented. For the implementation of this recommendation, two additional suggestions were done by data providers in the Member States:

- Synchronisation of the FoodEx2 maintenance with the maintenance of the SSD2 (to which FoodEx2 is connected through different data collections).
- Establishment of a forum of users to support the annual maintenance of FoodEx2.

Other recommendations were suggested by the data providers in the MSs while commenting on revision 2 of FoodEx2:

- Implementing FoodEx2 in the early stages of the data collection, including planning, sampling and generation and collection of data, should be considered. This would improve the process and dramatically reduce the overall time and resources used for gathering high-quality descriptions of food.
- The creation of versions of FoodEx2 in national languages is recommended as a crucial tool for allowing its use at all levels in the data collection chain. The evolution in the FoodEx2 terminology should also foresee the update of the versions in EU national languages.

These recommendations will be taken into account in the future revisions of FoodEx2.

References

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Glossary and Abbreviations

ASFIS list	Aquatic Sciences and Fisheries Information System list of species for fishery statistics purposes, published online by the FAO Fisheries and Aquaculture Statistics and Information Service
Base term	The term describing a food group in a FoodEx2 hierarchy and used as the starting point and principal descriptor in the FoodEx2 code
Composite food	Food products obtained by more commodities and/or derivatives through processes which always involve recipes (the association of different ingredients)
Corex	The field of the FoodEx2 catalogue that records the role of each food group in data reporting
DATA Unit	Evidence Management Unit of EFSA
EFSA	European Food Safety Authority
EU Menu	Fully harmonised European Food consumption survey methodology
Facets	Collections of (food) descriptors from specific points of view
FAO	Food and Agriculture Organization
FoodEx2	Multi-purpose food classification and description system developed by EFSA. Revision 1 of FoodEx2 was published in 2011, while revision 2 of FoodEx2 is the object of the present report
Generic food group	A food group referring to a particular nature, but not to a defined origin
Implicit facet	A facet descriptor that obviously applies to a specific base term and is already pre-recorded in the catalogue
Input hierarchy	FoodEx2 hierarchy used to facilitate coding food or other matrices
ISSCAAP	International Standard Statistical Classification for Aquatic Animals and Plants
MRL	Maximum Residue Limit
MS	European Union Member State
Output hierarchy	FoodEx2 hierarchy used to facilitate grouping for the

	presentation of results and statistics on data
Raw primary commodities (also named raw commodities)	Pieces physically separated from a live source after harvesting (plants) or slaughtering (animals); the separation may also be less invasive, such as picking fruit or collecting milk or eggs. No process changing the nature has been applied. Processes assumed, in the context of this classification, not to change the nature of food (e.g. freezing) can be applied
RPC	raw primary commodity
RPC derivatives/ingredients (also named derivatives of raw commodities/ingredients or derivatives)	Food products obtained from raw commodities (or chemical/microbiological sources) to which processes changing the 'nature' of food have been applied
SCFCAH	Standing Committee of the European Commission on the Food Chain and Animal Health
SSD	Standard sample description
SSD2	Standard sample description rev.2 (extended to new food safety domains, including Zoonoses, residues of veterinary medicines and food additives)
Statef	The field of the FoodEx2 catalogue that records the position in the food chain and the type of complexity of each food group (state of food)

Appendix A – Support tables and reference to support files

Table A1: Part-nature facet

FoodEx2 code	Name (as part-nature)	Note
A0BA0	Live plants (as part-nature)	The natures for plants are presently organised by type of major food commodity obtained from the plant. With the growing scope and dimension of this section of FoodEx, it may be considered in future releases to move to a taxonomy-oriented organisation of terms
A0EJM	Live cereal plants (as nature)	See above
A0EKP	Live legume plants (as nature)	See above
A0EKN	Live fruiting vegetables (as nature)	See above
A0EKM	Live root or tuber vegetables (as nature)	See above
A0EKL	Live leafy vegetables (as nature)	See above
A0EKK	Live flowering vegetables (as nature)	See above
A0EKJ	Live bulb vegetables (as nature)	See above
A0EKH	Live stem and stalk vegetables (as nature)	See above
A0EKG	Live nuts and seed plants (as nature)	See above
A0EKF	Live fruit plants (as nature)	See above
A0EKE	Live plants for spices (as nature)	See above
A0EKD	Live plants for herbs or flowers (as nature)	See above
A0ERP	Live plants for sugar (as part-nature)	See above
A0EKB	Live fungi (as nature)	See above
A0EKA	Live algae (as nature)	See above
A0EJZ	Live lichens and mosses (as nature)	See above
A0EKC	Live vegetables for infusions (as nature)	See above
A069F	Live animals (as part-nature)	The organisation of live animals as part-nature is generally taxonomy-oriented, with only very high level taxonomy groups as part-nature
A0EJN	Live mammals (as nature)	See above
A0EJX	Live birds (as nature)	See above
A0EJV	Live fishes (as nature)	See above
A0EJT	Live reptiles (as nature)	See above
A0EJS	Live amphibians (as nature)	See above
A0EJR	Live molluscs (as nature)	See above
A0EJQ	Live crustaceans (as nature)	See above
A0EJP	Live insects and arachnids (as nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A0EYJ	Live anellids (as part-.nature)	See above
A066M	Plant commodities-related part-nature	This is a generic aggregator of the groups below for browsing purposes
A066N	Plant commodities (as part-nature)	Part-natures for plant commodities are organised by type of tissue with sub-groups defined by the type of prevalent use as food
A066T	Vegetative tissues (as part-nature)	See above
A0EKR	Vegetative tissues of algae (as part-nature)	See above
A0EKS	Vegetative tissues of lichens and mosses (as part-nature)	See above
A067C	Flowering body (as part-nature)	See above
A067H	Fruiting body (fungi) (as part-nature)	See above
A0EKT	Leaves (as part-nature)	See above
A0EKV	Leaves used as leafy vegetables (as part-nature)	See above
A067J	Leaves (loose) used as leafy vegetables (as part-nature)	See above
A067K	Compact leaves used as leafy vegetables (head or heart) (as part-nature)	See above
A0EKX	Leaves (and eventually other minor parts) used for infusions or hot drinks (as part-nature)	See above
A0F0C	Aromatic herbs (leaves and other minor parts) (as part-nature)	See above
A067R	Sprout (as part-nature)	See above
A067T	Shoot (as part-nature)	See above
A067S	Stem / stalk (as part-nature)	See above
A0ELG	Stems/stalks eaten as vegetables (as part-nature)	See above
A0ELH	Stalks/canes for sugar (as part-nature)	See above
A067B	Flower (as part-nature)	See above
A0ELA	Flowers used as vegetables (as part-nature)	See above
A0EKZ	Flowers used for infusions or hot drinks (as part-nature)	See above
A0F0D	Aromatic flowers (as part-nature)	See above
A0F0G	Flowers used as spices or similar	See above
A066Z	Bud (as part-nature)	See above
A067L	Pod (including immature beans) (as part-nature)	See above
A066P	Seed (as part-nature)	See above
A066Q	Grains (as part-nature)	See above
A066R	Nuts (as part-nature)	See above
A066Y	Beans (as part-nature)	See above
A066S	Oil seeds (as part-nature)	See above
A0ELB	Seeds used for infusions or hot drinks (as part-nature)	See above
A0F0E	Seed spices (as part-nature)	See above
A066V	Aril (as part-nature)	See above
A066X	Bark (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A067A	Bulb / clove (as part-nature)	See above
A067D	Fruit unspecified (as part-nature)	See above
A0ELC	Fruits used as fruit (as part-nature)	See above
A0ELE	Fruits used as vegetables (as part-nature)	See above
A0ELD	Fruits used as oil source (as part-nature)	See above
A0ELF	Fruits used as spice (as part-nature)	See above
A067G	Fruit peel (as part-nature)	See above
A067M	Roots and other underground parts (as part-nature)	See above
A0ERX	Roots and other underground parts used as vegetables (as part-nature)	See above
A0F5F	Roots and other underground parts used as staple food (as part-nature)	See above
A0F0F	Root spices (as part-nature)	See above
A0ERY	Roots used for infusions or hot drinks (as part-nature)	See above
A0ESA	Roots used as sugar source (as part-nature)	See above
A0ETJ	Spices or infusion materials of miscellaneous origin (as part-nature)	See above
A067X	Primary products derived from plant commodities (as part-nature)	Part-nature groups for derivatives of plant commodities are organised first of all by type of commodity (type of plant part involved) and then by type of process-related resulting product
A0ELJ	Cereals derivatives (as part-nature)	See above
A068B	Groats (as part-nature)	See above
A068C	Semolina or coarse ground powder (as part-nature)	See above
A067Z	Flour/meal or finely ground powder (as part-nature)	See above
A067Y	Bran (as part-nature)	See above
A068A	Germ (as part-nature)	See above
A068E	Flakes and similar (as part-nature)	See above
A068F	Popped grains (as part-nature)	See above
A068G	Rolled grains (as part-nature)	See above
A0F7Y	Porridge (in dry form)	See above
A0ERR	Processed or preserved vegetables and similar (as part_nature)	See above
A0F7Z	Processed tomato products (as part-nature)	See above
A0F0X	Fermented/pickled/marinated vegetables	See above
A0ELM	Fermented vegetables (as part-nature)	See above
A0ELK	Marinated / pickled vegetables (as part-nature)	See above
A0F3E	Vegetable puree or paste (as part-nature)	See above
A0ERQ	Canned/jarred vegetables (as part-nature)	See above
A0ELL	Salted vegetables (as part-nature)	See above
A0ELP	Candied or sugar preserved vegetables (as part-nature)	See above
A0ELN	Dried vegetables (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A0EZL	Processed or preserved herbs, spices or similar (as part-nature)	See above
A0EZK	Dried herbs (as part-nature)	See above
A0ELQ	Processed or preserved legumes (as part_nature)	See above
A0ERT	Canned legumes (as part-nature)	See above
A0ERV	Dried legumes (pulses) and their flours (as part-nature)	See above
A0ELR	Processed or preserved fruits (as part_nature)	See above
A0ELS	Canned fruits (as part-nature)	See above
A0ELT	Candied or sugar preserved fruits (as part-nature)	See above
A0ELV	Dried fruits (as part-nature)	See above
A0EVC	Fermented fruit products (as part-nature)	See above
A0EVB	Fruit in vinegar or brine (marinated) (as part-nature)	See above
A0EYA	Fruit in alcohol or similar	See above
A0ELX	Primary derivatives from nuts and similar seeds (as part-nature)	See above
A0ELY	Candied or sugar preserved nuts (as part-nature)	See above
A0ELZ	Dried nuts and related flours and powders (as part-nature)	See above
A068L	Nut/seeds paste/emulsion/mass (as part-nature)	See above
A068P	Fruit / vegetable spreads and similar (as part-nature)	See above. Additionally, some groups of plant derivatives are grouped separately because they are extended across different types of starting raw commodities
A0EMA	Fruit / vegetable jams (as part-nature)	See above
A0EMB	Fruit / vegetable marmalades (as part-nature)	See above
A0EYB	Fruit fillings for pastries (as part-nature)	See above
A0ERS	Fruit / vegetable compotes (as part-nature)	See above
A0EMC	Fruit or fruit-vegetable puree (as part-nature)	See above
A068Q	Fruit / vegetable juices and nectars (as part-nature)	See above
A068V	Fruit/vegetable juice ready to drink (as part-nature)	See above
A068X	Fruit/vegetable nectar ready to drink (as part-nature)	See above
A068H	Extracts of plant origin (as part-nature)	See above
A068J	Liquid extract of plant origin (as part-nature)	See above
A068K	Powdered extract of plant origin (as part-nature)	See above
A067Q	Included liquid, gel or exudate (as part-nature)	See above
A068S	Fruit/vegetable concentrate (as part-nature)	See above
A068T	Fruit/vegetable powder (as part-nature)	See above
A0EYD	Derivatives of coffee, cocoa, tea and similar RPCs (as part-nature)	See above
A069C	Animal commodities-related part-nature	This is a generic aggregator of the groups below for browsing purposes
A069D	Animal commodities (as part-nature)	Part-natures for animal commodities are organised by type of animal and type of tissue with presence of levels defined by different extent of aggregation of the types of tissue.

FoodEx2 code	Name (as part-nature)	Note
A069G	Carcase (as part-nature)	See above
A069H	Meat (as part-nature)	See above
A0BYZ	Mammals and birds meat (as part-nature)	See above
A0C10	Minced meat (as part-nature)	See above
A07XS	Breast (as part-nature)	See above
A07XQ	Leg (as part-nature)	See above
A06AG	Wing (as part-nature)	See above
A0EMD	Fish meat (as part-nature)	See above
A0EMF	Crustaceans meat (as part-nature)	See above
A0EME	Molluscs meat (as part-nature)	See above
A0FAC	Sea-squirts and other tunicates (as part-nature)	See above
A0FAD	Sea urchins and other echinoderms (as part-nature)	See above
A0FAE	Jellyfishes and similar (as part-nature)	See above
A05HL	Amphibians and reptiles meat (as part-nature)	See above
A0EMH	Amphibians meat (as part-nature)	See above
A0EMJ	Reptile meat (as part-nature)	See above
A0EMG	Insects / arachnids meat (as part-nature)	See above
A0EYK	Anellids meat (as part-nature)	See above
A069J	Fat tissue (as part-nature)	See above
A0F1B	Visceral fat	See above
A0F1F	Caul fat	See above
A0CEH	Subcutaneal fat	See above
A069K	Mechanically separated meat (as part-nature)	See above
A069L	Offals and other slaughtering products (as part-nature)	See above
A069N	Kidney (as part-nature)	See above
A069M	Liver (as part-nature)	See above
A0BYK	Other organs (non-muscle) (as part-nature)	See above
A069P	Lung (as part-nature)	See above
A069Q	Spleen (as part-nature)	See above
A069R	Bladder (as part-nature)	See above
A0CJL	Gall bladder (as part-nature)	See above
A069T	Pancreas (as part-nature)	See above
A069V	Testicles (as part-nature)	See above
A0CJM	Mammal gland (as part-nature)	See above
A069X	Thymus (as part-nature)	See above
A0CJN	Lymph node (as part-nature)	See above
A06AL	Blood (as part-nature)	See above
A0BYL	Other slaughtering products	See above

FoodEx2 code	Name (as part-nature)	Note
A0CJJ	Trachea (as part-nature)	See above
A069S	Intestine (as part-nature)	See above
A06AB	Tongue (as part-nature)	See above
A06AC	Heart (as part-nature)	See above
A06AD	Stomach (as part-nature)	See above
A06AE	Bone marrow (as part-nature)	See above
A06AF	Tail (as part-nature)	See above
A06AH	Neck (as part-nature)	See above
A06AJ	Trotter / feet (as part-nature)	See above
A06AK	Skin (as part-nature)	See above
A0C0Y	Neck skin	See above
A06AM	Brain (as part-nature)	See above
A07XN	Tripe (as part-nature)	See above
A07XR	Giblet (as part-nature)	See above
A069Y	Hepatopancreas (as part-nature)	See above
A069Z	Roe (as part-nature)	See above
A06AA	Brown meat (as part-nature)	See above
A0F2M	Head (as part-nature)	See above
A06AN	Processed or preserved meat (as part-nature)	Part-nature groups for derivatives of animal meat commodities are organised first of all by type of animal involved and then by type of process-related resulting product
A0EMK	Canned/jarred meat (as part-nature)	See above
A0EML	Charcuterie meat (as part-nature)	See above
A06AP	Preserved meat cuts (as part-nature)	See above
A06AQ	Preserved fat tissues (as part-nature)	See above
A06AS	Sausages (as part-nature)	See above
A06AT	Fresh raw sausages (as part-nature)	See above
A06AV	Preserved sausages (as part-nature)	See above
A06AX	Meat specialities (as part-nature)	See above
A0EMN	Dried meat (as part-nature)	See above
A0F2L	Edible casings (as part-nature)	See above
A0BZ6	Marinated meat (as part-nature)	See above
A0EMQ	Processed or preserved fish (as part-nature)	See above
A0EMS	Canned/jarred fish (as part-nature)	See above
A0EMV	Salted fish (as part-nature)	See above
A0EMT	Dried fish (as part-nature)	See above
A0EMY	Marinated / pickled fish (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A0EMX	Smoked fish (as part-nature)	See above
A0EMM	Structured/textured fish meat (as part-nature)	See above
A0EMR	Processed or preserved seafood (as part-nature)	See above
A0EMZ	Canned/jarred seafood (as part-nature)	See above
A0ENA	Salted seafood (as part-nature)	See above
A0ENB	Dried seafood (as part-nature)	See above
A0ENC	Marinated / pickled seafood (as part-nature)	See above
A0END	Smoked seafood (as part-nature)	See above
A06AY	Dairy (as part-nature)	Part-Nature groups in dairy are organised by process-related type of product (including unprocessed)
A06AZ	Milk (as part-nature)	See above
A04HF	Powdered or concentrated dairy products (not isolated) (as part-nature)	See above
A0BZ2	Fermented milk (as part-nature)	See above
A06BA	Cream (as part-nature)	See above
A0BZ3	Fermented cream (as part-nature)	See above
A06BB	Whey (as part-nature)	See above
A06BC	Buttermilk (as part-nature)	See above
A06BJ	Milk-based drinks (as part-nature)	See above
A0DSP	Baked milk types (as part-nature)	See above
A0EQF	Dairy snacks (as part-nature)	See above
A06EX	Cheese (as part-nature)	See above
A06BL	Fresh cheese (as part-nature)	See above
A06BM	Brined cheese (as part-nature)	See above
A06BN	Ripened cheese (as part-nature)	See above
A06BP	Processed cheese (as part-nature)	See above
A0CRM	Cheese rind (as part-nature)	See above
A06BQ	Eggs and egg-related (as part-nature)	Part-Nature groups for eggs and egg products are organised by process-related type of product (including unprocessed)
A06BR	Whole eggs (as part-nature)	See above
A06BS	Egg mixed whole (as part-nature)	See above
A06BT	Egg yolk (as part-nature)	See above
A06BV	Egg white (as part-nature)	See above
A06BX	Hardened egg product (as part-nature)	See above
A0C0X	Microbiological or enzymatic part-nature	Part-Nature groups for microbiological ingredients/agents are organised by type of agent
A06CK	Microorganisms, live (as part-nature)	See above
A06CJ	Enzymes for food manufacture (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A06CL	Composite (recipe based) food (including related RPCs or RPC derivatives) (as part-nature)	Part-Nature groups for composite food are organised by type of food (as in the use and perception of consumers, reflected in some cases in Regulations); the type of food is generally related to a more or less complex association of production/preparation processes. Additional levels are depending on the source or the major characterising ingredients
A0C6G	Composite ingredients for soft drinks or hot drinks (as part-nature)	See above
A068Y	Hot drinks and similar (coffee, cocoa, tea and herbal drinks) (as part-nature)	See above
A068Z	Infused or steam extracted drink (as part-nature)	See above
A069A	Blended or reconstituted hot drink (as part-nature)	See above
A06EJ	Confectionery (as part-nature)	See above
A06EK	Chocolate and similar (as part-nature)	See above
A06EL	Chocolate-based product (as part-nature)	See above
A06EM	Chocolate imitate product (as part-nature)	See above
A0ENE	Candy (as part-nature)	See above
A06EN	Soft candy (as part-nature)	See above
A06EP	Hard candy (as part-nature)	See above
A0ENF	Sweet bars and other formed sweet masses (as part-nature)	See above
A06EQ	Basic sweet masses (as part-nature)	See above
A06EY	Alcoholic beverages (as part-nature)	See above
A06EZ	Beer and beer-like beverage (as part-nature)	See above
A0ENH	Beer (as part-nature)	See above
A0ENJ	Beer-like beverages (as part-nature)	See above
A06FA	Wine and wine-like drinks (as part-nature)	See above
A0ENK	Wine (as part-nature)	See above
A0ENL	Wine-like fermented fruit products (as part-nature)	See above
A06FB	Dessert wines (as part-nature)	See above
A0ENM	Fortified/liqueur wine (as part-nature)	See above
A06FC	Liqueurs (as part-nature)	See above
A06FD	Unsweetened spirits (as part-nature)	See above
A0ENN	Unsweetened spirits not from fruit (as part-nature)	See above
A0ENQ	Unsweetened spirits from fruit (as part-nature)	See above
A0ENP	Unsweetened flavoured spirits (as part-nature)	See above
A06FE	Mixed alcoholic drinks (as part-nature)	See above
A0ENR	Water-based beverages (as part-nature)	See above
A06CA	Water (as part-nature)	See above
A06HJ	Soft drinks (as part-nature)	See above
A0ENS	Cola-type drink (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A06HK	Functional drink (as part-nature)	See above
A0ENT	Energy drink (as part-nature)	See above
A0ENV	Isotonic/sport drink (as part-nature)	See above
A0F0Q	Drink pre-mixes	See above
A06FF	Food products for young population (as part-nature)	See above
A06FG	Infant and follow-on formulae (as part-nature)	See above
A06FH	Infant formulae (as part-nature)	See above
A06FJ	Follow-on formulae (as part-nature)	See above
A06FL	Ready-to-eat meal for infants and young children (as part-nature)	See above
A06FK	Processed cereal-based food for infants and young children (as part-nature)	See above
A06FM	Food for infants and children not included in regulatory categories (as part-nature)	See above
A06FP	Products for non-standard diets (as part-nature)	See above
A06FQ	Food for weight reduction (as part-nature)	See above
A06FR	Food for sporting people (as part-nature)	See above
A06FS	Dietary foods for special medical purposes (as part-nature)	See above
A06FT	Food supplements and similar preparations (as part-nature)	See above
A0F7S	Table-top sweeteners (as part-nature)	See above
A06GC	Composite dishes (as part-nature)	See above
A06GN	Sandwiches, pizza and other stuffed bread-like cereal products (as part-nature)	See above
A06GP	Sandwich and sandwich-like dishes (as part-nature)	See above
A06GQ	Pizza and pizza-like dishes (as part-nature)	See above
A0EQK	Savoury pies and tarts (as part-nature)	See above
A06GR	Finger food (as part-nature)	See above
A06GX	Soups and salads (as part-nature)	See above
A0EQH	Soups dry or concentrated preparations (as part-nature)	See above
A06GY	Soups ready-to-eat (as part-nature)	See above
A06GZ	Salads (as part-nature)	See above
A06GD	Dishes, incl. Ready to eat meals (excluding soups and salads) (as part-nature)	See above
A06GS	Pastas and rice (or other cereal) ûbased dishes (as part-nature)	See above
A0EQJ	Pasta-based dishes dry or uncooked (as part-nature)	See above
A06GT	Pasta-based dishes (cooked) (as part-nature)	See above
A0EQG	Rice-based dishes dry, to be cooked (as part-nature)	See above
A06GV	Rice based dishes (as part-nature)	See above
A06GE	Dishes (excluding pasta or rice dishes, sandwiches and pizza) (as part-nature)	See above
A06GH	Meat based dishes (as part-nature)	See above
A06GJ	Fish and seafood based dishes (as part-nature)	See above
A06GF	Potato based dishes (as part-nature)	See above
A0EPX	Fries (finger chips) (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A06GG	Legumes based dishes (as part-nature)	See above
A06GL	Egg based dishes (as part-nature)	See above
A06GM	Mushroom based dishes (as part-nature)	See above
A06GK	Vegetable based dishes (as part-nature)	See above
A0ENX	Spoonable desserts and ice creams (as part-nature)	See above
A06ER	Water-based desserts spoonable (as part-nature)	See above
A06ES	Water-based ice creams (as part-nature)	See above
A06BK	Dairy-based desserts spoonable and similar (as part-nature)	See above
A0ENY	Dairy-based ice creams and similar (as part-nature)	See above
A06HA	Seasoning, sauces and condiments (as part-nature)	See above
A06BZ	Salt (as part-nature)	See above
A06HB	Seasoning mixes (as part-nature)	See above
A06HC	Savoury extracts and ingredients (as part-nature)	See above
A06HD	Gravy ingredients (as part-nature)	See above
A0EPA	Stock cubes/granulates (as part-nature)	See above
A0ENZ	Taste enhancing RPC extracts (as part-nature)	See above
A06HF	Condiments (as part-nature)	See above
A0EPB	Vinegar (as part-nature)	See above
A0EPN	Salat dressing (as part-nature)	See above
A06HE	Savoury sauces (as part-nature)	See above
A0EPM	Emulsified sauces (as part-nature)	See above
A0EPL	Tomato-based cooking sauces (as part-nature)	See above
A0EPK	White sauces (as part-nature)	See above
A0EPJ	Brown cooked sauces (as part-nature)	See above
A0EPH	Mustard-type sauces (as part-nature)	See above
A0EPG	BBQ-type sauces (as part-nature)	See above
A0EPF	Sauces from fermented/hydrolised sources and similar (as part-nature)	See above
A0EPE	Tomato ketchups (as part-nature)	See above
A0EPP	Herbs/spices sauces (as part-nature)	See above
A0ERF	Vegetables-based cooked sauce (as part-nature)	See above
A0EPC	Relishes (as part-nature)	See above
A06HG	Chutneys (as part-nature)	See above
A0EPD	Pickles (as part-nature)	See above
A06HH	Dessert sauces/toppings (as part-nature)	See above
A06HM	Meat and dairy imitates (as part-nature)	See above
A06HN	Meat imitate (as part-nature)	See above
A06HP	Dairy imitate (as part-nature)	See above
A06CV	Pasta (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A06CX	Simple pasta (as part-nature)	See above
A06CY	Filled pasta (as part-nature)	See above
A06CZ	Pasta alternative (as part-nature)	See above
A06DA	Doughs (as part-nature)	See above
A06DB	Yeast leavened bread doughs (as part-nature)	See above
A06DC	Yeast leavened sweet doughs (as part-nature)	See above
A06DD	Chemically leavened doughs (as part-nature)	See above
A06DE	Unleavened doughs (as part-nature)	See above
A06DF	Short pastry doughs (pate brisee) (as part-nature)	See above
A06DG	Short sweet pastry doughs (pate sucree, sablee) (as part-nature)	See above
A06DH	Choux pastry doughs (as part-nature)	See above
A06DJ	Cake pre-mixes/batter (as part-nature)	See above
A06DK	Laminated dough (as part-nature)	See above
A06DL	Miscellaneous doughs (as part-nature)	See above
A0ERD	Pre-mixes (dry) for baked products (as part-nature)	See above
A0EPQ	Bakery products (as part-nature)	See above
A06CM	Bread (as part-nature)	See above
A06CN	Leavened bread (as part-nature)	See above
A0EPR	Sandwich bread (as part-nature)	See above
A06CP	Unleavened or flat bread (as part-nature)	See above
A0ERA	Crackers and breadsticks (as part-nature)	See above
A06CQ	Crisp bread (as part-nature)	See above
A06CR	Puffed-textured bread (as part-nature)	See above
A06CS	Rusk (as part-nature)	See above
A06CT	Bread alternative (as part-nature)	See above
A0EPS	Bread products (as part-nature)	See above
A06DM	Fine bakery (as part-nature)	See above
A06DN	Biscuits (as part-nature)	See above
A06DP	Choux pastry (as part-nature)	See above
A0ERC	Cakes (as part-nature)	See above
A06DQ	Yeast leavened pastry (as part-nature)	See above
A06DR	Shortcrust pastry (pies/tarts) (as part-nature)	See above
A06DS	Puff pastry (as part-nature)	See above
A06DT	Miscellaneous pastry (as part-nature)	See above
A06DV	Cereals or roots-based snacks or breakfast composite (as part-nature)	See above
A06EA	Chips, crisps, fries and dough-based analogues (as part-nature)	See above
A0EPT	Chips/crisps (as part-nature)	See above
A0EPV	Puffs/curls-type extruded snack (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A06EB	Snacks other than chips and similar (as part-nature)	See above
A06DY	Cereal bars (as part-nature)	See above
A06DZ	Muesli (as part-nature)	See above
A06DX	Porridge (ready to eat) (as part-nature)	See above
A06BY	Mineral, synthetic or isolated purified ingredients (as part-nature)	Part-natures for mineral, synthetic or isolated purified ingredients is organised by chemical nature of the substances or mixtures involved. In the case of additives etc. the regulatory classes are taken into account. In some cases additional levels are defined by type of origin (e.g. Fats and oils, isolated proteins)
A06CB	Additives, flavours, baking and processing aids (as part-nature)	See above
A06CD	Food flavours (as part-nature)	See above
A06CE	Food colours (as part-nature)	See above
A06CF	Food additives other than flavours, colours and artificial sweeteners (as part-nature)	See above
A06CG	Miscellaneous agents for food processing (as part-nature)	See above
A06CH	Processing aids (as part-nature)	See above
A06CC	Artificial sweeteners (e.g., aspartame, saccharine) (as part-nature)	See above
A0EMP	Animal and vegetable fats and oils (as part-nature)	See above
A068M	Vegetable fats and oils (as part-nature)	See above
A06AR	Animal fat (processed fat from animal tissues) (as part-nature)	See above
A06BD	Refined dairy fat (butter oil) (as part-nature)	See above
A06ET	Fat emulsions and blended fats (as part-nature)	See above
A06BE	Butter (as part-nature)	See above
A0ENG	Margarine (as part-nature)	See above
A0EYC	Blended fats including shortening (as part-nature)	See above
A06EC	Sugars and similar (as part-nature)	See above
A06EE	Mono and disaccharides (as part-nature)	See above
A0EPY	Sucrose (as part-nature)	See above
A06ED	Glucose (as part-nature)	See above
A0EPZ	Fructose (as part-nature)	See above
A06BF	Lactose (as part-nature)	See above
A0ESD	Galactose (as part-nature)	See above
A0F0R	Maltose (as part-nature)	See above
A06EF	Honey (as part-nature)	See above
A06EG	Syrup (as part-nature)	See above
A06EH	Polyol (as part-nature)	See above
A0BZ0	Maltodextrins and similar (as part nature)	See above
A0BZ1	Inulin and other polyfructoses (as part-nature)	See above
A068D	Starch (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A0EQA	Isolated proteins and other protein products (as part-nature)	See above
A06BG	Milk protein (as part-nature)	See above
A06BH	Whey protein (as part-nature)	See above
A0EQB	Ingredients for food fortification/enrichment (as part-nature)	See above
A06FV	Vitamins (as part-nature)	See above
A0EQC	Chemical elements (as part-nature)	See above
A06FX	Miscellaneous supplements or fortifying agents (as part-nature)	See above
A0ESC	Special fatty acids (as part-nature)	See above
A0EQT	Omega-3 fatty acids (as part-nature)	See above
A0ERH	Omega-6 fatty acids (as part-nature)	See above
A06FZ	Dietary fibre (as part-nature)	See above
A06GA	Phytochemicals (as part-nature)	See above
A0ERJ	Phytosterols (as part-nature)	See above
A0ERL	Polyphenols (as part-nature)	See above
A0ERK	Carotenoids (as part-nature)	See above
A06GB	Algae based fortifying agents (e.g. Spirulina, chlorella) (as part-nature)	See above
A0ESB	Coffeine (as part-nature)	See above
A0ERM	Enzymes for fortification (as part-nature)	See above
A06FY	Bee-produced fortifying agents (as part-nature)	See above
A0CEG	Non-food animal-related matrices (as part-nature)	Part-nature descriptors for non-food animal related matrices are specifically oriented to the needs of the Veterinary drug residues data collection and refer to biological samples or samples of other nature potentially analysed.
A0CES	Thyroid (as part-nature)	See above
A0CET	Urine (as-part-nature)	See above
A0CEV	Faeces (as part-nature)	See above
A0CEY	Blood serum (as part-nature)	See above
A0CEX	Plasma (as part-nature)	See above
A0EKY	Bile (as part-nature)	See above
A067P	Eye (as part-nature)	See above
A0ERZ	Eyeball (as part-nature)	See above
A0ESE	Feather (as part-nature)	See above
A0ESP	Hair (as part-nature)	See above
A0ESN	Injection site (as part-nature)	See above
A0ESK	Pollen (as part-nature)	See above
A0ESJ	Retina (as part-nature)	See above
A0ESH	Sand (as part-nature)	See above
A0ESG	Tissues juice (as part-nature)	See above

FoodEx2 code	Name (as part-nature)	Note
A0ESF	Wool (as part-nature)	See above
A0F0Y	Feed (as part-nature)	See above
A166E	Non-food plant-related matrices (as part-nature)	Part-nature descriptors for non-food plant related matrices specifically oriented to the needs of the Botanical Compendium data collection.
A166F	Aerial part of plants (as part-nature)	See above
A166G	Cone (as part-nature)	See above
A166H	Flowering top (as part-nature)	See above
A166J	Husk (as part-nature)	See above
A166K	Nutgall (as part-nature)	See above
A166L	Stigma (as part-nature)	See above
A166M	Stolon (as part-nature)	See above
A166N	Trunk (as part-nature)	See above
A166P	Wood (as part-nature)	See above
A166Q	Essential oil (as part-nature)	See above
A166R	Gum (as part-nature)	See above
A166S	Latex (as part-nature)	See above
A166T	Oleo-gum-resin (as part-nature)	See above
A166V	Sap (as part-nature)	See above
A166X	Resin (as part-nature)	See above

The table refers to terms updated at the end of February 2015.

Table A2: Process facet

FoodEx2 code	Name (different processes)	Note
A0C0Q	Generic process descriptors	
A07HS	Raw, no heat treatment	
A0C0S	Unprocessed	
A0C0R	Processed	
A0CHR	Batch process	
A0CHS	Continuous process	
A0CHV	Preserved (unspecified method)	
A066E	Semi-preserved (unspecified method)	
A07KS	Physical division / dimension reduction	
A07KT	Portioning	
A07KV	Slicing	
A07KX	Dicing and stripe-cutting	
A07KY	Mincing / chopping / cutting	
A07KZ	Grating	
A07LA	Grinding / milling / crushing	
A0C6N	Pulping / mashing	
A0C0K	Maceration	
A0BYG	Preservation treatments not changing nature	
A07JB	Physical decontamination treatment	
A0BZG	Aspiration	
A0BZL	Desliming	
A07JE	Cleaning	
A07JF	Brushing	
A07JG	Washing	
A07JH	Centrifugal cleaning	
A07JC	High pressure treating (pascalisation)	
A07JD	Micro-filtering	
A07JJ	Irradiation	
A0CSQ	Surface treatment with sanitizing agents	
A07KN	Lowering temperature	
A07KP	Chilling	
A07KQ	Freezing	
A07KR	Iqf freezing (flash/blast freezing)	
A07HR	Thermal treatment (heating for preservation)	
A07HT	Low pasteurisation (thermisation)	
A07HV	Pasteurisation	

FoodEx2 code	Name (different processes)	Note
A07HX	High pasteurisation (extending shelf life)	
A07HY	UHT	
A07HZ	Statical sterilisation (in batch or package)	
A07JA	Hot-filling	
A0BA1	Cooking and similar thermal preparation processes	
A07GF	Blanching	
A07GG	Cooking in water	
A07GH	Poaching	
A07GJ	Simmering	
A07GK	Scalding	
A07GL	Boiling	
A07GM	Stewing	
A07GN	Bain-marie cooking (in water bath)	
A07GP	Steaming	
A07GQ	Pressure cooking	
A07GR	Frying	
A07GS	Pan frying / shallow frying	
A07GT	Stir frying	
A07GV	Deep frying	
A07GX	Baking	
A07GY	Roasting	
A0EJY	Grilling/griddling (high temperature cooking)	
A07GZ	Broiling/grilling	
A07HA	Griddling	
A07HB	Microwave-cooking	
A0CRA	Infra-red micronisation	
A07HC	Toasting / coffee roasting	
A07HD	Reheating	
A07HE	Oven reheating	
A07HF	Microwave reheating	
A07HG	Pan reheating	
A07HH	Reheating in the pack	
A07HJ	Caramelization / browning	
A0BYM	Protective packing	
A0BYN	Aseptic filling	
A0BYP	Canning / jarring	
A07JK	Vacuum-packing	
A0C0N	Preservation with substances / ingredients	

FoodEx2 code	Name (different processes)	Note
A07JP	Preserving with salt	
A0F2N	Brining	
A07JQ	Preserving with sugars	
A07JR	Candying	
A07JS	Preserving with preserving additives	
A0CER	Preserving with alcohol	
A07JV	Smoking	
A07JL	Modification with chemical and biological agents	
A0C0P	Modification with substances / ingredients	
A07LQ	Alkalizing	
A07JM	Acidifying	
A07LR	Bleaching	
A07JN	Carbonating	
A07LS	Bromating	
A07JT	Marinating	
A07KC	Pickling	
A0CRH	Seasoning	
A07LX	Hydrolysis (sugar/proteins/fats)	
A07LT	Hydrogenation	
A07JX	Biological treatment	
A0CQZ	Fermentation	
A07JY	Yeast fermentation	
A07JZ	Bacteria fermentation	
A07KA	Mould culturing	
A07KB	Enzyme treatment	
A07KD	Curing	
A0C6F	Ripening	
A0C0L	Malting	
A07LD	Physico-chemical modification	
A07LE	Aerating / whipping	
A07LY	Pressurizing with aerosol propellant (spray)	
A0CRK	Stirring	
A0C0J	Liquefying	
A0BZJ	Condensation (gas to liquid)	
A0C0H	Melting	
A07LF	Extrusion/extrusion-cooking	
A07LG	Flaking	
A07LH	Flattening / rolling	

FoodEx2 code	Name (different processes)	Note
A07LJ	Homogenizing or emulsifying	
A07LK	Parboiling / pre-gelatinising	
A07LL	Puffing / expanding	
A07LM	Texturing	
A07XZ	Instantisation	
A0C0G	Gelling	
A0C0F	Micronisation	
A07XY	Granulation (from powder)	
A0BZX	Pelleting	
A07LN	Juicing	
A07LP	Coagulating / clotting	
A07KE	Subtraction of water	
A07KL	Semi-drying (e.g. Fruits)	
A07KG	Drying (dehydration)	
A07KH	Freeze-drying (lyophilisation)	
A07KJ	Air / heat drying	
A0C0C	Spray drying	
A07KK	Sun drying	
A07KF	Concentration / evaporation	
A07KM	Condensing milk (concentration + sugars)	
A07MP	Addition of water	
A07MQ	Dilution	
A07MR	Reconstitution from concentrate, powder or other dehydrated form	
A07MS	Soaking	
A07LV	Liquid injection	
A07MB	Separation of fractions / subtraction of components	
A0BZY	Fractionation	
A0BZH	Air fractionation	
A07LB	Sifting	
A0EKQ	Separation (in liquid phase)	
A07MC	Centrifugal separation	
A0C0D	Gravitational separation	
A0BZN	Pressing	
A0BZP	Filtration	
A07MD	Ultra-filtration	
A07ME	Reverse osmosis	
A07MF	Distillation	
A07MG	Fat fractioning	

FoodEx2 code	Name (different processes)	Note
A07MH	Churning	
A07MJ	Extraction	
A0BZS	Water or steam extraction	
A0BZR	Solvent extraction	
A0BZQ	Super-critical gas extraction	
A07MK	Brewing / infusion	
A0BZT	Refining	
A0CRC	Rectification	
A07ML	Crystallization	
A07MM	Lactose reduction	
A07MN	Decaffeinating	
A0BZK	Depectinising	
A0CQY	Degermination	
A0BZM	Desugaring	
A07LC	Removal of external layer	
A0BZV	Polishing	
A0C0M	Detoxification	
A0F0A	Deodorization	
A07LZ	Compounding, assembling, coating or filling	
A0CRJ	Blending	
A0CRL	Mixing	
A07MA	Filling	
A07HK	Breading	
A07HL	Battering	
A07HM	Glazing / icing	
A07HN	Sugar coating	
A07HP	Chocolate coating	
A07HQ	Nuts coating	
A0BZZ	Whole production processes	
A0C00	Winemaking	
A0C01	Beer production	
A0C6E	Cheesemaking	
A0C02	Oil production	
A0C06	Oil production - mechanical cold	
A0C08	Oil production - mechanical warm	
A0C07	Oil production - solvent based	
A0C03	Grain milling	
A0C09	Grain milling - early stages (cleaning)	

FoodEx2 code	Name (different processes)	Note
A0C0A	Grain milling - flours production	
A0C0B	Starch production	
A0C04	Sugar production	
A0C05	Fodder production	
A0CRB	Ensiling	
A0C0E	Rumen protection	

The table refers to terms updated at the end of February 2015.

Table A3: Facet descriptors for the groups defined in Regulation (EC) No 1333/2008 on food additives

Code	Descriptor
A0C5V	FA-0. All categories of foods
A0C5T	FA-01. Dairy products and analogues
A0C5S	FA-01.1 Unflavoured pasteurised and sterilised (including UHT) milk
A0C5R	FA-01.2 Unflavoured fermented milk products, including natural unflavoured buttermilk (excluding sterilised buttermilk) non-heat-treated after fermentation
A0C5Q	FA-01.3 Unflavoured fermented milk products, heat-treated after fermentation
A0C5P	FA-01.4 Flavoured fermented milk products including heat-treated products
A0C5N	FA-01.5 Dehydrated milk as defined by Directive 2001/114/EC
A0C5M	FA-01.6 Cream and cream powder
A0C5L	FA-01.6.1 Unflavoured pasteurised cream (excluding reduced fat creams)
A0C5K	FA-01.6.2 Unflavoured live fermented cream products and substitute products with a fat content of less than 20 %
A0C5J	FA-01.6.3 Other creams
A0C5H	FA-01.7 Cheese and cheese products
A0C5G	FA-01.7.1 Unripened cheese excluding products falling in category 16 (see FA.16 below)
A0C5F	FA-01.7.2 Ripened cheese
A0C5E	FA-01.7.3 Edible cheese rind
A0C5D	FA-01.7.4 Whey cheese
A0C5C	FA-01.7.5 Processed cheese
A0C5B	FA-01.7.6 Cheese products (excluding products falling in category 16) (see FA.16 below)
A0C5A	FA-01.8 Dairy analogues, including beverage whiteners
A0C59	FA-02. Fats and oils and fat and oil emulsions
A0C58	FA-02.1 Fats and oils essentially free from water (excluding anhydrous milkfat)
A0C57	FA-02.2 Fat and oil emulsions mainly of type water-in-oil
A0C56	FA-02.2.1 Butter and concentrated butter and butter oil and anhydrous milkfat
A0C55	FA-02.2.2 Other fat and oil emulsions including spreads as defined by Regulation (EC) No 1234/2007 and liquid emulsions
A0C54	FA-02.3 Vegetable oil pan spray
A0C53	FA-03. Edible ices

Code	Descriptor
A0C52	FA-04. Fruit and vegetables
A0C51	FA-04.1 Unprocessed fruit and vegetables
A0C50	FA-04.1.1 Entire fresh fruit and vegetables
A0C4Z	FA-04.1.2 Peeled, cut and shredded fruit and vegetables
A0C4Y	FA-04.1.3 Frozen fruit and vegetables
A0C4X	FA-04.2 Processed fruit and vegetables
A0C4V	FA-04.2.1 Dried fruit and vegetables
A0C4T	FA-04.2.2 Fruit and vegetables in vinegar, oil, or brine
A0C4S	FA-04.2.3 Canned or bottled fruit and vegetables
A0C4R	FA-04.2.4 Fruit and vegetable preparations, excluding products covered by 5.4 (see FA.05.4 below)
A0C4Q	FA-04.2.4.1 Fruit and vegetable preparations excluding compote
A0C4P	FA-04.2.4.2 Compote, excluding products covered by category 16 (see FA.16 below)
A0C4N	FA-04.2.5 Jam, jellies and marmalades and similar products
A0C4M	FA-04.2.5.1 Extra jam and extra jelly as defined by Directive 2001/113/EC
A0C4L	FA-04.2.5.2 Jam, jellies and marmalades and sweetened chestnut puree as defined by Directive 2001/113/EC
A0C4K	FA-04.2.5.3 Other similar fruit or vegetable spreads
A0C4J	FA-04.2.5.4 Nut butters and nut spreads
A0C4H	FA-04.2.6 Processed potato products
A0C4G	FA-05. Confectionery
A0C4F	FA-05.1 Cocoa and chocolate products as covered by Directive 2000/36/EC
A0C4E	FA-05.2 Other confectionery including breath refreshening microsweets
A0C4D	FA-05.3 Chewing gum
A0C4C	FA-05.4 Decorations, coatings and fillings, except fruit based fillings covered by category 4.2.4 (see FA.04.2.4 above)
A0C4B	FA-06. Cereals and cereal products
A0C4A	FA-06.1 Whole, broken, or flaked grain
A0C49	FA-06.2 Flours and other milled products and starches
A0C48	FA-06.2.1 Flours
A0C47	FA-06.2.2 Starches
A0C46	FA-06.3 Breakfast cereals
A0C45	FA-06.4 Pasta
A0C44	FA-06.4.1 Fresh pasta
A0C43	FA-06.4.2 Dry pasta
A0C42	FA-06.4.3 Fresh pre-cooked pasta
A0C41	FA-06.4.4 Potato gnocchi
A0C40	FA-06.4.5 Fillings of stuffed pasta (ravioli and similar)
A0C3Z	FA-06.5 Noodles
A0C3Y	FA-06.6 Batters
A0C3X	FA-06.7 Pre-cooked or processed cereals

Code	Descriptor
A0C3V	FA-07. Bakery wares
A0C3T	FA-07.1 Bread and rolls
A0C3S	FA-07.1.1 Bread prepared solely with the following ingredients: wheat flour, water, yeast or leaven, salt
A0C3R	FA-07.1.2 Pain courant français; Friss búzakenyér, fehér és félbarna kenyerek
A0C3Q	FA-07.2 Fine bakery wares
A0C3P	FA-08. Meat
A0C3N	FA-08.1 Fresh meat, excluding meat preparations as defined by Regulation (EC) N0 853/2004
A0C3L	FA-08.2 Meat preparations as defined by Regulation (EC) No 853/2004
A0C3K	FA-08.3 Meat products
A0C3J	FA-08.3.1 Non-heat-treated meat products
A0C3H	FA-08.3.2 Heat-treated meat products
A0C3G	FA-08.3.3 Casings and coatings and decorations for meat
A0C3F	FA-08.3.4 Traditionally cured meat products with specific provisions concerning nitrites and nitrates
A0C3E	FA-08.3.4.1 Traditional immersion cured products (Meat products cured by immersion in a curing solution containing nitrites and/or nitrates, salt and other components)
A0C3D	FA-08.3.4.2 Traditional dry cured products. (Dry curing process involves dry application of curing mixture containing nitrites and/or nitrates, salt and other components to the surface of the meat followed by a period of stabilisation/maturation).
A0C3C	FA-08.3.4.3 Other traditionally cured products. (Immersion and dry cured processes used in combination or where nitrite and/or nitrate is included in a compound product or where the curing solution is injected into the product prior to cooking)
A0C3B	FA-09. Fish and fisheries products
A0C3A	FA-09.1 Unprocessed fish and fisheries products
A0C39	FA-09.1.1 Unprocessed fish
A0C38	FA-09.1.2 Unprocessed molluscs and crustaceans
A0C37	FA-09.2 Processed fish and fishery products including mollusks and crustaceans
A0C36	FA-09.3 Fish roe
A0C35	FA-10. Eggs and egg products
A0C34	FA-10.1 Unprocessed eggs
A0C33	FA-10.2 Processed eggs and egg products
A0C32	FA-11. Sugars, syrups, honey and table-top sweeteners
A0C31	FA-11.1 Sugars and syrups as defined by Directive 2001/111/EC
A0C30	FA-11.2 Other sugars and syrups
A0C2Z	FA-11.3 Honey as defined in Directive 2001/110/EC
A0C2Y	FA-11.4 Table-top sweeteners
A0C2X	FA-11.4.1 Table-top sweeteners in liquid form
A0C2V	FA-11.4.2 Table-top sweeteners in powder form
A0C2T	FA-11.4.3 Table-top sweeteners in tablets
A0C2S	FA-12. Salts, spices, soups, sauces, salads and protein products
A0C2R	FA-12.1 Salt and salt substitutes

Code	Descriptor
A0C2Q	FA-12.1.1 Salt
A0C2P	FA-12.1.2 Salt substitutes
A0C2N	FA-12.2 Herbs, spices, seasonings
A0C2M	FA-12.2.1 Herbs and spices
A0C2L	FA-12.2.2 Seasonings and condiments
A0C2K	FA-12.3 Vinegars
A0C2J	FA-12.4 Mustard
A0C2H	FA-12.5 Soups and broths
A0C2G	FA-12.6 Sauces
A0C2F	FA-12.7 Salads and savoury based sandwich spreads
A0C2E	FA-12.8 Yeast and yeast products
A0C2D	FA-12.9 Protein products, excluding products covered in category 1.8 (see FA.01.8 above)
A0C2C	FA-13. Foods intended for particular nutritional uses as defined by Directive 2009/ 39/EC
A0C2B	FA-13.1 Foods for infants and young children
A0C2A	FA-13.1.1 Infant formulae as defined by Commission Directive 2006/141/EC
A0C29	FA-13.1.2 Follow-on formulae as defined by Directive 2006/141/EC
A0C28	FA-13.1.3 Processed cereal-based foods and baby foods for infants and young children as defined by Commission Directive 2006/125/EC
A0C27	FA-13.1.4 Other foods for young children
A0C26	FA-13.1.5 Dietary foods for infants and young children for special medical purposes as defined by Commission Directive 1999/21/EC and special formulae for infants
A0C25	FA-13.1.5.1 Dietary foods for infants for special medical purposes and special formulae for infants
A0C24	FA-13.1.5.2 Dietary foods for babies and young children for special medical purposes as defined in Directive 1999/21/EC
A0C23	FA-13.2 Dietary foods for special medical purposes defined in Directive 1999/21/EC (excluding products from food category 13.1.5)
A0C22	FA-13.3 Dietary foods for weight control diets intended to replace total daily food intake or an individual meal (the whole or part of the total daily diet)
A0C21	FA-13.4 Foods suitable for people intolerant to gluten as defined by Commission Regulation (EC) No 41/2009
A0C20	FA-14. Beverages
A0C1Z	FA-14.1 Non-alcoholic beverages
A0C1Y	FA-14.1.1 Water, including natural mineral water as defined in Directive 2009/54/EC and spring water and all other bottled or packed waters
A0C1X	FA-14.1.2 Fruit juices as defined by Directive 2001/112/EC and vegetable juices
A0C1V	FA-14.1.3 Fruit nectars as defined by Directive 2001/112/EC and vegetable nectars and similar products
A0C1T	FA-14.1.4 Flavoured drinks
A0C1S	FA-14.1.5 Coffee, tea, herbal and fruit infusions, chicory; tea, herbal and fruit infusions and chicory extracts; tea, plant, fruit and cereal preparations for infusions, as well as mixes and instant mixes of these products
A0C1R	FA-14.1.5.1 Coffee, coffee extracts
A0C1Q	FA-14.1.5.2 Other
A0C1P	FA-14.2 Alcoholic beverages, including alcohol-free and low-alcohol counterparts
A0C1N	FA-14.2.1 Beer and malt beverages
A0C1M	FA-14.2.2 Wine and other products defined by Regulation (EEC) No 1234/2007, and alcohol-free counterparts

Code	Descriptor
A0C1L	FA-14.2.3 Cider and perry
A0C1K	FA-14.2.4 Fruit wine and made wine
A0C1J	FA-14.2.5 Mead
A0C1H	FA-14.2.6 Spirit drinks as defined in Regulation (EC) No 110/2008
A0C1G	FA-14.2.7 Aromatised wine-based products as defined by Regulation (EEC) No 1601/91
A0C1F	FA-14.2.7.1 Aromatised wines
A0C1E	FA-14.2.7.2 Aromatised wine-based drinks
A0C1D	FA-14.2.7.3 Aromatised wine-product cocktails
A0C1C	FA-14.2.8 Other alcoholic drinks including mixtures of alcoholic drinks with non-alcoholic drinks and spirits with less than 15 % of alcohol
A0C1B	FA-15. Ready-to-eat savouries and snacks
A0C1A	FA-15.1 Potato-, cereal-, flour- or starch-based snacks
A0C19	FA-15.2 Processed nuts
A0C18	FA-16. Desserts excluding products covered in categories 1, 3 and 4 (see FA.01, FA.03 and FA.04 above)
A0C17	FA-17. Food supplements as defined in Directive 2002/46/EC of the European Parliament and of the Council excluding food supplements for infants and young children
A0C16	FA-17.1 Food supplements supplied in a solid form including capsules and tablets and similar forms, excluding chewable forms
A0C15	FA-17.2 Food supplements supplied in a liquid form
A0C14	FA-17.3 Food supplements supplied in a syrup-type or chewable form
A0C13	FA-18. Processed foods not covered by categories 1 to 17 (see FA.01 to FA.17), excluding foods for infants and young children

The table refers to terms updated at the end of February 2015.

Table A4: Facet descriptors for the groups defined in Commission Recommendation 2010/307/EU[19] on the monitoring of acrylamide and Commission Recommendation 2013/647/EU[20] on investigations into the levels of acrylamide in food (Annex, point C)

Code	Descriptor	
A169J	AC-1.	French fries sold as ready to eat
A169H	AC-1.1	French fries from fresh potatoes
A169G	AC-1.2	French fries from potato dough
A169F	AC-1.3	Unspecified French fries sold as ready to eat
A169E	AC-2.	Potato crisps and potato-based crackers
A169D	AC-2.1	Potato crisp from fresh potatoes
A169C	AC-2.2	Potato crisp from potato dough
A169B	AC-2.3	Unspecified potato crisps
A169A	AC-2.4	Potato-based crackers
A168Z	AC-3.	Pre-cooked French fries, potato products for home cooking
A168Y	AC-3.1	Fries baked in the oven (oven fries)
A168X	AC-3.2	Deep fried fries
A168V	AC-3.3	Unspecified pre-cooked French fries, potato products for home cooking
A168T	AC-4.	Soft bread
A168S	AC-4.1	Wheat based bread
A168R	AC-4.2	Soft bread other than wheat based bread
A168Q	AC-4.3	Unspecified soft bread
A168P	AC-5.	Breakfast cereals (excluding porridge)
A168N	AC-5.1	Maize, oat, spelt, barley and rice based products
A168M	AC-5.2	Wheat and rye based products
A168L	AC-5.3	Bran products and whole grain cereals, gun puffed grain
A168K	AC-5.4	Unspecified breakfast cereals (excluding porridge)
A168J	AC-6.	Biscuits, crackers, crisp bread and similar (excluding pastry and cake)
A168H	AC-6.1	Crackers with the exception of potato based crackers
A168G	AC-6.2	Crisp bread
A168F	AC-6.3	Biscuits and wafers
A168E	AC-6.4	Gingerbread
A168D	AC-6.5	Products similar to the other products in this category
A168C	AC-7.	Coffee and coffee substitutes
A168B	AC-7.1	Roasted coffee (dry)
A168A	AC-7.2	Instant coffee (dry)
A167Z	AC-7.3	Substitute coffee (dry) mainly based on cereals

[19] Commission Recommendation 2010/307/EU of 2 June 2010 on the monitoring of acrylamide levels in food. OJ L 137, 3.6.2010, p.8-10

[20] Commission Recommendation No 2013/647/EU of 8 November 2013 on investigations into the levels of acrylamide in food. OJ L 301, 12.11.2013, p.15-17.

Code	Descriptor
A167Y	AC-7.4 Other coffee substitutes (dry)
A167X	AC-7.5 Not specified coffee and coffee substitutes (dry)
A167V	AC-8. Baby foods , other than processed cereal based foods
A167T	AC-8.1 Baby foods not containing prunes
A167S	AC-8.2 Baby foods, containing prunes
A167R	AC-8.3 Unspecified baby foods
A167Q	AC-9. Processed cereal-based foods for infants and young children
A167P	AC-9.1 Biscuits and rusks for infants and young children
A167N	AC-9.2 Other processed cereal-based foods for infants and young children
A167M	AC-9.3 Not specified processed cereal-based foods for infants and young children
A167L	AC-10. Other products, based on cereals, potatoes, cocoa and coffee
A167K	AC-10.1 Porridge
A167J	AC-10.2 Cake and pastry
A167H	AC-10.3 Savoury snacks
A167G	AC-10.4 Other products, based on cereals
A167F	AC-10.5 Other products, based on potatoes
A167E	AC-10.6 Other products, based on cocoa
A167D	AC-10.7 Unspecified other products based on cereals, potatoes, cocoa and coffee
A167C	AC-11. Other products, non based on cereals, potatoes, cocoa and coffee

The table refers to terms updated at the end of February 2015.

Some Microsoft Excel® files are provided as support files for this technical report. Their list is provided in Table A5, with a short note explaining the content of each file.

Table A5: Separate spreadsheets provided as an Appendix to the present report

File name	Description
FoodEx2-revision2.xlsx	This file is an export in table form of the entire content of FoodEx2 revision 2. The export was performed on 27 February 2015.
Exposure_Hierarchy_revision2.xlsx	This file is an extract of the FoodEx2 terminology where only the terms of the exposure Hierarchy are presented in indented format. Additionally, the development of the 6 levels for each term is shown.
Foodex2-revision2-Mapping_removed_exposure_groups.xlsx	This file presents the 140 food groups removed from the exposure hierarchy in revision2 of FoodEx2 and describes their mapping to existing groups in the same hierarchy.
Foodex2-revision2-New_exposure_groups.xlsx	This file presents the 1524 new food groups in the exposure hierarchy of FoodEx2 revision2.
FoodEx2-InterpretingAndCheckingTool-2015-04-27.xlsm	This tool allows (with the support of Microsoft Excel® export of the FoodEx2 catalogue) to perform some basic checks on the codes once they have been created, for quality control purposes