

BASIC CONCEPTS OF FOOD STANDARDS

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Summary

Standards serve multifold purposes. They are written documents readily available, which can be used as the basis of contracts. By laying down the features that a product must fulfill, standards help to protect the interests of the consumer, and in turn define the requirements that producer and trade have to meet.

Among the general principles concerning the content of the standards, it should be primarily mentioned that each requirement included in the standard should be objectively measured. Any requirement concerning a product shall be generally specified in one standard, however there may be some properties of a product that should not necessarily be included in the standard, but should be declared by the manufacturer. Based on their status as standards, national, regional, and international standards may be distinguished. At a national level, some basic standards (e.g., identity, minimal quality, and so on) are issued by the government, but most are issued by standardization bodies.

It should be noted that a question arises in many cases: what should be standardized by the government, and what should be left to standardization bodies? There is a tendency to leave issues relating only to product to standardization bodies.

Concerning the content of standards, commodity (product) standards and standards for methods of test or analysis are the most common type of such documents. Finally, in this chapter, the structure and the main clauses of standards will be elaborated, and different aspects will be demonstrated through example.

1. Introduction

Standardization consists of the processes of formulating, issuing, and implementing standards. Standardization may have one or more specific aims to make a product, process, or service fit for its purpose. Such aims can be, but are not restricted to, variety control, usability, compatibility, interchangeability, health, safety, protection of the environment, product protection, mutual understanding, economic performance, and trade. They can be overlapping.

The noble aim, included among others, in the statutes of FAO/WHO Codex Alimentarius, concerning the provision of satisfactory, high quality, safe food for people, can only be realized by an effective food control system based on adequate food law from which it derives its powers.

Speaking about standardization and standards concerning food, it is necessary to see that this field of activity is part of a complex system under the umbrella of a food law. Generally, food law may be divided into two parts: (1) a basic food act and (2) regulations. The Act itself sets out broad principles. Regulations contain detailed provisions governing the different categories of products coming under the jurisdiction of each set of regulations.

Food standards, hygienic provisions, lists of food additives, and chemical tolerances, and so on, are sometimes included in basic food control law.

For effective administration of and compliance with basic food law, detailed provisions are needed. In governments where there is a division between the responsibilities of the legislative and executive branches, the legislative branch enacts the basic law, while detailed regulations are elaborated and promulgated by the executive agency or agencies responsible for administering the law.

Inclusion in the law of detailed specifications (about food processing, food quality, hygienic practices, packaging and labeling, food additives, and pesticides) can make difficulties. Prompt revisions of regulations may become necessary because of new scientific knowledge, changes in food processing technology, or emergencies requiring quick action to protect public health. Such revisions can be made much more expeditiously by executive agencies than by legislative bodies.

In some countries food specifications are part of regulations; in other countries they are separate standards. Regardless of whether they are included in regulations or are separate, they become part of the enforcement structure, and are intended to support the implementation of the basic food law. As mentioned above, when requirements concerning some groups of products are to be defined, the question often arises whether they should appear in standards or in regulations. This is a particularly important and complex issue in the food and drink industry. To be able to answer this question it is necessary to understand clearly what the differences between these possibilities are.

- Standards
 - are generally developed by the parties concerned, in the framework of a standards body
 - are based on consensus
 - are voluntary
- Regulations
 - are adopted by legislative authorities of the state
 - are legally binding

If the word “standard” is used in the sense of “level” (and not as a type of document), it can refer both to regulations and to voluntary standards, but that is another meaning of the word. In English, the word “standard” has some other meanings as well: used as an adjective it may mean “usual,” “normal,” “commercial,” or “conventional.”

Although standards are generally voluntary documents, their use may be made mandatory in some cases:

- if contracting parties make reference to a standard in a contract;
- if contracting parties did not sufficiently clarify some technical conditions of a contract, and the case comes to court, the principles according to which a decision will be taken to include that the supplier should have applied due diligence and followed “the state-of-the-art” standards that are supposed to be the codification of the latter;
- if reference is made to a standard in a regulation, law, ordinance, act, or decree, or if its text is reproduced in them (legal standards).

With the growing complexity of requirements concerning food and drink products, the need for reference to standards in regulations is also growing. To verify the compliance of products with the relevant requirements, uniform testing and inspection methods are needed. The specification of all details in regulations would lead to voluminous sets of requirements, the development and maintenance of which would be a difficult task for governmental bodies and similar authorities, so they are ever more frequently faced with the problem of leaving a part of the responsibilities to standards bodies, which are usually well prepared to cope with them. In such cases the regulation to be issued would make some reference to the relevant standard.

Reference to standards can be made in various ways:

- dated reference to a particular standard—the standard is identified by using its identification number with its year of issue
- undated reference to a particular standard—the standard is identified by using its identification number without its year of issue—in this case the latest edition of the normative document referred to applies)
- general reference to standards: without identification of a particular standard

All three possibilities mentioned above can be:

- either exclusive reference—the only acceptable solution is that specified in the standard;
- or indicative reference—the standard referred to is only an example of the possible acceptable solutions.

In the European Union, the use of the method of reference to standards is generally in connection with the so-called new approach directives. They apply the general reference to standards in which the reference is not exclusive but only indicative. If a product complies with the requirement of the relevant, harmonized, European standard, it must be assumed that the product complies with the relevant directives.

2. Standardization in Food Production

2.1. General

Standards can play an important role in facilitating trade. For example, when buyers and sellers negotiate contracts, they want to be able to refer to recognized qualities of the products to be traded, and to the accepted means of testing and analyzing to verify these qualities. This is highly important for all large scale trading within a country, but standards become even more important in the case of the exchange of goods and services at the international level, when buyers and sellers may be widely dispersed, speak different languages, or have different production and trading environments. When goods have to be bought and sold on international markets, recognized standards are the important reference documents. Orderly trade standards constitute a good selling point if the goods being offered to a foreign market can be stated to be in accordance with standards that have been approved internationally.

Agricultural food products are no exception to the above rule. It can be said that the need for standards is even more acute in their case, because from their very nature there

are likely to be considerable variations of type and quality during production and processing, more so than for an engineering product produced by mechanical means.

In fact standards can serve multifold purposes. They are the written documents, readily available, that can be used as the basis for contracts. By laying down the features that the product must fulfill, standards help to protect the interests of the consumer and in turn define the requirements that producers and trade have to meet. They represent the best available compromise, in the current state of knowledge, between the requirements of import quality and the interests of the exporting country. Goods conforming to recognized standards, and capable of being verified as such, can be expected to sell more readily to reputable buyers, and to fetch better return on the world market. Standards thus lay the foundation for development, and for growth of production and export along sound lines, and serve the interests of both the exporting and the importing countries.

2.2. Principal Aspects of Standardization

For agriculture and the food industry, the most important aspects of standardization relate to:

- terminology
- methods of sampling and analysis
- product specification and grading
- and requirements for handling, transport, and storage

2.2.1. Terminology

Agreement on terminology and definitions may be regarded as a first requirement, both in national and international standardization activities, to ensure that all interested parties are speaking the same language. Important enough for trading within country, this aspect is far more important when goods and services have to be exchanged on the international market. Many national standards describe terms, definitions, nomenclature, and lists of equivalent terms. In the field of agricultural food products, ISO has published standards vocabularies for oilseeds, cereals, pulses, coffee and its products, fruits and vegetables, and spices and condiments, and for animals for slaughter.

2.2.2. Methods of Sampling and Analysis

One of the prerequisites for the international exchange of goods is the availability of agreed methods of testing or analysis for verifying the quality. Standards may therefore be required for:

- adequate sampling
- quality measurement (to ascertain the quality of a product being offered for sale)
- quality assurance (to verify that the quality of the product traded is in accordance with the agreed upon terms of the contract)
- quality control or management with regard to effecting variations, rectifications, or adjustments, and blending, and so on, to maintain or improve the quality in response to market requirements.

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Biographical Sketches

Radomir Lásztity D.Sc., Professor of the Department of Biochemistry and Food Technology at Budapest University of Technology and Economics, was born in 1929 in Deszk, Hungary. He completed his studies in 1951 at the Faculty of Chemical Engineering of the Technical University of Budapest. Dr. Lásztity received his M.Sc. degree in Chemical Engineering in 1951 and his D.Sc. degree in Chemical Science in 1968.

Dr. Lásztity is honorary president of ICC (International Association for Cereal Science and Technology). He was acting chairman of the Codex Committee on Methods of Analysis and Sampling of the FAO/WHO Food Standard Program in the period 1975-1988. Dr. Lásztity is a member of the Food Division of the Federation of European Chemical Societies and member of editorial board of several international scientific journals. He was acting Vice-Director of the Technical University from 1970 to 1976.

Among other awards he has received the Bailey and Schweitzer Medal of the ICC, the State Prize of the Hungarian Republic, and the Golden Medal of the Czech Academy of Sciences.

Dr. Lásztity's main research activities are chemistry and biochemistry of food proteins, food analysis, and food control. The results of his research work were published in more than 700 papers in foreign and Hungarian journals. He is the author of more than 20 books and textbooks (among them: *Chemistry of Cereal Proteins*, First and Second Editions, in 1984 and 1996, respectively; *Amino Acid Composition and Biological Value of Cereal Proteins*, 1985; *Use of Yeast Biomass in Food Production*, 1991; *Gluten Proteins*, 1987; *Cereal Chemistry*, 1999).

Dr. Martha Petró-Turza, chemical engineer, graduated in 1996 and received her doctor's degree in 1975 at Budapest Technical University, Hungary. Between 1966 and 1990 she worked as a researcher for the Central Food Research Institute, Budapest. In the last 13 years of this period she was head of the Analytical Chemistry Division of the Institute. Her main research areas were flavor research and the detection of adulteration of fruit juices. Between 1990 and 1995 she was the director of quality assurance of the Canning Research Institute, in Budapest.

Since 1996 she has worked for the Hungarian Standards Institution as secretary of ISO Technical Committee TC 34 "Food products" and its Subcommittee SC 4 "Cereals and pulses."

Thomas Földesi was born in 1920 in Budapest, Hungary. An electrical engineer, he graduated in 1942 at the Technical University in Budapest. He worked at a design office, then in foreign trade, and since 1957 in the Hungarian Office for Standardization (transformed in 1995 into the Hungarian Standards Institution, MSZT). He retired in 1983 but continued to work at the same office as a senior advisor. In the meantime, from 1974 to 1980, he worked in the ISO Central Secretariat in Geneva, dealing with standardization and certification issues. Back in Budapest, from 1983 to 1991, he was responsible for the secretariat of the Hungarian National Committee for EOQ.

His recent activities focus on training in the field of standardization, quality, certification, and accreditation. He is a certified quality system manager, author of numerous articles and some textbooks on standardization, quality, and certification. He was the prize-winner of the IIASA-Shiba award in 1998. IIASA is the International Institute for Applied Systems Analysis.