TECHNICAL REGULATION THROUGH STANDARDIZATION: THE CASE OF DAIRY AND MEAT INDUSTRIES

REGLEMENTARE TEHNICĂ PRIN STANDARDIZARE: CAZUL INDUSTRIILOR LAPTELUI ȘI CĂRNII

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Sumar. *Viața economică modernă necesită o coordonare eficientă a soluțiilor tehnice și tehnologice, iar această coordonare este sarcina reglementării tehnice și standardizării la scară globală și națională. Materialul conține informații analitice privind cadrul de reglementare pentru reglementarea tehnică în lume și în Ucraina. În cadrul standardizării naționale din Ucraina, Comitetul Tehnic de Standardizare TC 140 „Lapte, Carne și Produse din Prelucrarea acestora" este responsabil pentru dezvoltarea și menținerea standardelor în domeniul produselor lactate și din carne, Institutul de Resurse Alimentare al Academiei Naționale de Științe Agrare din Ucraina acționând ca secretariat. Domeniul de expertiză al TC 140 include, de asemenea, echipamente*

tehnologice specializate pentru producția alimentară. Articolul descrie activitățile TC 140 în aceste domenii și prezintă provocările și realizările specialiștilor săi. De asemenea, descrie progresele înregistrate în armonizarea Standardelor Naționale ale Ucrainei DSTU cu standardele europene și internaționale.

Cuvinte-cheie: *reglementare tehnică, standardizare, standarde, armonizare, produse alimentare, lapte, carne.*

INTRODUCTION

In accordance with the Law of Ukraine "On Technical Regulations and Conformity Assessment," technical regulation is the legal regulation of relations in the field of determining and implementing mandatory requirements for product characteristics or related processes and production methods, as well as verifying their compliance through conformity assessment and/or state market surveillance and control of non-food products or other types of state surveillance (control) [1]. Mandatory norms for product quality and safety are mainly established in technical regulations. According to the Law of Ukraine [1], a technical regulation is a normative legal act that defines product characteristics or related production processes and methods, including relevant administrative provisions, compliance with which is mandatory. The objectives of adopting technical regulations are to protect the life and health of humans, animals, and plants; to protect the environment and natural resources; to ensure energy efficiency; to protect property; to ensure national security; and to prevent business practices that mislead consumers (users) [2]. Thus, along with legal norms, there are also technical norms. Among technical norms, there are those that, when enshrined in regulatory acts, acquire legal force; these can be called technical-legal [2, 3].

Standards are also normative documents, but their role and place are somewhat different. In general, standardization covers all spheres of society, systematizes, approves, and controls all norms and rules of fair distribution, implements and accumulates: the latest achievements in science and technology, organically combines fundamental and applied areas of science, promotes the rapid introduction of scientific achievements into practice, and helps to identify the most economical and promising areas of development of scientific and technological progress and the national economy. The purpose of standardization is to ensure that products, processes, and services are fit for their intended purpose, to remove barriers, and to promote the rational use of resources. Standards are voluntary, except in cases where references to them are provided in laws and technical regulations. Mandatory indicators in regulatory documents include: indicators of product safety for life, human health, animals, and plants; indicators that guarantee property safety and environmental protection; occupational safety and hygiene requirements with references to relevant standards and rules; and metrological standards that ensure the reliability and uniformity of measurements [4, 5].

MATERIAL AND METHOD

Different sources of scientific and technical information concerning technical regulation and standardization as well as the above concepts applied to the dairy and meat industries. To achieve the goal of the study, a set of approaches and principles of general theoretical and specialized methods of scientific research were used. For the theoretical part, the methods of systematization and generalization, comparative methods were applied as well.

RESULTS AND DISCUSSION

Standardization is a collective activity aimed at establishing and implementing standards to define the requirements that goods, products, services, procedures, etc. must meet. The main purpose of standardization is to resolve conflicts that may arise in the implementation of recurring situations. It encompasses the development, distribution, and application of norms that may (or may not) be mandatory, and it is a dynamic and continuous process [6-8].

Standardization requires clear rules and formulations that exist and must be mastered by specialists. The Law of Ukraine "On Standardization" states that a standard is a normative document based on consensus, adopted by a recognized body, which establishes rules, instructions, or characteristics for general and repeated use regarding activities or their results, and is aimed at achieving an optimal degree of order in a particular field [4]. Standards regulating general technical conditions and technical conditions for food products are usually voluntary. However, domestic consumers are well acquainted with the hierarchy of regulatory documents for food products and, given the choice, prefer products manufactured in accordance with the National Standards of Ukraine DSTU.

For twenty years now, Ukrainian specialists in technical regulation and standardization have been working intensively to achieve the necessary and sufficient harmonization of National Standards DSTU with European Union EN standards, International Organization for Standardization ISO standards, and other recognized international standards. The complexity of this process lies in the fact that the National Standards DSTU for food products regulate specifications and general specifications for food products, while European and international standards contain norms for determining the safety indicators of food raw materials and finished food products. The international standards CODEX STAN Codex Alimentarius also regulate the quality indicators of food products, but they only contain a description of the finished product without requirements for the technological process of food control standards. However, significant progress has already been made in harmonizing domestic standards with European and international ones – see Table 1.

Table 1. Harmonization of standards on the food industry by the code 67 "Technology of the manufacturing food products" in accordance with NK 004:2020 [9] as of April 2025

Code according to NC 004:2020 [9]	Designation of a group according to NC 004:2020 [9]	Number of standards *		Harmonization rate, %
		in a group	including harmonized**	
67.020	Technological processes in the food industry	47	16	34
67.040	Food products in general	37	31	84
67.050	General methods of controlling and analyzing food products	197	134	68
67.060	Cereals, legumes and products of their processing	239	110	46
67.080	Fruit. Vegetables	386	176	46
67.100	Milk and milk products	246	144	59
67.120	Meat, meat products and other animal products	236	49	
67.140	Tee. Coffee. Cocoa	58	47	21
67.160	Beverages	218	42	19
67.180	Sugar. Sugar products. Starch	107	34	32
67.190	Chocolate	10	7	70
67.200	Food oils and fats. Oilseeds	273	168	
67.220	Spices and seasonings. Food additives	110	53	62
67.230	Prepacked food products and precooked food products	33	9	27
67.240	Sensorial analyzing	47	35	75
67.250	Materials and items in contact with food products	134	131	98
67.260	Installations and equipment for food industry	124	100	81
Total by the classification code 67		2502	1286	51

* *Standards of the nationwide validity (DSTU, GOST, etc.)*
** *National and interstate standards in force in Ukraine, harmonized with European and international ones (DSTU EN, DSTU ISO, GOST ISO, etc.)*

Among the standardization entities that, according to Article 8 of the Law of Ukraine "On Standardization" [4], there are technical committees, which are a form of cooperation between interested legal entities and individuals with the aim of organizing

and carrying out work on international, regional, and national standardization in certain areas of activity and on established objects of standardization. Standardization in the field of dairy and meat production is carried out by Technical Committee for Standardization 140 "Milk, Meat and Products of Their Processing," whose secretariat functions are performed by the Institute of Food Resources of the National Academy of Agrarian Sciences of Ukraine. This Institute maintains a high professional level of development of national standards, preserving the necessary balance between the technical and economic interests of producers and the need to maintain the traditionally high quality of meat and dairy products produced in accordance with National Standards DSTU [8].

The list of objects of standardization of TC 140 of the technical committee, according to the NK 004:2020 "Ukrainian Classifier of Regulatory Documents" [9] in force, is shown in Fig. 1.

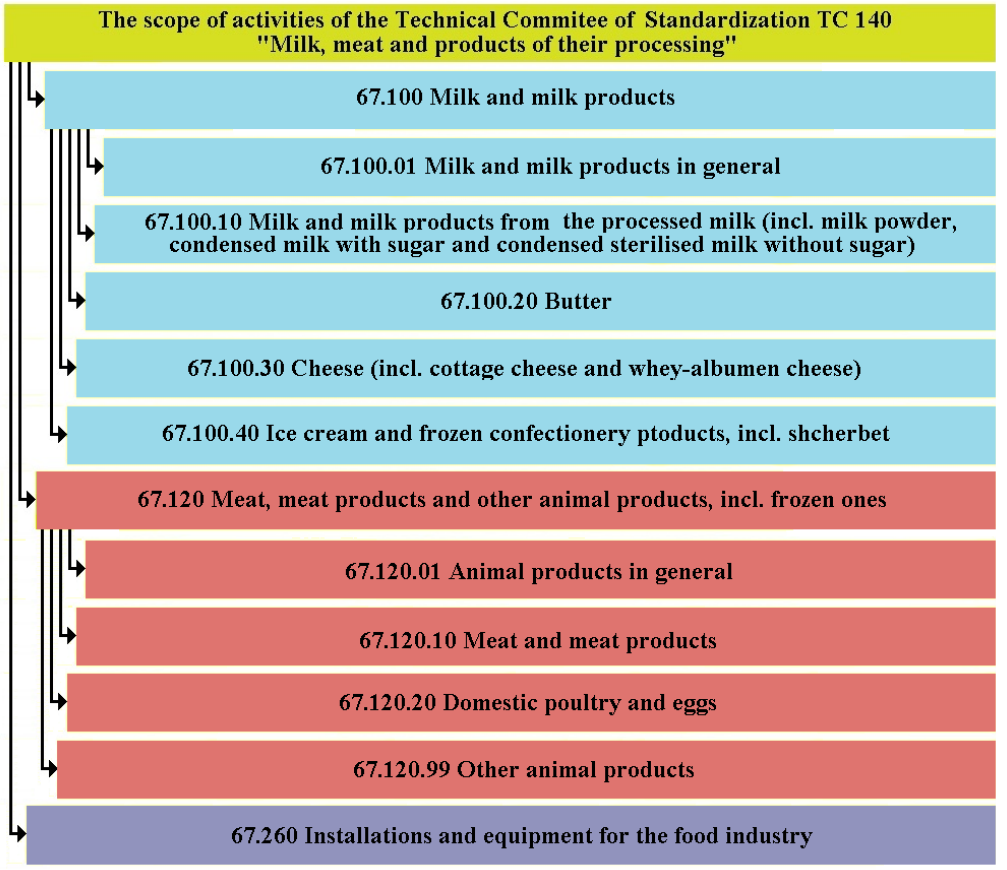


Figure 1. Objects of standardization corresponding to NK 004:2020 [19] [5]

Figure 1 shows that standardization work under code 67.260 "Installations and equipment for the food industry" also falls within the scope of TC 140 "Milk, meat, and

their processed products." Regulatory support for the production and operation of technological equipment for food industry enterprises is relevant, since standards with the specified scope of application require updating and improvement [10]. that the implementation of the above measures will contribute to the development of domestic food engineering based on modern high-tech principles, as it will eliminate the inconsistency between the current state of the system of national standards for specialized equipment for the food industry and the important role that the machine-building industry should play in the mechanization of food production and the achievement of the proper quality, safety, and environmental friendliness of the specified equipment [8]. Naturally, standards for food production equipment must take into account technical and technological innovations such as artificial intelligence, machine learning, blockchain solutions, robotics, the Internet of Things (IoT), digitization, big data, autonomous vehicles, additive manufacturing, nanotechnology, biotechnology, and 3D food printing technology [10, 11]. Accordingly, all of these innovations should be properly reflected in Ukraine's national regulatory documents.

CONCLUSION

Technical regulation and standardization play an important role in regulating economic life on a global and national scale. Ukraine has a system of legislation on technical regulation and standardization that ensures the effective performance of these functions. In particular, within the framework of national standardization in Ukraine, the Technical Committee for Standardization TC 140 "Milk, meat and their products of their processing", whose secretariat functions are performed by the Institute of Food Resources of the National Academy of Agrarian Sciences of Ukraine. In particular, TC 140 successfully carries out a range of work on harmonizing Ukrainian National Standards DSTU with European and international standards. This work should become a significant technical and legal basis for Ukraine's desired accession to the European Union and the strengthening of Ukraine's position in international markets.

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