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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47141-2026

Guidelines for determining the shelf life of food

食品保质期确定指南

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1 Scope

GB/T 47141-2026 is the Chinese national standard covering how a shelf life is arrived at - the spoilage mechanism that actually limits the product, the real-time and accelerated studies, the challenge testing where a pathogen is the limit, the safety margin and the labelling that follows. Shelf life is one of the most guessed-at numbers in the food industry, and this is the document that asks for evidence. First edition. It was issued on 28 January 2026 and has been in force since 1 August 2026, as a first edition. The document is under the responsibility of the State Administration for Market Regulation. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This Document provides guidance on the general principles for determining shelf life of food, factors to be considered, work processes, verification of shelf life of food, and management systems, etc. This Document applies to the determination of food shelf life.

2 Normative References

This Document has no normative references.

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Shelf life of food The period during which food maintains its quality under the indicated storage conditions.

3.2 Storage condition The environmental conditions such as temperature, humidity, and light required for food to maintain its inherent quality stability during storage.

3.3 Ingredient Any substance used in the manufacture or processing of food and present in food (including in modified form), including water, edible agricultural products, food used as raw materials, and food additives (including food fortifiers).

3.4 Food stability test Methods for determining the shelf life of food by studying the degree and laws of quality changes in food under different environmental conditions. NOTE. Food stability test includes long-term stability test and accelerated destruction test.

4 Principle

4.1 The objectives of determining shelf life of food should include.

--- Ensuring that the shelf life meets the requirements of laws, regulations, and relevant standards;

--- Ensuring the inherent quality of the food remains stable within the shelf life;

--- Conserving food resources and reducing food waste;

--- Accurately assessing and reducing shelf-life errors;

--- Providing basic data for research & development and total quality management.

4.2 Endogenous and exogenous factors that significantly affect food should be fully considered, and a scientifically designed and implemented determination scheme of shelf life of food should be developed based on sufficient evidence. Common methods for determining shelf life of food include the reference method, literature method, and test method.

--- The reference method allows direct citation or modification of the shelf life of identical or similar foods;

--- The literature method determines the shelf life of food based on authoritative data;

--- The test method determines the shelf life of food through the results of food stability tests and/or packaging stability tests.

4.3 The shelf life of food should be scientifically determined based on the determination scheme conclusions of shelf life of food and in conjunction with production and operation practices.

4.4 The shelf life of food should be verified. Assessments shall be conducted when factors affecting the shelf life of food change. When verification or assessment reveals significant deviations in the shelf life of food, the shelf life of food should be changed or the influencing factors be adjusted promptly.

4.5 The work of determining the shelf life of food should have accurate and complete records, which can be in the form of text, pictures, tables, inspection reports, etc.

4.6 The application of digital and intelligent technologies is encouraged to be used to determine the shelf life of food.

5.1 Influencing factors and basis

5.1.1 The basis for determining the shelf life of food is a comprehensive identification of endogenous and exogenous influencing factors. The following factors shall be considered in particular.

--- Inherent characteristics of food, such as sensory, physicochemical, and microbiological properties;

--- Environmental conditions required to maintain the stability of the inherent quality of food, such as temperature, humidity, and light, etc.;

--- The food formula, ingredient characteristics, and the state and/or function of ingredients and/or components that have a key impact on shelf life of food;

--- Packaging form, packaging materials, and packaging performance, etc.;

--- Production process, production equipment, production processing environment/conditions, and production process control;

--- The influence of actual storage and transportation conditions;

--- The influence of factors related to the edibility of food, such as the purpose of edibility, edibility characteristics, and edibility methods.

5.1.2 The basis for determining the shelf life of food includes product standards (usually the primary basis), research and development documents, historical data, literature, and other relevant technical documents. The following should be considered as key bases.

--- Sensory indicators and/or requirements such as texture, mouthfeel, odor, and taste, etc.;

--- Physicochemical indicators such as moisture content, water activity, osmotic pressure, and pH, etc.;

--- Microbiological indicators such as total bacterial count, yeast, and mold, etc.;

--- Content or related indicators and/or requirements of nutrients;

--- Indicators and/or requirements related to components (or factors) sensitive to conditions such as temperature, humidity, and light;

5.2 Food formulas and ingredients

5.2.1 The impact of food formulas and ingredients on the shelf life of food should be

considered, with particular attention to the following.

--- The variety and quantity of raw materials, excipients, and food additives in the food formulas, and the rationality of their proportions;

--- The possibility of optimizing/improving the food formulas based on product performance requirements and process conditions;

--- The state (solid, liquid, etc.), stability, performance characteristics, dosage/content, and method of addition of major ingredients;

--- The stability, performance characteristics, dosage/content, etc. of excipients, especially those with a significant or critical impact on the shelf life of food (hereinafter referred to as "critical excipients");

--- The impact of the existence and performance characteristics of intermediate products (hereinafter referred to as "semi-finished products") during food processing and production of other foods;

--- Other situations requiring special consideration.

5.2.2 When changes in the performance of food ingredients and semi-finished products may affect the shelf life of the final food product, a recommended shelf life should be set, taking into account, but not limited to, the following influencing factors.

--- Sensory, physicochemical, microbiological, and nutritional characteristics of food ingredients and semi-finished products;

--- Performance characteristics of food ingredients and semi-finished products; EXAMPLE

1.Enzyme activity.

--- Usage methods, dosages, or contents of food ingredients and semi-finished products, and their forms of existence in food; EXAMPLE

2.Viable bacterial count.

--- Requirements of food production technologies, production processes, and production environment on food ingredients and semi-finished products;