ICS 67.160.10
CCS X 62

National Standards of People's Republic of China

GB/T 10781.4-2024

Quality requirements for baijiu - Part 4: Jiangxiangxing baijiu

白酒质量要求 第4部分：酱香型白酒

(Draft for approval)

(English Translation)

Issue date: XXXX-XX-XX Implementation date: XXXX-XX-XX

Issued by State Administration for Market Regulation
Standardization Administration of the People's Republic of China

Foreword

SAC/TC358 is in charge of this English translation. In case of any doubt about the contents of English translation, the Chinese original shall be considered authoritative.

This document is drafted in accordance with the rules given in the GB/T 1.1-2020 *Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents*.

This is Part 4 of GB/T 10781 *Quality requirements for baijiu*, which has published the following parts under the general title:

——*Part 1: Nongxiangxing baijiu*;

——*Part 2: Qingxiangxing baijiu*;

——*Part 4: Jiangxiangxing baijiu*;

——*Part 8: Nongjiangjianxiangxing baijiu*;

——*Part 9: Zhimaxiangxing baijiu*;

——*Part 11: Fuyuxiangxing baijiu*.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing body of this document shall not be held responsible for identifying any or all such patent rights.

This document was proposed by the China National Light Industry Council.

This document was prepared by SAC/TC 358 the National Technical Committee 358 on Baijiu of Standardization Administration of China.

The previous editions of this document are as follows:

GB/T 26760-2011

This is the first revised edition.

Introduction

Baijiu is a traditional distilled spirit in China, its unique multiple microbial solid state/semisolid fermentation, distillation and other production processes contribute to a variety of baijiu styles. The traditional Chinese baijiu is represented by twelve major aroma types, with Jiangxiangxing baijiu being one of them.

To better assist consumers in recognizing and appreciating the quality characteristics of Jiangxiangxing baijiu, this document describes the principal production processes and technical points in the informative appendix. Additionally, by referring to the principles and methods for establishing a sensory profile as provided in GB/T 39625-2020, the aroma characteristics of typical Jiangxiangxing baijiu are described using sensory terms that are easy for consumers to understand, and a sensory profile diagram of the aroma characteristics is provided in the informative appendix to clearly convey the product characteristics of Jiangxiangxing baijiu to consumers.

Esters and organic acids are important aroma and flavor compounds in baijiu. Under natural conditions, a reversible reaction occurs between organic acids, alcohols, and esters, which over time contributes to the long-term stabilization and harmonization of baijiu. In the process of revising this document, the objective laws of acid-ester conversion in baijiu were followed, and different physicochemical index requirements were proposed for products within one year of the production date and those older than one year.

The purpose of formulating GB/T 10781 "Quality requirements for baijiu" is to standardize the quality requirements during the production, inspection, and sales processes of baijiu produced in three different ways: traditional baijiu (including twelve major aroma types), liquid fermentation baijiu, and traditional and liquid fermentation baijiu.

GB/T 10781 is proposed to be divided into the following sections:

——*Part 1: Nongxiangxing baijiu*;

——*Part 2: Qingxiangxing baijiu*;

——*Part 3: Mixiangxing baijiu*;

——*Part 4: Jiangxiangxing baijiu*;

——*Part 5: Chixiangxing baijiu*;

——*Part 6: Fengxiangxing baijiu*;

——*Part 7: Texiangxing baijiu*;

——*Part 8: Nongjiangjianxiangxing baijiu*;

——*Part 9: Zhimaxiangxing baijiu*;

——*Part 10: Laobaiganxiangxing baijiu*;

——*Part 11: Fuyuxiangxing baijiu*;

——*Part 12: Dongxiangxing baijiu*;

——*Part 13: Liquid fermentation baijiu*;

——*Part 14: Traditional and liquid fermentation baijiu*;

——*Part 15: Xiaoqu traditional baijiu*.

Quality requirements for baijiu - Part 4: Jiangxiangxing baijiu

1 Scope

This document specifies the quality requirements of Jiangxiangxing baijiu, including production process requirements, technical requirements, inspection rules, sign, packaging, transport, and storage, and describes test methods.

This document applies to the production, inspection, and sales of Jiangxiangxing baijiu.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute indispensable provisions of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB 5009.225 *National food safety standard - determination of ethanol concentration in alcoholic drink and edible alcohol*

GB/T 10345 *Methods of analysis for baijiu*

GB/T 10346 *General principle of inspection and sign, packaging, transport, storage for baijiu*

GB 12456 *National food safety standard - determination of total acids in food*

GB/T 15109 Terminology of baijiu industry

JJF 1070 *Rules of metrological testing for net quantity of products in prepackages with fixed content*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 15109 and the following apply.

3.1

jiangxiangxing baijiu

jiang-flavor baijiu

a type of baijiu made from grains, using high-temperature daqu (3.3) and/or other saccharification and fermentation agents, produced through solid-state fermentation, solid-state distillation, aging, and blending. It does not directly or indirectly add edible alcohol or coloring, aromatic, or flavoring substances not naturally produced during fermentation, and it has the distinctive aroma and style of jiangxiangxing baijiu.

Note to entry: Other saccharification and fermentation agents refer to those that do not

exclusively use, or do not use high-temperature daqu.

3.1.1

jiangxiangxing baijiu (daqu)

a type of jiangxiangxing baijiu made from glutinous sorghum and wheat, exclusively using high-temperature daqu (3.3) as the saccharification and fermentation agent.

Note to entry: Throught the entire production process, no artificial microbial inoculation or the use of exogenous enzymes is allowed.

3.1.2

jiangxiangxing baijiu (others)

a type of jiangxiangxing baijiu made from grains, produced either without using or partially using high-temperature daqu (3.3) as the saccharification and fermentation agent.

Note to entry: Examples include fuqu jiangxiangxing baijiu and mixed-qu jiangxiangxing baijiu.

3.2

high-temperature duiji

high-temperature stacking fermentation

a process which involves spreading and cooling the mixture of raw and fermented materials, or the distilled alcoholic fermented materials, which is then mixed with a certain proportion of high-temperature daqu (3.3). After mixing, the material is stacked into a specific shape and left in an open environment for a certain period for fermentation.

Note to entry: During stacking, microbial activity increases, and the temperature of the mixture of raw and fermented materials or the distilled alcoholic fermented materials gradually rises.

3.3

high-temperature daqu

a type of daqu in which the maximum fermentation temperature exceeds 60° C during production.

3.4

rounds

the production process of jiangxiangxing baijiu, which involves raw material adding (transferred into the fermentation pit), steaming and cooking, spreading and cooling, mixing with daqu, stacking fermentation, pit fermentation, and distillation.
[Source: GB/T 15109—2021, 3.4.19]

3.5

sorghum first added in jiangxiangxing baijiu production

xiasha

adding sorghum for the first time during the production of jiangxiangxing baijiu.
[Source: GB/T 15109—2021, 3.4.17]

3.6

sorghum secondly added in jiangxiangxing baijiu production

zaosha

adding sorghum for the second time during the production of jiangxiangxing baijiu.
[Source: GB/T 15109—2021, 3.4.18]

4 Production process requirements

4.1 Jiangxiangxing baijiu (daqu)

4.1.1 Raw materials

Glutinous sorghum, wheat, and water shall be used as raw materials, which shall comply with corresponding standards and requirements.

4.1.2 High-temperature daqu making

High-temperature daqu shall be cultivated in the fermentation room for no less than 40 days, during which it undergoes fanqu (the rearrangement of daqu bricks) twice. The maximum temperature during the first fanqu shall not be lower than 60° C.

4.1.3 Two-time material addition

The glutinous sorghum shall be partially crushed, with the degree of crushing not exceeding 30% (by mass fraction). In one production cycle, glutinous sorghum is added only during the xiasha and zaosha rounds.

4.1.4 Multiple-round production

4.1.4.1 High-temperature stacking fermentation

After the raw and fermented materials or the distilled alcoholic fermented materials are evenly mixed with high-temperature daqu, the temperature naturally rises, with the maximum temperature of the heap top reaching 50° C or above. After maintaining this for a certain period, it is placed into the fermentation pit. During one production cycle, no less than six rounds of stacking fermentation shall be conducted.

4.1.4.2 Pit fermentation

After the high-temperature stacking fermentation, the material is transferred into the pit for sealed fermentation. The pit shall preferably be constructed from stone and has a bottom layer of pit mud. During one production cycle, no less than six rounds of pit fermentation shall be conducted.

4.1.4.3 High-temperature distillation

The temperature for collecting distillate should preferably not be lower than 35° C, and the minimum alcohol content of base baijiu shall be 50%vol. During one production cycle, distillate collection shall take place for no less than five rounds.

4.1.5 Base baijiu storage

Base baijiu shall be stored separately in accordance with rounds, quality grades and other factors. Storage containers shall preferably be pottery jars or equivalents that are suitable for aging baijiu .

4.1.6 Blending

Base baijiu shall exhibit a certain level of diversity. It shall be blended and combined according to quality requirements to form a blending scheme, which shall then be scaled up for production.

Note to entry: For key production process points and a detailed flowchart of jiangxiangxing baijiu (daqu), see Annex A.

4.2 Jiangxiangxing Baijiu (other)

4.2.1 Raw materials

Grains, such as sorghum, and water shall be used as raw materials, which shall comply with corresponding standards and requirements.

4.2.2 Saccharification and fermentation agent

High-temperature daqu shall be partially used or not used.

4.2.3 Production

4.2.3.1 Stacking

After the materials are spread and cooled to the desired temperature, they shall be evenly mixed with the saccharification and fermentation agent, stacked into a specific shape, and allowed to naturally rise in temperature. After a specified period, the materials shall be transferred into the fermentation pit.

4.2.3.2 Fermentation

After stacking, the materials shall be placed into a fermentation vessel, such as a pit, for sealed fermentation.

4.2.3.3 Distillation

The temperature for collecting distillate should preferably not be lower than 30° C, and the minimum alcohol content of base baijiu shall be 50%vol.

4.2.4 Storage and Blending

Base baijiu shall exhibit a certain level of diversity. It shall be blended and combined according to quality requirements to form a blending scheme, which shall then be scaled up for production.

5 Technical requirements

5.1 Sensory requirements

Products within different alcohol content ranges shall respectively comply with the sensory requirements specified in Table 1 and Table 2.

Table 1 Alcohol Content X (45% vol ≤ X ≤ 58% vol)

Item	Superior Grade	First Grade
Color and appearance	Colorless or light yellow, clear and transparent, free from suspension, sediments, or impurities [a]	
Aroma	The complex sauce aroma produced by natural fermentation is prominent. Various aromas, such as fruity, floral, grassy, and roasted aroma, are well-coordinated, balanced, and pleasant. Rich qu-aroma. The aroma of an emptied cup lingers on	The sauce aroma produced by natural fermentation is obvious. Various aromas, such as fruity, grain, grassy, and roasted aroma, are well-coordinated. Obvious qu-aroma. The aroma of an emptied cup lingers on
Taste	The taste shall be mellow, soft, and full-bodied. The aftertaste shall exhibit an obvious qu-aroma and be long-lasting	The taste shall be mellow, harmonious, and well-balanced. The aftertaste shall be clean and long-lasting
Style	Typical style of the product	Distinct style of the product
Note: The aromatic profile for different grades of Jiangxiangxing baijiu (daqu) is specified in Annex B.		
[a] When the temperature of the baijiu is below 10° C, the formation of white flocculent precipitates or loss of luster is permissible. Above 10° C, it should gradually return to its normal state.		

Table 2 Alcohol Content X (35%vol ≤ X < 45% vol)

Item	Superior Grade	First Grade
Color and appearance	Colorless or light yellow, clear and transparent, free from suspension, sediments, or impurities [a]	
Aroma	The complex sauce aroma produced by natural fermentation is obvious. Various aromas, such as fruity, floral, grassy, and roasted aroma, are well-coordinated and balanced. Obvious qu-aroma. The aroma of an emptied cup lingers on	The sauce aroma produced by natural fermentation is relatively obvious. Various aromas, such as fruity, grain, grassy, and roasted aroma, are well-coordinated. Noticeable qu-aroma. The aroma of an emptied cup lingers on
Taste	The taste shall be mellow, full-bodied, and harmonious. The aftertaste shall exhibit an obvious qu-aroma and be long-lasting	The taste shall be mellow, harmonious, and well-balanced. The aftertaste shall be clean and relatively long-lasting

Style	Typical style of the product	Distinct style of the product
[a] When the temperature of the baijiu is below 10° C, the formation of white flocculent precipitates or loss of luster is permissible. Above 10° C, it should gradually return to its normal state.		

5.2 Physical and chemical requirements

Shall comply with the requirements specified in Table 3.

Table 3 Physical and chemical requirements

Item		Superior Grade	First Grade
Alcohol content [a] (20℃) /(%vol)		35.0~58.0	
Solids content/ (g/L)		≤0.70	
Total acids [b]/ (g/L)	Apply to products within (≤) one year of the production date.	≥1.50	≥1.40
Total esters [b]/ (g/L)		≥2.50	≥2.00
Ethyl hexanoate/ (g/L)		≤0.30	
Total acids and esters [b]/(mmol/L)	Apply to products with a production date exceeding (>) one year.	≥60.0	≥50.0
[a] The permissible tolerance between the measured and labeled alcohol content shall not exceed ±1.0% vol. [b] Converted to 53%vol alcohol content			

5.3 Net quantity

The permissible tolerance of net quantity shall comply with the requirements of *Measures for the metrological supervision and administration of quantitative packed commodities*.

6 Test methods

6.1 Sensory requirements

In accordance with GB/T 10345.

6.2 Physical and chemical requirements

6.2.1 Alcohol content

In accordance with GB 5009.225.

6.2.2 Solids content, total esters, and ethyl hexanoate

In accordance with GB/T 10345, the total esters are converted based on 53%vol alcohol content.

6.2.3 Total acids

In accordance with GB 12456, expressed as acetic acid and converted to 53%vol alcohol content, the unit is grams per liter (g/L).

6.2.4 Total acids and esters

In accordance with GB/T 10345 and converted to 53%vol alcohol content.

6.3 Net quantity

In accordance with JJF 1070.

6.4 Production process

Conducted by checking the production record documents.

7 Inspection, sign, packaging, transportation, and storage

7.1 Before the product leaves the factory, the inspection department of the production plant shall check the production record documents. When the production records meet the production process requirements, each batch shall be inspected in accordance with the provisions of this document.

7.2 The inspection and sign, packaging, transport, storage shall be conducted in accordance with GB/T 10346.

7.3 The product may be labeled as "Jiangxiangxing baijiu" if the production process complies with the requirements of 4.1. Only when high-temperature daqu is exclusively used as the saccharification and fermentation agent may the product be labeled as "Jiangxiangxing baijiu (daqu)"; otherwise, it shall not be labeled as " Jiangxiangxing baijiu (daqu)."

Annex A

(informative)

Key production process of Jiangxiangxing Baijiu (Daqu)

A.1 Key production process points

A.1.1 Raw and auxiliary materials

A.1.1.1 Primary raw materials

Glutinous sorghum shall be used as the raw material for brewing, and wheat used for the production of daqu:

a) Glutinous sorghum and wheat shall possess their inherent color and aroma, with full, plump grains, free from mold, insect damage, or off-odors, and comply with corresponding standards;

b) Soft wheat is preferred.

A.1.1.2 Pre-treatment of raw and auxiliary materials

Before production, the raw and auxiliary materials shall be pre-treated:

a) Glutinous sorghum, wheat, and auxiliary materials shall undergo dust and impurity removal;

b) Wheat shall be ground. If glutinous sorghum is crushed, the degree of crushing in the xiasha round shall not exceed 20% of the grain input for that round (by mass), and in the zaosha round, it shall not exceed 30% of the single round's grain input (by mass);

c) Auxiliary materials, such as rice husks, shall be thoroughly steamed before use.

A.1.2 High-temperature daqu making

High-temperature daqu shall be used as the saccharification and fermentation agent, and its primary production conditions are as follows:

a) Wheat shall be used as the raw material, which shall be moderately ground and mixed with ripe starter for inoculation and water in a certain ratio. The mixture shall then be stepped (or pressed) into "turtle-shell" shaped daqu bricks;

b) After being spread and cooled, daqu bricks shall be placed into the fermentation room in a specific manner, with straws placed between bricks for separation;

c) The temperature of daqu stacks shall be monitored in real time, and fanqu (rearrangement of daqu bricks) shall be conducted at the appropriate time. The maximum temperature during the first fanqu shall not be lower than 60° C;

d) During 40 days of fermentation, fanqu shall be conducted twice. After that, daqu bricks shall be removed from the fermentation room and transferred into the dry storage room where they are stored for at least three months before being ground for use.

A.1.3 Grain moistening (soaking) and steaming (cooking)

During the xiasha and zaosha rounds, raw materials shall be moistened (soaked) before steaming. Traditionally, the raw materials shall be steamed nine times throughout a production cycle:

a) Add a certain ratio of hot water to the sorghum for grain moistening (soaking);

b) After moistening (soaking), in xiasha round, add maternal fermented grains, and in zaosha round, add alcoholic fermentative materials from xiasha round. After mixing thoroughly, steam (cook) the grain;

c) The steaming (cooking) time shall be no less than 70 minutes, with the sorghum fully cooked but not mushy, and no uncooked core inside.

A.1.4 Rapid cooling and mixing with daqu

Evenly spread the steamed mixture of raw and fermented materials or the distilled alcoholic fermented materials on the cooling floor (or on the cooling machine), allow them to cool for a certain amount of time to enrich the brewing microorganisms from the environment. Once the materials cool to a suitable temperature (preferably no higher than 30° C), add a specified ratio of ground high-temperature daqu and optionally, feints, mix well, and pile for fermentation.

A.1.5 Multi-round baijiu production

A.1.5.1 High-temperature stacking fermentation

Under natural conditions, the temperature of the mixture of raw and fermented materials or the distilled alcoholic fermented materials rises, promoting the growth and reproduction of alcohol- and aroma-producing microorganisms, generating flavor compounds. Traditionally, eight rounds of stacking shall be conducted:

a) Stack into a specific shape, such as a hemisphere;

b) Track and measure temperature changes during stacking, with the temperature at the top of the heap ideally not lower than 50° C;

c) Stacking time may be adjusted according to season, environment, and rounds.

A.1.5.2 Pit fermentation

Generally, mud-bottomed stone pits should be used as fermentation containers, with eight rounds of pit fermentation traditionally:

a) After stacking fermentation, the mixture of raw and fermented materials or the distilled alcoholic fermented materials shall be placed into the pit for fermentation;

b) The pit shall be sealed, and the fermentation time within the pit shall not be less than 30 days.

A.1.5.3 High-temperature distillation

Traditionally, seven rounds of distillate collection shall be conducted:

a) Materials shall be spread gently and evenly. The amount added at a time shall be precise, forming a thin, flat layer to ensure that the material remains loose. (the principle of "gentle, loose, thin, precise, even, and flat");

b) The temperature for distillate collection shall ideally not be lower than 35° C, with the alcohol content not less than 50%vol.

A.1.6 Base baijiu storage

Set internal standards for base baijiu acceptance:

a) Base baijiu shall be stored separately according to different rounds and quality grades to ensure its diversity;

b) Traditionally, pottery jars are preferred as storage containers;

c) Base baijiu should be stored for a long time.

A.1.7 Blending

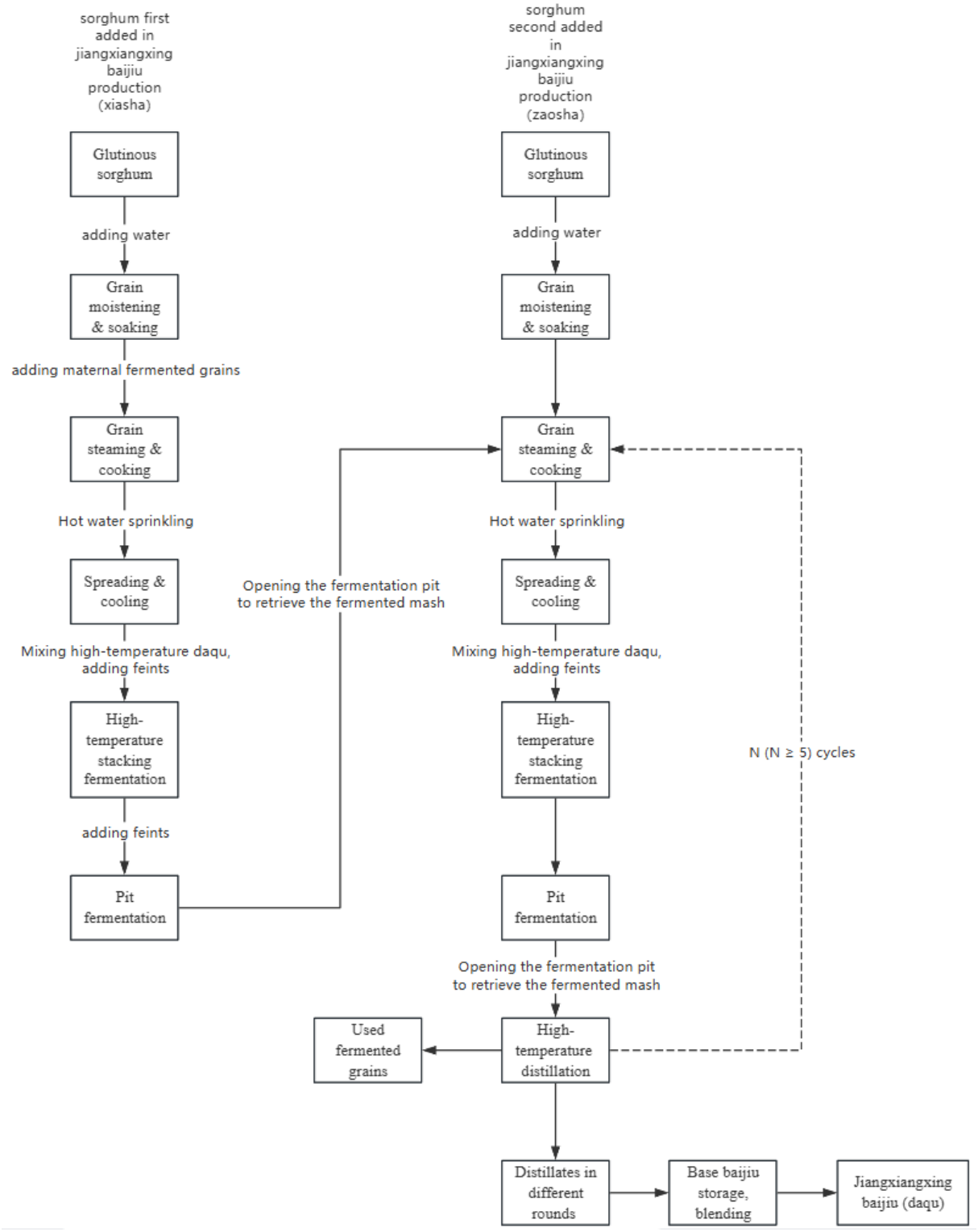
The blending scheme shall be made according to the design of the product's style and positioning.

a) Blend and combine base baijiu from different rounds, quality grades, and styles in accordance with product quality standards to create preliminary samples. The final blending scheme is confirmed through sensory evaluation and physicochemical analysis;

b) Implement the blending scheme in batches, ensuring that the sensory and physicochemical characteristics match those of the preliminary samples.

A.2 Production Process Flowchart

The key process flowchart for jiangxiangxing baijiu (daqu) production is shown in Figure A.1.



Note to entry: Starting from the third round, the process cycles through steaming (cooking), cooling, high-temperature stacking fermentation, pit fermentation, and high-temperature distillation.

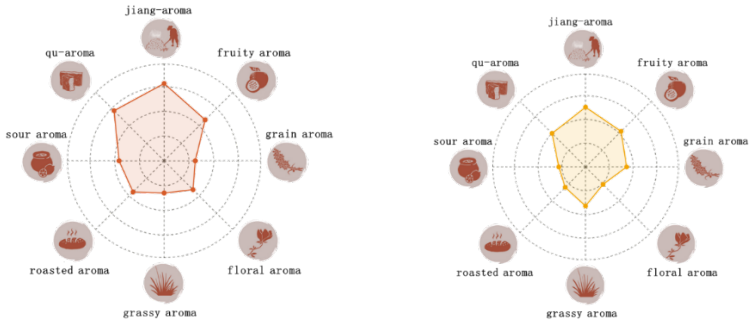
Figure A.1 The key process flowchart of jiangxiangxing baijiu (daqu) production

Annex B

(informative)

Aromatic Profile of Different Grades of Jiangxiangxing Baijiu (Daqu)

Taking different grades of Jiangxiangxing baijiu (Daqu) (alcohol content 45%vol~58%vol) for example, the aromatic characteristics are evaluated and described based on the principles and methods for establishing sensory profiles given in GB/T 39625-2020, and an aromatic profile diagram is drawn (see Figure B.1) to visually reflect the product characteristics. The form of expression varies depending on the evaluation method used.



a) Superior Grade b) First Grade

Note 1 to entry: The sensory description terms are not limited to those shown in Figures a) and b).

Note 2 to entry: Common sensory description terms for different grades of Jiangxiangxing baijiu (daqu) are as follows:

a) Jiang-aroma: The aroma characteristic of baijiu through production operations like high-temperature daqu production and high-temperature stacking fermentation;
b) Fruity aroma: The aroma characteristic of baijiu similar to that of fruits;
c) Grain aroma: The aroma characteristic of baijiu similar to steamed grains, derived from fermented and distilled sorghum, wheat, and other grains;
d) Floral aroma: The aroma characteristic of baijiu similar to the fragrance emitted by flowers;
e) Grassy aroma: The aroma characteristic of baijiu similar to that of fresh grass;
f) Roasted aroma: The aroma characteristic of baijiu similar to that of roasted grains or cereals;
g) Sour aroma: The aroma characteristic presented by volatile acids in baijiu;
h) Qu-aroma: The aroma characteristic of Jiangxiangxing baijiu influenced by high-temperature daqu and other fermentation agents.

Figure B.1 Aromatic Profile of Different Grades of Jiangxiangxing Baijiu (Daqu)

Bibliography

[1] GB/T 33405-2016 Terminology of Baijiu sensory evaluation
[2] GB/T 39625-2020 Sensory analysis—Methodology—General guidance for establishing a sensory profile
[3] Measures for the metrological supervision and administration of quantitative packed commodities (State Administration for Market Regulation)