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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 8537-200x

Replaces GB 8537 -1995

Potable natural mineral water

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General Administration of Quality Supervision, Inspection and Quarantine of the
People's Republic of China

Announced by:

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Foreword

Chapter 3 sections 5.2 and 8.1.1 of the present standard consist of mandatory clauses. The remainder are recommendations.

The present standard references Codex Alimentarius Commission (CAC) CODEX STAN 108-1981, Rev 1-1997¹ "Codex Standard for Natural Mineral Waters."

The present standard is a revision of GB 8537-1995 "Potable natural mineral water."

The present standard replaces GB 8537-1995.

The present standard changes GB 8537-1995 primarily with respect to the following:

- changes "entire text is mandatory" to "mandatory clauses;"
- improves the definition of potable natural mineral water;
- adds product classifications;
- deletes specific clauses of the water source requirements and applies GB/T 13727 "Specifications for natural mineral water-related geological exploration;"
- removed 1 boundary measure (bromide);
- added 4 limits (antimony, manganese, nickel, bromate), revised 4 limits (cadmium, arsenic, boron, fluoride), and deleted 4 limits (lithium, strontium, iodide, zinc);
- added 2 pollutant measures (anionic synthetic detergent, mineral oil) and revised 1 measure (nitrite);
- added 3 microbe measures (faecal streptococcus, *Pseudomonas aeruginosa*, and *Clostridium perfringens*) and deleted 1 measure (total colony count);
- deleted Annex A and changed Annex B to Annex A.

Annex A of the present standard is an informational annex.

The present standard was put forward by the China National Light Industry Council.

The present standard is under the jurisdiction of the National Beverages Standardisation Technical Committee.

The main entities involved in drafting the present standard: China National Research Institute of Food and Fermentation Industries, Institute for Environment and Health-related Product Safety of the Chinese Centre for Disease Control and Prevention, China Institute for Geo-environmental Monitoring, Institute for Nutrition and Food Safety of the Chinese Centre for Disease Control and Prevention, Natural Mineral Water Division of the China Beverage Industry Association, Haikou Yeshe Mineral Water Co., Ltd., and Shenzhen Danone Yili Drinks Co., Ltd.

The main authors of the present standard: Guo Xinguang, Cao Zhaojin, Tian Tingshan, Liu Xiumei, Kang Yongpu, Chen Jun, Wen Wanlong, Tian Qijing, Du Zhong, and Xu Fang.

The previously announced versions replaced by the present standard:

- GB 8537-1987 and GB 8537-1995

¹ Revised 2001

Potable natural mineral water

1 Scope

The present standard specifies the product classifications, requirements, test inspection, inspection rules, marking, packaging, transportation, and storage of potable natural mineral water.

The present standard applies to the production, inspection and sale of potable natural mineral water.

2 Cited regulatory documents

The clauses in the documents below become clauses of the present standard by virtue of being cited by the present standard. If a date is indicated for a cited document, no subsequent revision sheet (not including corrigenda) or amended version shall apply to the present standard. Nevertheless, the parties to agreements based on the present standard are encouraged to study whether the most recent versions of these documents can be used. If no date is indicated for a cited document, then the most recent version applies to the present standard.

GB 7718	General standard for the labelling of pre-packaged foods
GB/T 8538	Methods for examination of potable natural mineral water
GB/T 13727	Specifications for natural mineral water-related geological exploration
GB 16330	Specifications for potable natural mineral water production plants

3 Terms and definitions

The terms and definitions below apply to the present standard.

3.1

Potable natural mineral water

Water that naturally wells up from deep within the earth or is extracted from there by drilling, that contains a certain amount of minerals, trace elements, or other constituents, and that, within a certain area, has not been polluted or has been protected from pollution through the adoption of preventive measures; under general conditions, its chemical composition, flow, and temperature trends are relatively stable within the range of natural, cyclical fluctuations.

4 Product classifications

Classified according to carbon dioxide content in the product, as follows:

a) Naturally carbonated natural mineral water: Natural mineral water that, after packaging has visible, same-source natural effervescence of carbon dioxide under normal temperature and pressure.

b) Carbonated natural mineral water: Natural mineral water that, treated in accordance with the provisions of 5.3.2, has been made effervescent after the addition of carbon dioxide.

c) Non-carbonated natural mineral water: A natural mineral water that, after treatment in accordance with the provisions of 5.3.2 and after packaging, does not contain free carbon dioxide in excess of the carbon dioxide content necessary to keep the hydrogen carbonate salts dissolved in the water.

d) Decarbonated natural mineral water: A natural mineral water that, after treatment in accordance with the provisions of 5.3.2 and after packaging, has no visible, natural effervescence of carbon dioxide under normal temperature and pressure.

5 Requirements

5.1 Water source requirements

Water source geological survey evaluations, water source protection, and monitoring of water source geology shall be carried out in accordance with GB/T 13727.

5.2 Water quality requirements

5.2.1 Sensory requirements

Shall comply with the specifications of Table 1.

Table 1 Sensory requirements

Item	Requirement
Colour/ (degrees)	• 15 (no other colour may be present)
Turbidity/ (NTU)	• 5
Smell and taste	Has distinctive taste of mineral water, may not have abnormal odour or taste
Visible matter	Permitted to have a minute amount of natural mineral salt sediments, but may not contain other foreign matter

5.2.2 Physical and chemical requirements

5.2.2.1 Boundary measures

Shall comply with one (or more than one) measure specified in Table 2.

Table 2 Boundary measures

Item	Requirement
Lithium/ (mg/L)	• 0.20
Strontium/ (mg/L)	• 0.20 (when content is between 0.20 mg/L and 0.40 mg/L, water source water temperature shall be above 25 °C)
Zinc/ (mg/L)	• 0.20
Iodide/ (mg/L)	• 0.20
Silicic acid/ (mg/L)	• 25.0 (when content is between 25.0 mg/L and 30.0 mg/L, water source water temperature shall be above 25 °C)
Selenium/ (mg/L)	• 0.01
Free carbon dioxide/ (mg/L)	• 250
Dissolved solids/ (mg/L)	• 1,000

5.2.2.2 Limits

Shall comply with the specifications of Table 3.

Table 3 Limits

Item	Requirement
Selenium (mg/L)	< 0.05
Antimony (mg/L)	< 0.005
Arsenic/ (mg/L)	< 0.01
Copper/ (mg/L)	< 1.0
Barium/ (mg/L)	< 0.7
Cadmium/ (mg/L)	< 0.003
Chromium/ (mg/L)	< 0.05
Lead/ (mg/L)	< 0.01
Mercury/ (mg/L)	< 0.001
Manganese/ (mg/L)	< 0.4
Nickel/ (mg/L)	< 0.02
Silver/ (mg/L)	< 0.05
Bromate/ (mg/L)	< 0.01
Borate (measured in B)/ (mg/L)	< 5
Nitrate (measured in NO ₃)/ (mg/L)	< 45
Fluoride (measured in F)/ (mg/L)	< 1.5

Oxygen uptake (measured in O ₂)/ (mg/L)	<	3.0
²²⁶ Radium radioactivity/ (Bq/L)	<	1.1

5.2.2.3 Pollutant measures

Shall comply with the specifications of Table 4.

Table 4 Pollutant measures

Item		Requirement
Volatile phenol (measured in phenol)/ (mg/L)	<	0.002
Cyanide (measured in CN)/ (mg/L)	<	0.10
Anionic synthetic detergent/ (mg/L)	<	0.3
Mineral oil/ (mg/L)	<	0.05
Nitrite (measured in NO ₂)/ (mg/L)	<	0.1
Total • radiation/ (Bq/L)	<	1.50

5.2.3 Microbe measures

Shall comply with the specifications of Tables 5 and 6.

Table 5 Microbe measures

Item	Requirement
Coliform group (MPN/100 mL)	0
Faecal streptococcus (cfu/250 mL)	0
Pseudomonas aeruginosa (cfu/250 mL)	0
Clostridium perfringens (cfu/50 mL)	0

1. Sample 1 x 250 mL (for Clostridium perfringens, sample 1 x 50 mL), and conduct the first examination. Report as acceptable if the requirements of Table 5 are met.

2. If a test result is greater than or equal to 1 and less than 2, conduct the second examination on n samples in accordance with Table 6.

3. If a test result is greater than or equal to 2, report as "unacceptable."

Table 6 Second examination

Item	Number of samples		Limit	
	n	c	m	M
Coliform group	4	1	0	2
Faecal streptococcus	4	1	0	2
Pseudomonas aeruginosa	4	1	0	2
Clostridium perfringens	4	1	0	2

Note:

n: The number of samples taken from one lot of products.

c: Maximum number of samples that may exceed m value. More than this number shall be judged unacceptable.

m: Maximum acceptable level limit (cfu) per 250 mL (or 50 mL) sample.

M: Unacceptable microbe limit (cfu) per 250 mL or (50 mL) sample; samples equals to or greater than M are unacceptable.

5.3 Processing requirements

5.3.1 Extraction, processing, and bottling shall be carried out while ensuring source water hygiene and safety of natural mineral water and compliance with the provisions of GB 16330.

5.3.2 Provided that the basic characteristics of, and the amounts of the primary constituents in, potable natural mineral water in its source water state are not changed, it is permissible that: the water may undergo such methods as aeration, decantation, or filtration to remove unstable compounds; the same-source carbon dioxide be recovered and added; that food additive carbon dioxide be added or that carbon dioxide be removed from the water.

5.3.3 Containers may not be used to transport source water to another location for bottling.

6 Inspection methods

Water quality requirements inspection shall be carried out in accordance with the methods in GB/T 8538. The natural mineral water quality inspection report may be written in accordance with Annex A.

7 Inspection rules

7.1 Sampling

Number of samples randomly taken from each lot of products: No fewer than 10 bottles if product net content is less than 3 L; no fewer than 5 kegs if net product content is greater than or equal to 3 L.

7.2 Pre-shipment inspection

7.2.1 Confirm product lot number in accordance with the appropriate rules. As each lot of products is shipped from the plant, conduct sensory requirements tests and two microbe tests: coliform group and *Pseudomonas aeruginosa*.

7.2.2 At least one test for faecal streptococcus and *Clostridium perfringens* shall be performed monthly.

7.3 Comprehensive inspection

All the items specified in the technical requirements of the present standard constitute the comprehensive inspection. They shall be performed at least once during the wet season and once during the dry season each year or in the event of any of the following situations:

- when equipment is replaced or the production process undergoes a relatively major change;
- when restoring production after production has been suspended;
- when there is a major difference between pre-shipment inspection results and the normal records;
- when water quality undergoes a relatively large fluctuation.

7.4 Decision rules

If an inspected item does not comply with the requirements of the present standard, the number of samples taken from the product lot shall be doubled, and the failed item shall be re-inspected, with the re-inspection results being decisive. If a re-inspected item still includes a failed sample, then assess this lot of products as unacceptable products. Microbe measure inspections and decisions are carried out in accordance with the provisions of 5.2.3.

8 Marking, packaging, transportation and storage

8.1 Marking

8.1.1 Pre-packaging labels shall, in addition to complying with the relevant provisions of GB 7718, comply with the requirements below:

- label with the name of the water source location of the natural mineral water;
- label with the boundary measures by which the product qualified, the total dissolved solid content, and the content ranges of the main positive ions (K^+ , Na^+ , Ca^{2+} , and Mg^{2+});
- when fluorine content is greater than 1.0 mg/L, label with the words "Contains fluorine;"
- label with product type, perhaps with an attributive form used directly before the product name, e.g.: "Naturally carbonated mineral water;" or label with the product name "Natural Mineral Water," with the product category labelled below: naturally carbonated or carbonated. The product category does not need to be labelled in the case of "noncarbonated" and "de-carbonated" natural mineral water.

8.1.2 The label may not claim therapeutic effects unless reviewed and approved by the departments concerned of the state.

8.2 Packaging

8.2.1 Packaging materials shall comply with the relevant hygiene standard requirements of the state.

8.2.2 The exterior of packaging containers (bottles, kegs) shall remain clean, be tightly sealed, be free of seepage, and have a label that adheres tightly and firmly.

8.3 Transportation

8.3.1 Means of transportation shall be kept in clean and hygienic condition. Products may not be loaded and transported together with toxic, hazardous, corrosive, volatile, or odoriferous materials.

8.3.2 Handle the products carefully during shipment. Throwing, striking, or squeezing the product is strictly prohibited.

8.3.3 Avoid exposure to sun, rain, dampness, or freezing during transportation.

8.4 Storage

8.4.1 Do not store the product in the same storage area with toxic, hazardous, corrosive, volatile, or odoriferous materials.

8.4.2 The product shall be stored in a cool, dry, ventilated warehouse. Do not stack outdoors, expose to sun or rain, or place near a heat source.

8.4.3 Adopt measures to prevent freezing when transporting and storing below zero degrees Celsius.

Annex A
(Informational Annex)
Potable Natural Mineral Water Quality Inspection Report

Name of spring
Spring code
Sampling location
Water temperature °C

Sample taken on
Sample delivered on
Inspection date
Report date

Ions		• (B) / (mgL ⁻¹)	c (1/z B ^{z+}) / (mmolL ⁻¹)	x (1/z B ^{z+}) / %	Item	• (B) / (mgL ⁻¹)	• (B) / (mgL ⁻¹)
Positive ions	K ⁺				Dissolved solids		Barium
	Na ⁺				Silicic acid		Chromium
	Ca ²⁺				Free carbon dioxide		Lead
	Mg ²⁺				Lithium		Antimony
	Fe ²⁺ + Fe ³⁺				Strontium		Manganese
	Total				Iodide		Nickel
Negative ions	HCO ₃ ⁻				Zinc		Cobalt
	CO ₃ ²⁻				Selenium		Vanadium
	Cl ⁻				Copper		Aluminium
	SO ₄ ²⁻				Arsenic		Silver
	F ⁻				Mercury		Volatile phenol
	No ₃ ⁻				Cadmium		Cyanide
	Total				Borate		Nitrite
					Bromide		Bromate
Matter visible to the naked eye	Total hardness (measured using CaCO ₃) mg/L			Coliform group	MPN/100 mL	Oxygen uptake	mg/L
Colour	Total alkalinity (measured using CaCO ₃) mg/L			Faecal streptococcus	cfu/250 mL	Anionic synthetic detergent	mg/L
Turbidity	Total acidity (measured using CaCO ₃) mg/L			Pseudomonas aeruginosa	cfu/250 mL	Mineral oil	mg/L
Smell and taste				Clostridium perfringens	cfu/50 mL	²²⁶ Radium	Bq/L
pH						Total •	Bq/L
Inspection conclusion	Issued on year month day						
Remarks							

Approved

Checked

Compiled