

PAKISTAN STANDARD SPECIFICATION
FOR

**BOTTLED NATURAL MINERAL WATERS
(3RD REVISION)**



*only for research purposes
not for sale
copyright www.psqca.com.pk*

(ALL RIGHTS RESERVED)
PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY
Standards Development Centre,
PSQCA Complex, Standardization Wing II, 1st Floor, Plot - ST-7/A, Block-3,
Scheme No.36, Gulistan-e-Jauher, Karachi

**PAKISTAN STANDARDS & QUALITY CONTROL AUTHORITY
(STANDARDS DEVELOPMENT CENTRE)**

(AGRICULTURE & FOOD DIVISION)

MEMBERSHIP LIST OF FOOD HYGIENE TECHNIAL COMMITTEE

CHAIRMAN

- | | | |
|----|--|--|
| 1. | Dr. M Ahsan Siddiqui,
Water Technologist, | NCEAS, University of Sindh,
<u>Jamshoro. (Sindh).</u> |
|----|--|--|

MEMBERS

- | | | |
|-----|--|--|
| 2. | The Secretary, | Food Department,
Govt. of Punjab,
<u>Lahore.</u> |
| 3. | The Secretary, | Food Department,
Govt. of Balochistan,
<u>Quetta.</u> |
| 4. | The Secretary, | Food Department,
Govt. of Sindh,
<u>Karachi.</u> |
| 5. | Dr. Farhan Aslam,
Deputy Director (Operations), | Punjab Food Authority,
Govt. of Punjab,
Naqsha Stop, 83-C, Block-A,
New Muslim Town, <u>LAHORE.</u> |
| 6. | The Director Food | Sindh Food Authority,
Govt. of Sindh,
D-47, Block No.1, Clifton
<u>KARACHI.</u> |
| 7. | The Director Food, | Balochistan Food Authority,
Govt. of Balochistan, Quetta.
(UNDER PROCESS) |
| 8. | The Director Food, | Food Safety & Halaal Food Authority,
Govt. of KPK,
Police Line Road, PTCL Colony,
<u>PESHAWAR.</u> |
| 9. | Mr. Asmatullah Khan,
Deputy Director (Food), | Food Directorate, KPK,
<u>Peshawar.</u> |
| 10. | Govt. Public Analyst, | Food Laboratory,
Hayatabad Phase V,
<u>PESHAWAR.</u> |

- 11 Govt. Public Analyst, Food Laboratory,
Directorate General, Health Services
HYDERABAD.
12. Director General, PCSIR Laboratories Complex,
Off, University Road,
KARACHI.
13. Director, Quality Control Centre, (PSQCA)
Block-77, Pak Secretariat,
KARACHI.
14. Govt. Public Analyst, Food Laboratory,
24 Cooper Road,
LAHORE.
15. Surgeon General, AGS Br. (Med Dte)
GHQ,
RAWALPINDI.
16. Mr. Zuzzer A. Shamsuddin,
Consultant, Hamilton Court,
Clifton Road,
Karachi.
17. Mrs. Kishwar Shabina,
Public Analyst, KMC Food Laboratory,
Jigamuradabadi Road,
KARACHI.
18. Mr. Mehdi A. Mohsin,
Chief Executive, Mitchels Fruit Farms Ltd.,
Renala Khurd,
OKARA.
19. Dr. Fayyaz Ashraf, Rafhan Best Foods Ltd.,
Pakland House,
LAHORE.
20. Dr. Sarfaraz Ahmed,,
Manager Regulatory Affairs, Engro Foods Ltd.,
Lahore.
21. Director, Hashmi Cans (Pvt.) Ltd.,
B-27, SITE,
KARACHI.
22. Director, Pakistan Packaging Institute,
C/O, E.P.B.,
KARACHI.
23. Mr. Shehzad Sikandar,
Regulatory Affairs Manager Nestle Milk Pak Ltd.,
308, upper mall
LAHORE

24. Mr. Naeem Shahid,
Chief Executive, Halaal Foundation,
Gulshan-e-Maymar,
Karachi
25. Dr. Masood Siddiq Butt,
Director General National Institute of Food Sciences &
Technology University of Agriculture,
Faisalabad.
26. Director, Pakistan Environmental Protection
Agency,
Islamabad.
27. Mr. Sohail Anwar,
General Manager Regulatory Affairs, Qarshi Industries Ltd.,
Hattar (KPK)
28. Mr. M. Aamir Hanif, AVA Water Ltd., Plot No.19, Sector-15,
Korangi Industrial Area,
KARACHI.

SECRETARIATE:

1. Mr. Abdul Hayee Tunio,
Deputy Director (Agri. & Food) &
Secretary to the Committee, Standards Development Centre,
PSQCA,
KARACHI
2. Mr. Naseem-us-Sami
Assistant Director (Agri. & Food) & Standards Development Centre,
PSQCA,
KARACHI

**PAKISTAN STANDARD SPECIFICATION
FOR
BOTTLED NATURAL MINERAL WATERS (3RD REVISION)**

0. FOREWORD

- 0.1 This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority; Standards Development Centre, on **30-03-2010** after the draft finalized by the Food Hygiene Technical Committee had been approved by the National Standards Committee for Agriculture & Food Products.
- 0.2 This standard was established in 1989, first revised in 2002 and the secondly revised in 2003 the Committee felt it necessary to revise in the light of latest development in the industries.
- 0.3 Natural mineral water characterized by its content of non-adverse health related mineral salts and their relative proportions and the presence of non-toxic trace elements or of other constituents. It is not subjected to any treatment other than those permitted by this standard.
- 0.4 Guidelines for the determination of a compliance of a lot with the requirements of this standard based on statistical sampling and inspection are given in clause 6 & 14.
- 0.5 For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with PS:103 (R). The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.
- 0.6 All the ingredients preparation, processing, packaging, storage and for transportation shall be according to PS: 3733 for Halaal Food Management System Requirement for any Organization in the Food Chain.

1. SCOPE

- 1.1 This standard applies to all packaged natural mineral waters offered for sale as food. It does not apply to natural mineral waters sold or used for other purposes.

2. DESCRIPTION

2.1 DEFINITION OF NATURAL MINERAL WATER

Natural mineral water is the water clearly distinguishable from ordinary drinking water because:

- a) It is characterized by its content of certain mineral salts and their relative proportions and the presence of trace elements or of other constituents;
- b) it is obtained directly from natural or drilled sources from underground water bearing strata for which all possible precautions should be taken within the protected perimeters to avoid any pollution of, or external influence on, the chemical and physical qualities of natural mineral water;
- c) of the constancy of its composition and the stability of its discharge and its temperature, due account being taken of the cycles of minor natural fluctuations;
- d) it is collected under conditions which guarantee the original microbiological purity and chemical composition of essential components;
- e) it is packaged close to the point of emergence of the source with particular hygienic precautions;
- f) it is not subjected to any treatment other than those permitted by this standard.

2.2 SUPPLEMENTARY DEFINITIONS

2.2.1 Naturally carbonated natural mineral water

A naturally carbonated bold natural mineral water is a natural mineral water which, after possible treatment in accordance with Clause 3.1.1 and re-incorporation of gas from the same source and after packaging taking into consideration usual technical tolerance, has the same content of carbon dioxide spontaneously and visibly given off under normal conditions of temperature and pressure.

2.2.2 Non-carbonated natural mineral water

A non-carbonated natural mineral water is a natural mineral water which, by nature and after possible treatment in accordance with Clause 3.1.1 and after packaging taking into consideration usual technical tolerance, does not contain free carbon dioxide in excess of the amount necessary to keep the hydrogen carbonate salts present in the water dissolved.

2.2.3 Decarbonated natural mineral water

A decarbonated natural mineral is a natural mineral water which, after possible treatment in accordance with Clause 3.1.1 and after packaging, has less carbon dioxide content than that at emergence and does not visibly and spontaneously give off carbon dioxide under normal conditions of temperature and pressure.

2.2.4 Natural mineral water fortified with carbon dioxide from the source

A natural mineral water fortified with carbon dioxide from the source is a natural mineral water which, after possible treatment in accordance with Clause 3.1.1 and after packaging, has more carbon dioxide content than that at emergence.

2.2.5 Carbonated natural mineral water

A carbonated natural mineral water is a natural mineral water which, after possible treatment in accordance with Clause 3.1.1 and after packaging, has been made effervescent by the addition of carbon dioxide from another origin.

2.3 Authorization

Natural mineral water should be recognized as such by the responsible authority of the state, in which the natural mineral water has emerged.

3 COMPOSITION AND QUALITY FACTORS

3.1 Treatment and handling

3.1.1 Treatments permitted include separation from unstable constituents, such as compounds containing iron, manganese, sulphur or arsenic, by decantation and/or filtration, if necessary, accelerated by previous aeration.

3.1.2 The treatments provided for in Clauses 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5 and 3.1.1 above may only be carried out on condition that the mineral content of the water is not modified in its essential constituents, which give the water its properties.

3.1.3 The transport of natural mineral waters in bulk containers for packaging or for any other process before packaging is prohibited.

4. **Health-related limits for certain substances**

Natural mineral water in its packaged state shall contain not more than the following amounts of the substances indicated hereunder:

5. Bottled Natural Mineral Water shall conform to the requirements prescribed in Table-1.

TABLE-I
PHYSICAL & CHEMICAL REQUIREMENTS

SL. NO.	PARAMETERS	LIMITS
1.	pH Range.	6.5 – 8.5
2.	Total dissolved solids (TDS), max.	1000 mg/L
3.	Total hardness as CaCO ₃ , max	250 mg/L
4.	Nitrite (NO ₂)	0.020 mg/L
5.	Chloride max.	250 mg/L
6.	Sulphate max.	100 mg/L
7.	Sodium max.	30 mg/L
8.	Potassium max.	30 mg/L
9.	Magnesium max.	100 mg/L
10.	Calcium max.	200 mg/L

TABLE-II
CHARACTERISTIC MAXIMUM ADMISSIBLE CONCENTRATION (mg/L)

Parameters	Limits
Antimony (Sb)	0.005
Arsenic (As)	0.01
Barium (Ba)	0.7 ¹
Borate (B)	1.5
Cadmium (Cd)	0.003
Chromium (Cr)	0.05
Copper (Cu)	1.0
Cyanide (CN)	0.070
Fluoride (F)	As per Codex section 7.3.2 of CXS 108-1981
Lead (Pb)	0.01
Manganese (Mn)	0.4
Mercury (Hg)	0.001
Nickel (Ni)	0.02
Nitrate (NO ₃)	50, Calculated as nitrate
Nitrite	0.1 as nitrate
Selenium (Se)	0.01
Boron (B)	2.4

- 5.1. The following substances shall be below the limit of quantification² when tested, in accordance with the methods prescribed in Clause 9:

Surface active agents³
 Pesticides and PCBs³
 Mineral oil³
 Polynuclear aromatic hydrocarbons³

6.0 Hygiene

- 6.1 Natural Mineral Water shall be collected, processed and marketed under hygienic conditions in accordance with PS: 4718 for Code of Hygienic Practice for the Collecting, Processing and Marketing of Natural Mineral Water.
- 6.2 Natural mineral water shall be bottled closed to the point of emergence of the source with particular hygienic precautions.

-
1. Pending further review of new scientific evidence by an appropriate scientific body to be determined by FAO/WHO.
 2. As stated in the relevant ISO methods.
 3. Temporarily endorsed pending elaboration of appropriate method(s) of analysis.

7. SOURCE

- 7.1 The source or the point of emergence shall be protected against risks of pollution.
- a) The installation intended for the production of Natural Mineral Water shall be such as to exclude any possibility of contamination. For this purpose, and in particular:
 - (b) The installations for collection, the pipes and the reservoirs shall be made from materials suited to the water and in such a way as to prevent the introduction of foreign substances into the water;
 - (c) the equipment and its use for production, especially installations for washing and packaging shall meet hygienic requirements;
 - (d) if during production it is found that the water is polluted, the producer shall stop all operations until the cause of pollution is eliminated.

The observance of the above provisions shall be subject to periodic checks in accordance with the requirements of the country of origin.

8. MICROBIOLOGICAL REQUIREMENTS:

During marketing, natural mineral water:

- a) shall be of such a quality that it will not present a risk to the health of the consumer (absence of pathogenic microorganisms);
- b) furthermore it shall be in conformity with the following microbiological quality specifications:

TABLE-III
MICROBIOLOGICAL LIMITS

Sl. #	Organisms	Recommended Value
1	Total coliform	< 1 CFU / 250 ml
2	Thermotolerant / Fecal coliform	< 1 CFU / 250 ml
3	E-coli	< 1 CFU / 250 ml
4	Fecal enterococci/streptococci	< 1 CFU / 250 ml
5	Pseudomonas aeruginosa	< 1 CFU / 250 ml
6	Total viable count at 20 – 22 °C	< 100 CFU / ml
7	Total viable count at 37 °C	< 20 CFU / ml

} **Optional**

9. METHODS OF ANALYSIS

The relevant testing methods of ISO, CAC and of other internationally recognized standard methods may be taken in to account for analysis purpose.

10. PACKAGING

10.1 Natural mineral water shall be packed in hermetically sealed retail and food grade containers suitable for preventing the possible adulteration or contamination of water.

10.2 It can be inspected at random just prior to being filled and sealed.

10.3 It shall be packed in hermetically sealed containers/bottles of food grade material to prevent contamination of Natural Mineral Water.

10.4 Filling and sealing operations of containers/bottles shall be done in an aseptic atmosphere so as to prevent any contamination.

10.5 The water packaging material must be of food grade and it shall conform to PS: 4069 for Plastic Potable Water Bottles or any other relevant internationally accepted standard.

10.6 **Transportation.** Bottled Natural Mineral water shall be transported by any suitable means of transport to protect it from contamination.

11. Marking

- (a) Name of the product.
- (b) Brand name or trade name if any,
- (c) Net volumes
- (d) Name and address of the manufacturer,
- (e) Batch number or code number.
- (f) Date of process & expiry
- (g) Location and name of the source,
- (h) Chemical composition for e.g. Sulphate, Magnesium, Potassium, Chloride, and Hardness.
- (i) Pakistan Standard number, PS Mark & Licence Number.
- (j) One time usable plastic / PET Bottle shall carry the following statement “Crush the Bottle after use” (both in English and Urdu)

12. LABELLING

Pakistan Standard for Labelling of Prepackaged Foods (PS: 1485), and the following provisions shall apply:

The following designations shall be used in accordance with Clause 2.2 and may be accompanied by suitable descriptive terms (e.g., still and sparkling):

- a) Naturally carbonated natural mineral water;
- b) Non-carbonated natural mineral water;
- c) Decarbonated natural mineral water;
- d) Natural mineral water fortified with carbon dioxide from the source;
- e) Carbonated natural mineral water.

12.1 Additional Labeling Requirements

12.2 Chemical composition

12.3 The analytical composition giving characteristics to the product shall be declared in the labeling.

12.4 If the product contains more than 1 mg/l of fluoride, the following term shall appear on the label as part of, or in close proximity to, the name of the product or in an otherwise prominent 5 Codex Standard 108-1981 position: "contains fluoride". In addition, the following sentence should be included on the label: "The product is not suitable for infants and children under the age of seven years" where the product contains more than 1.5 mg/l fluorides.

12.5 If a natural mineral water has been submitted to a treatment in accordance with sub-clause 3.1.1, the result of the treatment shall be declared on the label.

13. Labeling Prohibitions

13.1 No claims concerning medicinal (preventative, alleviative or curative) effects shall be made in respect of the properties of the product covered by the standard. Claims of other beneficial effects related to the health of the consumer shall not be made unless true and not misleading.

13.2 The name of the locality, hamlet or specified place may not form part of the trade name unless it refers to a natural mineral water collected at the place designated by that trade name.

13.3 The use of any statement or of any pictorial device which may create confusion in the mind of the public or in any way mislead the public about the nature, origin, composition and properties of natural mineral waters put on sale is prohibited.

14. SAMPLING

14.1 **LOT:** In any consignment all the bottles of the same size and belonging to one batch of manufacture or supply shall constitute a lot.

14.2 General Requirements of Sampling

14.3 Each container/bottle of the sample shall be marked with necessary details of sampling and the bottles for bacteriological testing shall be marked separately.

14.4 The containers/bottles of the sample shall be stored in such a manner that there shall be no deterioration of quality of water.

- 14.5 The containers/bottles for bacteriological testing shall be brought to the testing laboratory within one hour of sampling. If this is not possible the bottles shall be stored at 10 °C or below and transported to the testing laboratory within 24 hours. In case of small units, the original packing shall be treated as sample.
- 14.6 **Scale of Sample:**
- 14.7 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.
- 14.8 The number of containers/bottles to be selected from a lot shall be in accordance with the Table-IV.

TABLE – IV
SCALE OF SAMPLING
Number of bottles to be selected

Number of Bottles in the Lot Up To	
1000	15
1001 to 3000	17
3001 to 10,000	18
10001 and above	24

- 14.9 If the containers/bottles are packed in cases, 10 percent of the cases subject to a minimum of five cases shall be selected from the lot and as far as possible an equal number of bottles shall be selected from each case so selected to form a sample of size given in 15.2.
- 14.10 **Number of Tests:**
- 14.11 Each container/bottle selected as in 14.8 shall be inspected for packaging and marking requirements.
- 14.12 Each container/bottle selected as in 14.8 shall be tested individually for the Microbiological Limits given in Table-III.
- 14.13 A sufficient quantity of water shall be drawn from each of the remaining bottles and mixed to form a composite sample and the composite sample thus obtained shall be tested for the requirements given in Table-I and Table-III.
15. **CRITERIA FOR CONFORMITY:**
- A lot shall be declared as conforming to the requirements of this specification, if the following conditions are satisfied.
- 15.1 Each bottle inspected as in 14.11 satisfies the relevant requirements.
- 15.2 Each bottle when tested as in 14.13 satisfies the relevant requirements.
- 15.3 Composite sample when tested as in satisfies the relevant requirements.