

**PAKISTAN STANDARD**  
**FOR**  
**BOTTLED DRINKING WATER**  
**(4<sup>TH</sup> REVISION)**



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**PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY,  
STANDARDS DEVELOPMENT CENTRE,  
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**PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY**  
**STANDARDS DEVELOPMENT CENTRE**  
**(Agriculture & Food Division)**

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| 3. | The Secretary,                                    | Food Department,<br>Govt. of Balochistan,<br><b><u>Quetta.</u></b>                      |
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| 7. | Dr. Mubarik Ali,                                  | Earth & Environment<br>Head of Department,<br>Bahria University, <b><u>Karachi.</u></b> |
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14. Mr. Shahzad Sikandar  
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18. Mr. Muneer Hussain,  
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19. Mr. Fairs Hidzar,  
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20. Syed Kashif Ali,  
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21. Mr. Masood Mustafa,  
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2. Engr. Lal Muhammad Rajar,  
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**PAKISTAN STANDARD SPECIFICATION  
FOR  
BOTTLED DRINKING WATER (4<sup>TH</sup> REVISION)**

**0. FOREWORD**

0.1 This Pakistan Standard was adopted by the Pakistan Standards & Quality Control Authority, Standards Development Centre, on **24-01-2018**, after the draft finalized by the Water Quality Technical Committee had been approved by the National Standards Committee for Agriculture & Food Products.

0.2 This Pakistan Standard specification was established in 2001, first revised in 2002, second revised in 2003 and third Revision in 2004. Now keeping in view the latest developments made in the industries, the committee felt it necessary to revise.

**0.3 DESCRIPTION**

**0.3.1 Packaged waters**

“Packaged waters”, other than natural mineral waters, are waters for human consumption and may contain minerals, naturally occurring or intentionally added; may contain carbon dioxide, naturally occurring or intentionally added; but shall not contain sugars, sweeteners, flavourings or other foodstuffs.

**0.3.1.1 Waters defined by origin**

“**Waters defined by origin**”, whether they come from the underground or from the surface, defined under the present standard share the following characteristics:

- a) they originate from specific environmental resources without passing through a community water system;
- b) precautions have been taken within the vulnerability perimeters to avoid any pollution of, or external influence on, the chemical, microbiological and physical qualities of water at origin;
- c) collecting conditions which guarantee the original microbiological purity and essential elements of their chemical make-up at origin;
- d) from the microbiological standpoint, are constantly fit for human consumption at their source and are kept in that state with particular hygienic precautions until and while packaging in accordance with provisions of sections 3 and 4 of CAC 227-2001;
- e) are not subject to any modification or treatment other than those permitted under clause 3.1.1.

**0.3.1.2 Prepared waters**

“**Prepared waters**” are waters that do not comply with all the provisions set for waters defined by origin under clause 3.1.1. They may originate from any type of water supply.

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- 0.4 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) Method of Rounding Off Numerical Values. The number of significant places retained in the rounded off value, should be the same as that of the specified value in this specification.
- 0.5 All the ingredients and processes shall be in accordance with PS:3733 for Halaal Food Management System Requirements for any organization in the Food Chain.

1. **SCOPE:**

- 1.1 This specification prescribes the requirements, Methods of Sampling and Test for Bottled Drinking Water.

2. **DEFINITION:**

- 2.1 For the purpose of this specification the following definition shall apply:

- 2.1.1 **Bottled Drinking Water:** Bottled Drinking Water is water other than Natural Mineral Water which is filled into hermetically sealed containers/bottles of various compositions, forms, and capacities that is safe and suitable for direct human consumption. Bottled drinking water is included in the category of food.

2.2 **Supplementary Definitions:**

- 2.2.1 Underground water: Water such as spring water, stream water, well water originating from subsurface aquifers.
- 2.2.2 Protected underground water is water coming from a unique environmental resource, not directly influenced by surface water (water such as streams, rivers, lakes, ponds and reservoirs) or the surface environment.

3. **REQUIREMENTS:**

3.1 **General**

- 3.1.1 **SUITABILITY:** The assessment of the suitability of water for human consumption shall be based on consideration of its physical, chemical and microbiological requirements and limits for toxic substances.

Permitted physicochemical modifications and antimicrobial treatments for the waters defined by origin Waters defined by origin must not, prior to packaging, be modified or subjected to treatments other than those described in subsections below with the proviso that these modifications or treatments and the processes<sup>1</sup> used to achieve them do not change the essential physicochemical characteristics nor compromise the chemical, radiological and microbiological safety of these waters when packaged:

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### 3.1.1.1 Selective treatments that modify the original composition:

- reduction and/or elimination of dissolved gases (and resulting possible change in pH);
- addition of carbon dioxide (and resulting change in pH) or re-incorporation of the original carbon dioxide present at emergence;
- reduction and/or elimination of unstable constituents such as iron, manganese, sulphur (as SO or S<sup>2-</sup>) compounds and carbonates in excess, under normal conditions of temperature and pressure, of the calco-carbonate equilibrium;
- addition of air, oxygen or ozone on condition that the concentration of by-products resulting from the ozone treatment is below the tolerance established under section 3.2.1<sup>2</sup>;
- decrease and/or increase in temperature; • reduction and/or separation of elements originally present in excess of maximum concentrations or of maximum levels of radioactivity.

3.1.2. Health-related limits for chemical and radiological substances No packaged water shall contain substances or emit radioactivity in quantities that may be injurious to health. To this effect, all packaged water shall comply with the health-related requirements of the most recent “Guidelines for Drinking Water Quality” published by the World Health Organization

## 3.2 **REQUIREMENTS:**

The bottled drinking water shall be free from all chemicals and bacteriological contaminations which are hazardous to health.

3.2.1 The product shall conform to the permissible levels given under the following Tables:

1. Table –I Physical characteristic for bottled drinking water.
2. Table –II Chemical characteristic for bottled drinking water.
3. Table –III Chemical characteristics for bottled drinking water (Optional)
4. Table –IV Microbiological Limits.

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**TABLE -I**  
**PHYSICAL CHARACTERISTIC FOR BOTTLED DRINKING WATER.**

S. #	Characteristics	Maximum Permissible Level	Technique of the Method
1.	Colour,(Hazen Unit/NTU/Equivalent)	5	Colormetry – tristimulus filter method (Reference Method)
2.	Odour	Unobjectionable	Sensory evaluation
3.	Taste	Unobjectionable	Sensory evaluation
4.	Turbidity (NTU)	0.5	Visual Method - candle turbidmeter (Reference Method)

**TABLE-II**  
**CHEMICAL CHARACTERISTICS FOR BOTTLED DRINKING WATER**

S. #	Elements or Compounds	Maximum Admissible Concentration (ppm)
1.	pH range	6.5 – 8.5
2.	Total Dissolved Solids (TDS)	500
3.	Nitrite (NO <sub>2</sub> ) as Nitrogen	1.0
4.	Chloride	250
5.	Sulphate ( SO <sub>4</sub> )	250
6.	Potassium ( K )	10
7.	Sodium ( Na )	50
8.	Magnesium ( Mg )	100
9.	Calcium ( Ca )	100
10.	Chlorine (Cl)	0.1



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**TABLE – III****FOR CHEMICAL CHARACTERISTICS FOR BOTTLED DRINKING WATER**

S. #	ELEMENTS	Maximum admissible concentration (ppm)
1.	Arsenic (As)	0.01
2.	Fluoride (F)	0.7

**3.3 MICROBIOLOGICAL REQUIREMENTS:**

The product shall conform to the limits given in Table-IV.

**TABLE – IV:****MICROBIOLOGICAL LIMITS**

S. #	Organisms	Recommended Value
i.	Total coliform	0/250 ml
ii	E-Coli	0/250 ml
iii	Feceal enterococci/ streptococci	0/250 ml
iv.	Pseudomonas aeruginosa	0/250 ml
v.	Total viable count at 20 – 22 °C	< 100 / 1ml (Optional)
vi.	Total viable count at 37 °C	< 20 / 1ml (Optional)

**Note:** The relevant Testing of PS, ISO, CAC and of other internationally recognized Standard, methods may be taken into account for analysis purpose.

**4. HYGIENE**

- 4.1 Drinking Water for the purpose of bottling shall be prepared in accordance with PS: 3944 for Code of Practice – General Principles of food Hygiene.

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## 5. **PACKAGING**

- 5.1 The containers/bottles shall be hygienic, suitable and completely clean and shall not cause any undesirable change in taste, odour or colour or quality of the water. It can be inspected at random just prior to being filled and sealed.
- 5.2 The water packaging material must be of food grade & it shall conform to PS: 4069 for Plastic Portable Water Bottles or any other internationally accepted Standard.
- 5.3 It shall be packed in hermetically sealed containers of food grade material to prevent contamination of bottled water.
- 5.4 Filling and sealing operations of containers/bottles shall be done in an aseptic atmosphere so as to prevent any contamination.
- 5.5 **Transportation.** Bottled water shall be transported by any suitable means of transport to protect it from contamination.

## 6. **MARKING**

- 6.1 In addition to the PS: 1485(R) for Pakistan Standard for the Labelling of Pre-Packaged Foods, the following provisions shall apply:
- a) Brand name or trade name if any,
  - b) Net volumes in System International/Metric System,
  - c) Name and address of the manufacturer,
  - d) Batch number or code number
  - e) Date of bottling & expiry,
  - f) Chemical composition for e.g. Sulphate, Sodium, Magnesium, Potassium, Chloride,
  - g) Pakistan Standard Number, PS Mark & Licence Number.
  - h) Location and name of the source.

## 7. **METHOD OF TEST**

- 7.1 The relevant Testing Method of ISO, ASTM, CAC, PS, and of other Internationally Recognized Standard Methods may be taken in to account for Analysis Purpose.

## 8. **SAMPLING**

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

### 8.2 **General Requirements of Sampling**

- 8.2.1 Each bottle of the sample shall be marked with necessary details of sampling and the bottles for bacteriological testing shall be marked separately.
- 8.2.2 The bottles of the sample shall be stored in such a manner that there shall be no deterioration of quality of water.

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8.2.3 The bottles for Microbiological 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<sup>0</sup>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.

8.3 **SCALE OF SAMPLE:**

8.3.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

8.3.2 The number of bottles to be selected from a lot shall be in accordance with the Table – V.

**TABLE – V - SCALE OF SAMPLING**

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

8.3.3 If the 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.

8.4 **NUMBER OF TESTS:**

8.4.1 Each bottle selected shall be inspected for packaging and marking requirements.

8.4.2 Five bottles shall be selected from the bottles, and tested individually for the microbiological limits.

8.4.3 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.

9. **CRITERIA FOR CONFORMITY:**

9.1 A lot shall be declared as conforming to the requirements of this specification.

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