SRI LANKA STANDARD 894 : 2003

UDC 663.64.059

SPECIFICATION FOR
BOTTLED (PACKAGED) DRINKING WATER
(SECOND REVISION)

SRI LANKA STANDARDS INSTITUTION

- Blank Page -

SPECIFICATION FOR BOTTLED (PACKAGED) DRINKING WATER (SECOND REVISION)

SLS 894 : 2003
(Incorporating Corrigendum 1:2005)

Gr. 5

SRI LANKA STANDARDS INSTITUTION
17, Victoria Place
Elvitigala Mawatha
Colombo 08
Sri Lanka

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARDS
SPECIFICATION FOR BOTTLED (PACKAGED) DRINKING WATER
(SECOND REVISION)

FOREWORD

This standard was approved by the Sectoral Committee on Agriculture and Food products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standard Institution on 2003-09-25.

This specification was first published in 1990 and revised in 2001. In this revision Technological changes with regard to the clauses of definition, treatment and handling and requirements have been made. Marking clause also amended to be in line with Food Regulations (Labelling).

During the formulation of this specification due consideration has been given to the relevant provisions made under the Sri Lanka Food Act No. 26 of 1980. Specific requirements given in this specification, wherever applicable, are in accordance with the relevant regulations. However, general provisions made under the Sri Lanka Food Act No. 26 of 1980 have not been included in this specification and therefore, the attention of the user of this specification is drawn to these general provisions, made in the regulations framed under the Food Act No. 26 of 1980.

Guidelines for the determination of a compliance of a lot with the requirements of this standard based on statistical sampling and inspections are given in Appendix **A**.

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 an analysis shall be rounded off in accordance with **CS 102**. The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

In the preparation of this specification the valuable assistance obtained from the relevant publications of the Codex Alimentarius Commission, and World Health Organization is gratefully acknowledged.

1 SCOPE

This specification prescribes the requirements and methods of test for bottled (packaged) drinking water.

2 REFERENCES

CS	102	Presentation of numerical values
SLS	143	Code of practice for general principles of food hygiene
SLS	428	Random sampling methods
SLS	467	Code of practice for labelling of prepackaged food
SLS	516	Microbiological test methods Part 1: Aerobic plate count

SLS 614 Potable water
Part 2 : Bacteriological requirements
SLS 910 Limits for pesticide residues in food
SLS 1211 Code of hygienic practice for bottled drinking water

3 DEFINITIONS

For the purpose of this specification, the following definitions shall apply:

3.1 Product

3.1.1 bottled (packaged) drinking water :water which is used 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 added sugars, sweeteners, flavourings or other foods.

3.2 Waters defined by origin :

3.2.1 artesian water : water from a well tapping a confined aquifer in which the water level stands at some height above the top of the aquifer.

3.2.2 spring water : water derived from an underground formation from which water flows naturally to the surface of the earth. Spring water shall be collected at the spring or through a bore hole tapping the underground formation feeding the spring. There shall be a natural force causing the water to flow to the surface through a natural orifice.

3.2.3 well water : water from a hole bored, drilled or otherwise constructed in the ground which taps the water of an aquifer.

3.2.4 surface water : water open to the atmosphere such as streams, rivers, lakes, ponds and reservoirs.

3.3 Prepared waters : Waters that do not comply with all the provisions set for waters defined by origin under **3.2.** They may originate from any type of water supply.

4. TREATMENT AND HANDLING

4.1 Collection of water : The conditions in which the water are collected must not modify the physical properties, composition or quality of the water prior to the treatments.

4.2 Transportation : Transportation of water from extraction or collection points to bottling facilities if necessary shall be conducted in a way that does not have any significant effect on the safety and the characteristic composition of the transported water.

4.3 Forms of treatment Chemical, physical, thermal and anti-microbial treatments are permitted. These treatments can be used singly or in combination as multiple barriers.

4.4 Additional requirements for water derived from ground formation

4.4.1 Water derived from ground formation (artesian, spring or well water) must not be under the direct influence of the surface water.

5. REQUIREMENTS

5.1 Hygienic requirements

5.1.1 The product shall be treated, filtered, filled and distributed in accordance with **SLS 143** and **SLS 1211**

5.1.2 The product shall be free from agrochemicals and pesticide residues in excess of the limits as prescribed in **SLS 910.**

This characteristic shall be tested only if considered as necessary.

5.1.3 The product shall be free from phenolic compounds and mineral oils.

5.1.4 The source of water shall be free from faecal or any other contamination.

5.2 Physical requirements

The product shall conform to the requirements prescribed in Table **1** when tested in accordance with the methods prescribed in the publication given in clause **7.2**.

TABLE 1 – Physical requirements

Sl. No. **(1)**	**Characteristic** **(2)**	**Limit** **(3)**
i	Colour, Hazen units, max	15
ii	Odour	Unobjectionable
iii	Taste	Unobjectionable
iv	Turbidity, NTU, max,	5

5.3 Chemical requirements

The product shall conform to the requirements prescribed in Table **2** when tested in accordance with the methods prescribed in the publication given in clause **7**.

TABLE 2 – Permissible limits of chemical characteristics

Sl. No. (1)	Characteristic (2)	Permissible limits (3)
	Basic constituents	
i	pH value	6.5 to 8.5
ii	Iron (as Fe), mg/l, max,	0.3
iii	Nitrate (as NO_3), mg/l, max,	50
iv	Nitrite(as NO_2), mg/l, max,	3
v	Free residual chlorine (as Cl_2), mg/l, max.	0.2
vi	Flouride (as F), mg/l, max,	1.5
vii	Free ammonia, (as NH_3), mg/l, max,	0.06
viii	Total dissolved solids, mg/l, max,	1000
ix	Chlorides (as Cl^-), mg/l, max,	250
x	Sulphates (as SO_4), mg/l, max	250
	Optional constituents	
xi	Chemical oxygen demand, mg/l, max	10
xii	Zinc (as Zn), mg/l, max,	3.0
xiii	Aluminium (as Al), mg/l, max,	0.2
xiv	Copper (as Cu), mg/l, max,	1.0
xv	Manganese(as Mn), mg/l, max,	0.5
xvi	Arsenic (as As), mg/l, max,	0.01
xvii	Cadmium (as Cd), mg/l, max,	0.003
xviii	Cyanide(as CN), mg/l, max,	0.05
xix	Lead (as Pb), mg/l, max,	0.01
xx	Mercury (total as Hg) mg/l, max,	0.001
xxi	Selenium (as Se), mg/l, max,	0.01
xxii	Chromium, (as Cr) mg/l , max,	0.05
xxiii	Nickel (as Ni), mg/l, max,	0.02
xxiv	Alkalinity, (total as $CaCO_3$), mg/l max	200
xxv	Total Hardness as ($CaCO_3$), mg/l max	250

5.4 Bacteriological limits

The product shall not exceed the bacteriological limits given in Table **3** when tested in accordance with the methods prescribed in Column **7** of the Table.

TABLE 3 – Bacteriological limits

Sl. No. (1)	Test (2)	n (3)	c (4)	Limit m (5)	Limit M (6)	Method of test (7)
i	** Aerobic plate count, per ml	5	2	100	1 x 10^4	SLS 516 : Part 1
ii	Coliforms, MPN per 100 ml	10	1	0	10	SLS 614 : Part 2
iii	E Coli, MPN per 100 ml	10	0	0	-	SLS 614 : Part 2

*** Incubation at 37 ^{0}C for 72 h*

where,

n is the number of samples to be tested;
c is the maximum allowable number of samples yielding values between m and M;
m is the limit below which a count is acceptable for any sample; and
M is the limit above which a count is unacceptable for any sample.

NOTE : *See **A.2** General requirements of sampling.*

6. PACKAGING AND MARKING

6.1 Packaging

6.1.1 The product shall be filled in clean food grade containers under strict hygienic conditions and the bottles shall be sealed air-tight with a suitable cap. The cap should be shrink wrapped with a security wrapper, to prevent possible adulteration, contamination or unauthorized refilling of water.

These containers may be further packed in cases as agreed between the purchaser and the supplier.

6.1.2 Packaging materials used shall conform to relevant Sri Lanka Standards.

6.2 Marking

6.2.1 The product shall be marked or labelled legibly and indelibly with the following information :

a) Name of the product ;
b) Brand name or trade name, if any;
c) Net volume, in millilitres or litres ;
d) Name and address of the manufacturer/distributor ;
e) Batch or code number ;

f) Date of packaging ;
g) Country of origin and ;
h) Name of the source and location.

6.2.2 **(a)** No claims concerning medicinal or other beneficial effects relating to the health of the consumer shall be made in respect of the properties of the product ; and

(b) The use of any statement or 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 the product is not allowed.

6.2.3 General guidelines for marking and labelling as given in **SLS 467** shall be followed.

NOTE : *Attention is drawn to certification facilities offered by the Sri Lanka Standards Institution. See the inside back cover of the specification.*

7 METHOD OF TEST

7.1 Tests shall be carried out as prescribed in relevant appendices of this specification, **SLS 516 : Part 1** and **SLS 614 : Part 2** and the following publication.

7.2 American Public Health Association, American Water Works Association and Water Environment Federation New York .

Standards methods for the examination of water and waste waters, 18th edition New York.

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with this standard is to be assured based on manufacturer's control systems coupled with type testing and check test or any other procedure, appropriate schemes of sampling and inspection should be adopted.

A.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.

A.2 GENERAL REQUIREMENTS OF SAMPLING

A.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.

A.2.2 The bottles of the sample shall be stored in such a manner that there shall be no deterioration of quality of water.

A.2.3 The bottles for bacteriological testing shall be brought to the testing laboratory within 1 h of bottling. If this is not possible the bottles shall be stored at 10 ^{o}C or below and transported to the testing laboratory within 24 hours.

A.3 SCALE OF SAMPLING

A.3.1 Samples shall be tested from each lot for ascertaining its conformity to the requirements of this specification.

A.3.2 The number of bottles to be selected from a lot shall be in accordance with Table **4**.

Table 4 – Scale of sampling

Number of bottles in the lot	Number of bottles to be selected
Up to 1 000	15
1 001 to 3 000	17
3 001 to 10 000	18
10 001 and above	24

A.3.3 If the bottles are packed in cases, 10 per cent 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 **A.3.2.**

A.3.4 The cases and bottles shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in **SLS 428** shall be used.

A.4 NUMBER OF TESTS

A.4.1 Each bottle selected as in **A.3.2** or **A.3.3** shall be inspected for packaging and marking requirements.

A.4.2 Ten bottles shall be selected from the bottles selected as in **A.3.2** or **A.3.3** and tested individually for bacteriological limits.

A.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 given in **5.2** and **5.3**

A.5 CRITERIA FOR CONFORMITY

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied :

A.5.1 Each bottle inspected as **A.4.1** satisfies the relevant requirements.

A.5.2 Each bottle when tested as in **A.4.2** satisfies the relevant requirements.

A.5.3 The composite sample when tested as in **A.4.3** satisfies the relevant requirements

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development & formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical & Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such field of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLS/ which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

Printed at SLSI (Printing Unit)