SRI LANKA STANDARD 1038: 2020
UDC 663.646

SPECIFICATION FOR BOTTLED (PACKAGED) NATURAL MINERAL WATER
(*Second Revision*)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard

SPECIFICATION FOR BOTTLED (PACKAGED) NATURAL MINERAL WATER (*Second Revision*)

SLS 1038: 2020

(Attached AMD 583)

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SRI LANKA STANDARDS INSTITUTION
17, Victoria Place
Elvitigala Mawatha
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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 Standard
SPECIFICATION FOR BOTTLED (PACKAGED) NATURAL MINERAL WATER
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FOREWORD

This Standard was approved by the Sectoral Committee on Food Products was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2020-05-27.

This Standard was first published in 1995 and revised in 2003. This revision has been made to be in line with the Food (Bottled or Packaged water) Regulations and microbiological test methods have been updated to be align with ISO methods.

Natural mineral water is characterized by its content of non-adverse health related mineral salts, 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.

This Standard is subjected to the restrictions imposed under the Sri Lanka Food Act No. 26 of 1980 and the regulations framed thereunder.

For the purpose of deciding whether a particular requirement of this Standard 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 **SLS 102**. The number of significant places retained in the rounded off value should be the same as that of the specified value in this Standard.

In revising this Standard, the valuable assistance obtained from the following publications is gratefully acknowledged.

CODEX STAN 108: 1981, Rev. 1 – 1997 (Natural Mineral Waters)
Code of Federal regulations-2019

1 SCOPE

This Standard prescribes the requirements and methods of test for bottled (packaged) natural mineral water.

2 REFERENCES

SLS	102	Presentation of numerical values
SLS	428	Random sampling methods
SLS	467	Code of practice for labelling of prepackaged food
SLS	1021	Code of hygienic practice for the collecting, processing and marketing of natural mineral waters
SLS	1336	Containers made of polymer materials for packaging of drinking water
SLS	1461	Microbiological test methods for water Part 1/ Section 1: Detection and enumeration of *Escherichia coli* and coliform

Bacteria -Membrane filtration method for waters with low bacterial background flora
Part 2/ Section 1-Enumeration of culturable microorganisms/colony count by inoculation in a nutrient agar culture medium
Part 3/Section 1-Detection and enumeration of *Pseudomonas aeruginosa*-method by membrane filtration
Part 4/Section 2-Detection and enumeration of intestinal Enterococci-Membrane filtration method
Part 5 /Section 2 - Detection and enumeration of the spores of sulfite reducing anaerobes (Clostridia)-Method by membrane filtration

SLS 1462 Methods for sampling of water
Part 10: Sampling for microbiological analysis

Standard methods for the examination of water and waste waters, 23rd edition (2017), published by the American Public Health Association, USA (**APHA**)
World Health Organization Guideline for drinking water quality, fourth edition (2017)

3 DEFINITIONS

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

3.1 natural mineral water: Which has the following characteristics;

(a) Water that originates from an underground water bearing strata and is extracted from natural or drilled sources such as springs or deep tube wells which all possible precautions should be taken within the protected perimeters to avoid any pollution of, or external influence on, the chemical, physical and microbiological qualities of natural mineral water;

(b) 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;

(c) It is collected under conditions which guarantee the original microbiological purity and chemical composition of essential components;

(d) It is packaged close to the point of emergence of the source with particular hygienic conditions;

(e) It is not subjected to any treatment other than those permitted by Clause **4.4** of this Standard;

(f) It is not subject to be transported in bulk containers for bottling or packaging.

4. REQUIREMENTS

4.1 Hygiene

Natural mineral water shall be collected, processed, packaged and distributed under hygienic conditions in accordance with **SLS 1021**.

4.2 General requirements

Natural mineral water shall be free from agrochemicals and pesticide residues and shall not exceed the guideline values specified in the latest edition of WHO Guidelines for drinking water quality.

NOTE
Tests for pesticide residues may not be necessary for routine analysis and carried out only if required or requested.

4.3 Source

4.3.1 The source or the point of emergence shall be protected against risks of pollution.

4.3.2 Water derived from source must not be under the direct influence of the rain water and surface water.

4.3.3 Minimum of 33 meter perimeter protection shall be maintained from the abstraction point. However, the authority can grant exception in the case of deep tube wells.

4.3.4 The installations intended for the production of natural mineral water shall be such as to exclude any possibility of contamination.

For this purpose, and in particular:

(a) The pumps, pipes or other possible devices coming into contact with natural mineral water and used for its collection and storage shall be made of stainless steel (SS 316) food grade materials suitable to the water and in such a way as to prevent the introduction of foreign substances into the water;

(b) The equipment and its use for production, especially installations for washing and packaging shall meet hygienic requirements;

(c) If during production, it is found that the water is polluted, the producer shall stop all operations until the cause of pollution is eliminated;

(d) The observance of the above provisions shall be subjected to periodic checks; and

(e) No additional water source at a given premise shall be permitted for extraction of natural mineral water.

4.4 Authorized treatment

The only treatment permitted is for the separation of suspended matter by filteration without altering the chemical composition of the source water.

4.5 Finished product

4.5.1 *Physical requirements*

Natural mineral water shall conform to the requirements given in Table **1** when tested in accordance with the methods prescribed in Column **4** of the table.

TABLE 1 -Physical requirements

Sl No (1)	**Characteristic** (2)	**Requirement** (3)	**Method of test** (4)
i)	Colour, Hazen Units, max.	5	APHA 2120 B
ii)	Odour	Unobjectionable	Sensory evaluation [a)]
iii)	Taste	Unobjectionable	Sensory evaluation [b)]
iv)	Turbidity, NTU*, max.	2	APHA 2130 B

a) Test cold and when heated; Test at several dilutions (Alternative method -Threshold odour test, APHA 2150 B*)*
b) Test to be conducted only after safety has been established (Alternative method APHA 2160 B, C*)*
** NTU -Nephelometric Turbidity Units*

4.5.2 *Chemical requirements*

Natural mineral water shall conform to the requirements given in Table **2** when tested in accordance with the methods prescribed in Column **4** of the table.

TABLE 2 - Permissible levels for chemical characteristics

SI No	Substance or Characteristic	Requirement	Method of test	
			Referee method	Alternative method
(1)	(2)	(3)	(4)	(5)
i)	Aluminium (as Al) mg/l, max.	0.2	APHA 3113 B	APHA 3125 B
ii)	Free ammonia (as NH_3) mg/l, max.	0.06	SLS 614 Appendix A	-
iii)	Albuminoid ammonia mg/l, max.	0.15	SLS 614 Appendix A	-
iv)	Anionic detergents (as MBAS) mg/l, max.	0.2	APHA 5540 C	-
v)	Antimony (as Sb), mg/kg, max	0.005	APHA 3113 B	ICP-MS (APHA 3125, EPA 200.8)
vi)	Barium (as Ba), mg/kg, max	0.5	APHA 3111 D	ICP-MS (APHA 3125, EPA 200.8)
vii)	Arsenic (Calculated as total As) mg/l, max.	0.01	APHA 3114 C	ICP-MS (APHA 3125, EPA 200.8)
viii)	Cadmium (as Cd) mg/l, max.	0.003	APHA 3113 B	ICP-MS (APHA 3125, EPA 200.8)
ix)	Calcium (as Ca) mg/l, max.	100	APHA 3500 Ca B	APHA 3111 D
x)	Chloride (as Cl^-) mg/l, max.	250	APHA 4500-Cl B	APHA 4110 B
xi)	Chemical Oxygen Demand (COD) mg/l, max.	10	APHA 5220 B	-
xii)	Chromium (Calculated as total Cr) mg/l, max.	0.05	APHA 3113 B	ICP-MS (APHA 3125, EPA 200.8)
xiii)	Copper (as Cu) mg/l, max.	1.0	APHA 3111 B	APHA 3111B/C ICP-MS (APHA 3125, EPA 200.8)
xiv)	Cyanide (as CN) mg/l, max.	0.05	APHA (4500-CN C; EPA 335.4)	APHA 4500-CN G
xv)	Fluoride (as F^-) mg/l, max.	1.0	APHA 4500-F^- C	APHA 4110 B
xvi)	Lead (as Pb) mg/l, max.	0.01	APHA 3113 B	ICP-MS (APHA 3125, EPA 200.8)
xvii)	Manganese (as Mn)[c] mg/l, max.	0.1	APHA 3111 B	ICP-MS (APHA 3125, EPA 200.8)
xviii)	Mercury (as Hg) mg/l, max.	0.001	APHA 3112 B	ICP-MS (APHA 3125, EPA 200.8)
xix)	Nitrate (as NO_3^-) mg/l, max.	50	APHA 4500 -NO_3^- E	APHA 4110 B
xx)	Nitrite (as NO_2^-) mg/l, max.	3	APHA 4500 -NO_2^- B	APHA 4110 B
xxi)	Nickel (as Ni) mg/l, max.	0.02	APHA 3113 B	ICP-MS (APHA 3125, EPA 200.8)
xxii)	Oil and grease	Less than 1.4	APHA 5520 B	-
xxiii)	Phenolic compounds as phenolic OH mg/l, max.	0.001	APHA 5530 B & C	-
xxiv)	Selenium (as Se) mg/l, max.	0.01	APHA 3114 C	ICP-MS (APHA 3125, EPA 200.8)
xxv)	Sulphide as (H_2S), mg/l, max	0.05	APHA 4500-S2–D	APHA 4500-S2–F
xxvi)	Total dissolved solids	250- 1000	APHA 2540-C	-

4.5.3 *Microbiological requirements*

Natural mineral water shall not exceed the microbiological limits given in Table **3** when tested in accordance with the method prescribed in Column **7** of the table.

TABLE 3 – Limits for microbiological requirements

Sl No (1)	**Microorganism** (2)	**Limit**				**Method** (7)
		n (3)	**c** (4)	**m** (5)	**M** (6)	
i)	Aerobic plate count/ ml at 22 ± 1 ^{o}C in 72 hours*	5	0	100	-	SLS 1461 Part 2 Section1
ii)	Aerobic plate count/ ml at 36 ^{o}C ±1 ^{o}C in 48 hours *	5	0	20	-	SLS 1461 Part 2 Section1
iii)	Coliforms/250 ml **	5	0	0	-	SLS 1461 Part 1 Section 1
iv)	*E. coli*/ 250 ml **	5	0	0	-	SLS1461 Part 1 Section 1
v)	Fecal Streptococci/ 250 ml **	5	0	0	-	SLS 1461 Part 4 Section 2
vi)	*Pseudomonas aeruginosa* / 250 ml**	5	1	0	2	SLS 1461 Part 3 Section 1
vii)	Spore forming sulphite reducing anaerobes (Clostridia)/ 50 ml ***	5	0	0	-	SLS 1461 Part 5 Section 2

* The aerobic plate count shall be determined within 12 hours after bottling, the water being maintained at 5 ^{o}C ±3 ^{o}C during this period.

** Filter 250 ml of sample (through 0.45 μm membrane filter)

*** Filter 50 ml of sample (through 0.2 μm membrane filter)

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.

NOTES

1. *Sometimes it would become difficult to transport samples to a testing laboratory for analysis within* 12 *hours of bottling due to logistic reasons. Under such circumstances, it may be necessary to extend the time period between bottling and analysis but not to exceed* 24 *hours and stored at* 5 ^{o}C ±3 ^{o}C *or below and transported to the testing laboratory, in order to minimize errors attributable to the final count.*

2. *Natural mineral water should be of such a microbiological quality that will not present hazard to the health of the consumer (in particular regarding pathogenic microorganisms including parasites)*

5 PACKAGING

5.1 The product shall be filled in clean colourless food grade containers or transparent glass containers under strict hygienic conditions. The containers shall be sealed air-tight, with a suitable food grade cap or a cover. The cap shall be wrapped with a security wrapper, to prevent possible adulteration, contamination or unauthorized refilling of water. Packages shall not be reused.

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

5.2 In case when polymer materials are used for packaging those shall conform to **SLS 1336**.

6 MARKING AND/ OR LABELLING

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

a) Name of the product as “Bottled natural mineral water” or “Packaged natural mineral water”;
b) Brand name or trade name, if any;
c) Number and date of registration by the competent authority;
d) Net volume, in millilitres or litres;
e) Name and address of the manufacturer/distributor;
f) Batch or code number;
g) Date of packaging;
h) Date of expiry;
j) Country of origin; and
k) Name of the source and location.

6.2. No claim concerning health or other beneficial effects shall be made in respect of the properties of the product.

6.3 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 natural mineral water is not allowed.

6.4 Marking and/or labelling shall be in accordance with **SLS 467**.

7 METHOD OF TEST

7.1 The product shall be tested for the relevant requirements of this Standard by the test methods prescribed in Section **1** of Part **1**, Section **1** of Part **2**, Section **1** of Part **3**, Section **2** of Part **4**, Section **2** of Part **5** of **SLS 1461** and the following publication:

Standards methods for the examination of water and waste waters, 23rd edition (2017), published by the American Public Health Association, USA (**APHA**). American Water Works Association and Water Environment Federation New York.

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix shall 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 microbiological testing shall be marked separately. The samples shall be drawn as per **SLS 1462** Part **10**.

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 microbiological testing shall be sampled and brought to the testing laboratory within 12 hours of bottling. If not possible ice to lower the temperature and transport 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 Standard.

A.3.2 The number of containers to be selected from a lot shall be in accordance with Column **2** of table **4**.

Table 4 – Scale of sampling

Number of containers in the lot (1)	Number of containers to be selected (2)
Up to 300	9
301 to 500	10
501 to 1 200	12
1 201 and above	14

A.3.3 The containers 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 Four of the containers selected from the containers drawn as in **A.3.2** shall be tested for the microbiological requirements given in **4.5.3**.

A.4.2 All remaining containers selected as in **A.3.2** after drawing sample for microbiological analysis shall be inspected for packaging (Clause **5**) and marking and/ or labelling requirements (Clause **6**).

A.4.3 A sufficient quantity of water shall be drawn from each of the remaining containers (**A.4.2**) and mixed to form a composite sample and shall be tested for the physical and chemical requirements given in **4.5.1** and **4.5.2**.

A.5 CRITERIA FOR CONFORMITY

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

A.5.1 Each container inspected/tested as **A.4.1** and **A.4.2** satisfies the relevant requirements.

A.5.2 The composite sample when tested as in **A.4.3** satisfies the relevant requirements.

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AMD 583

Amendment No: 1 Approved on 2022-10-25 to SLS 1038: 2020

AMENDMENT NO: 1 TO SLS 1038: 2020

SRI LANKA STANDARD SPECIFICATION FOR BOTTLED (PACKAGED) NATURAL MINERAL WATER (Second Revision)

EXPLANATORY NOTE

The requirement for total dissolved solids (TDS) was specified in SLS 1038: 2020, considering the draft Food (Bottled or Packaged Water) Regulations, expecting that draft regulation and the Standard will be published simultaneously. However, as the draft regulation is still not published, to avoid discrepancy between the Standard and the existing Food (Bottled or Packaged Water) Regulations-2005, this amendment is issued.

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Table 2

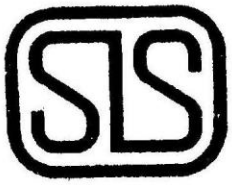
Replace Column 2 and 3 in Sl No (xxvi) by;

Substance or characteristic (2)	**Requirement** (3)
Total dissolved solids, mg/l, max.	1500.0

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 SLSI *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.*



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SRI LANKA STANDARDS INSTITUTION

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

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