

**SRI LANKA STANDARD 722 : 1985**

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**TOLERANCE LIMITS FOR  
INLAND SURFACE WATERS USED AS RAW  
WATER FOR PUBLIC WATER SUPPLY**

**SRI LANKA STANDARDS INSTITUTION**



TOLERANCE LIMITS FOR INLAND SURFACE WATERS  
USED AS RAW WATER FOR PUBLIC WATER SUPPLY

SLS 722:1985

Gr. 5

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SRI LANKA STANDARD  
TOLERANCE LIMITS FOR INLAND SURFACE WATERS  
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**FOREWORD**

This Sri Lanka Standard has been authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1985-11-20, after the draft finalized by the Drafting Committee on Industrial Effluents had been approved by the Chemicals Divisional Committee.

Inland surface waters refer to rivers, estuaries, streams, lakes and reservoirs including rivers liable to seasonal drying. Pollution of inland surface waters with sewage, effluents and industrial wastes is an important problem associated with industrial development and concentration of population in cities. As a first step in the prevention and control of pollution, it is necessary to prescribe standards for the purity of waters into which effluents may be discharged, so that such receiving water courses could be safely used as raw water for public water supply.

This standard is intended essentially to help the local authorities in deciding on restrictions that may be required on the discharge of industrial and sewage effluents into inland surface waters. Pollution of such waters beyond tolerance limits prescribed in this standard should not be allowed. The authorities should bear in mind that concentration of industries can give rise to a situation where, although each industrial effluents complies with the relevant standard, the combined effect of the effluent may render the water bodies unsuitable for the purpose.

The standard values given in this standard are in SI units.

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

In the preparation of this standard the assistance obtained from the publications of the Indian Standards Institution is gratefully acknowledged.

**1 SCOPE**

This standard prescribes the tolerance limits and methods of sampling and test for inland surface waters used as raw water for public water supply.

**2 REFERENCES**

CS 102 Presentation of numerical values

SLS 614 Potable water

Part 1 : Physical and Chemical requirements

Part 2 : Bacteriological requirements.

**3 REQUIREMENTS**

Inland surface waters used as raw water for public water supply, shall comply with the tolerance limits specified in Table 1.

**TABLE 1 - Tolerance limits for inland surface waters for use as raw water for public water supply**

Determinant	Tolerance limit	Method of test (Ref. to publication in Clause 5 and SLS 614)	Technique of the method
1) Coliform organisms (monthly average, most probable number (MPN) per (100 ml)	Not more than 5000, with less than 5 per cent of the samples with value 20 000, and less than 20 per cent of the samples with the value 5000	SLS 614 Part 2	
2) pH range at ambient temperature	6.0 to 9.0	1	Electrometry, by means of pH meter with glass electrode (Reference Method)
		2	Colorimetry, winkler (azide modification) method
3) Chloride (as Cl) mg/l, max.	1,200	1	Titrimetry-silver nitrate method (Reference method)
		1	Titrimetry-mercuric nitrate method
4) Nitrate (as N) mg/l, max.	10	1	Ultraviolet spectrophotometric method (Reference method)

Determinant	Tolerance limit	Method of test (Ref. to publication in Clause 5 and SLS 614)	Technique of the method
		1	Colorimetry
		2	Burcine method
		Appendix C of SLS 614: Part 1	Colorimetry-phenol-disulfonic acid method
5) Fluoride (as F), mg/l, max.	1.5	1	Selective ion electrode method (Reference method)
		1	Colorimetry - Alizarin visual method
6) Phenolic compounds (as phenolic OH) mg/l, max	0.005	1	Colorimetry - chloroform extraction method
7) Oils and grease, mg/l, max.	0.1	1	Gravimetry, liquid extraction with trichlorotrifluoroethane
8) Pesticide residue	As per WHO/FAO* requirements	1	Gas chromatography
9) Arsenic (as As), mg/l, max	0.05	1	A.A. Spectrophotometric method
10) Cyanide (as CN) mg/l. max.	0.05	1	Pyridine pyrazolone (or barbituric acid) colorimetric method
11) Lead (as Pb), mg/l, max.	0.1	1,2	Colorimetric (Dithizone) method (Reference method)

Determinant	Tolerance limit	Method of test (Ref. to publication in Clause 5 and SLS 614)	Technique of the method
		1.2	A.A. Spectrophometric method
12) Mercury (total as Hg), mg/l, max.	0.001	1	A.A. Spectrophotometric method
13) Selenium (as Se) mg/l, max.	0.05	1	A.A. Spectrophotometric method (Reference method)
14) Chromium (as Cr) mg/l, max.	0.05	1	A.A. Spectrophotometric method (Reference method)
15) Dissolved oxygen (DO), mg/l, min.	4	2	Azide modification method
16) Biochemical oxygen demand (BOD) mg/l. max.	5	2	Incubation for 5 days at 20 °C (Reference method)
			Incubation for 3 days at ambient temperature (Routine method)
17) Radio active material:			
a) Alpha emitters µc/ml, max.	10 <sup>-9</sup>	1	Proportional or scintillation counter
b) Beta emitters µc/ml, max.	10 <sup>-8</sup>	1	Proportional or scintillation counter

\* Food and Agriculture Organisation  
µc/ml - micro curies per millilitre

#### 4 SAMPLING

##### 4.1 General requirements of sampling



4.1.1 When samples are taken for testing of chemical requirements, the following precautions and directions shall be observed.

4.1.1.1 The samples shall be collected in clear-glass winchester quartz bottles with glass stoppers or plastic containers with plastic lids.

4.1.1.2 If sampling instruments are used, they shall be cleaned and dried when used.

4.1.1.3 If the tests are not to be carried out at once at the place of sampling, the samples shall be transported to the laboratory without delay and kept cool in transit.

*Note - Containers, methods of preservation of samples and recommended maximum storage time are given in Appendix A of SLS 614 : Part 1.*

4.1.2 When samples are taken for bacteriological examination the following precautions and directions shall be observed.

4.1.2.1 The samples for bacteriological examination shall be taken first.

4.1.2.2 Samples shall be collected in sterilized glass bottles. They shall be fitted with ground glass stoppers or metal screw caps. Stopper and the neck of the bottle shall be protected from contamination by a suitable cover, either of aluminium foil or other suitable material.

4.1.2.3 Interval between collection of samples and beginning of examination shall not exceed 24 hours.

If the time interval between collection and examination is to exceed one hour the samples shall be transported to the Laboratory in iced coolers ( $4 \pm 2$  °C). Samples shall not be frozen.

4.1.3 An identification number shall be marked for each sample container and the following information shall be provided with the sample:

- a) Name and address of person requesting examination;
- b) Exact place from which sample was taken;
- c) Exact position and approximate depth at which sample was collected; and
- d) Date, time and weather conditions when sample was taken and despatched.

#### 4.2 Collection of samples

4.2.1 The stoppered bottles shall be immersed well under the surface of the water with the mouths upwards and the bottles shall be filled by removing the stoppers with the help of a clean piece of string tied to each stopper before immersion.

4.2.2 Separate samples shall be taken for testing of bacteriological requirements and chemical requirements.

#### 4.3 Size of the sample

4.3.1 The sample size for chemical analysis shall be at least 5 litres.

4.3.2 The sample size for bacteriological examination shall be at least 200 ml.

#### 4.4 Number of tests

4.4.1 Samples obtained as described in 4.1.1, 4.2 and 4.3.1 shall be tested for chemical requirements of this specification.

4.4.2 Samples obtained as described in 4.1.2, 4.2 and 4.3.2 shall be tested for microbiological requirements of this specification.

#### 5 Methods for test

5.1 Samples obtained as described in 4 shall be tested for the relevant requirements of the standard as prescribed in the following publications.

1) American Public Health Association, American Water Works Association and Water Pollution Control Federation (1980) Standard Methods for the Examination of Water and Waste Water; 15th ed. New York, APEA.

2) Global Environmental Monitoring Systems Water Operational Guide UNESCO/WHO 1978.

5.2 For certain determinants two test methods have been given in Table 1. The reference method shall be used in case of dispute.

#### 6 Conformity to Standard

The samples of water obtained for testing shall be considered as conforming to the requirements of this standard, if the samples tested as in 4.4 satisfy the relevant requirements.

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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.

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