SRI LANKA STANDARD 721 : 1985

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TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC EFFLUENTS DISCHARGED INTO MARINE COASTAL AREAS

SRI LANKA STANDARDS INSTITUTION

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SLS 721:1985

Gr. 5

SRI LANKA STANDARDS INSTITUTION
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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

TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC EFFLUENTS DISCHARGED INTO MARINE COASTAL AREAS

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.

Marine environment is intended to cover, in addition to the sea and oceans, creeks and tidal waters. Within the estuarine region, the marine environment will extend up to the low tide level; waters above that point will fall in the region of inland surface waters. Marine coastal areas shall extend up to 5 km from the mean high water line.

It is intended that each effluent shall be treated on the basis of techno-economic capabilities prior to discharge.

The tolerance limits prescribed in this standard are intended to guide the local authorities in framing rules regarding industrial and domestic effluents. In arriving at a decision on the tolerance limits the authorities shall in consultation with Central Environmental Authority (CEA), give due consideration to local conditions and in special cases may relax the limits or make them more rigid. This standard is also intended to guide the industry in selecting appropriate technology, suitable site, and the degree of treatment of effluents.

Tolerance limits for colour and odour have not been prescribed in this standard but it is recommended that as far as practicable, colour and unpleasant odours should not be present in industrial and domestic effluents.

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 tolerance limits and methods of sampling and test for industrial and domestic effluents discharged into marine coastal areas.

2 REFERENCES

CS 102 Presentation of numerical values

CS 124 Test sieves

SLS 652 Tolerance limits for industrial effluents discharged into inland surface waters

3 REQUIREMENTS

3.1 Industrial and domestic effluents, before they are discharged into marine coastal areas, shall comply with the tolerance limits specified in Table 1. Industrial effluents shall, in addition, comply with the tolerance limits specified in Table 2.

3.1.1 In industrial effluents, if more than one metal is present at the same time percentage values are calculated for each metal from the actual concentration and the permissible limits. The sum of the percentages shall not exceed 100.

TABLE 1 - Tolerance limits for industrial and domestic effluents

Determinant	Tolerance limit	Method of test (Ref. to publications in Clause 5 and relevant Appendix)	Technique of the method
1) Total suspended solids, mg/l, max.		a	Glass fibre filtration, 103 °C to 105 °C post washing of residue
a) For process waste waters	150		
b) For cooling water effluents	Total suspended matter content of influent cooling water plus 10 per cent		
2) Particle size of		Appendix A	
a) floatable solids, max.	3 mm		
b) settleable solids, max.	850 µm		
3) pH range at ambient temperature	6.0 - 8.5	a	Electrometry, by means of pH meter with glass electrode (Reference method)
		b	Colorimetry, Winkler (Azide modification) method.
4) Biochemical oxygen demand (BOD) mg/l, max.	100	b	Incubation for 5 days at 20 °C (Reference method)
			Incubation for 3 days at ambient temperature (Routine method)
5) Temperature, max.	45 °C at the point of discharge	b	Electrometric thermometer
6) Oils and grease mg/l, max.	20.0	a	Gravimetry, liquid-liquid extraction with trichloro-trifluoro ethane

Table 1 Contd.

Determinant	Tolerance limit	Method of test (Ref. to publications in Clause 5 and relevant Appendix)	Technique of the method
7) Residual chlorine, mg/l, max.	1.0	a	Colorimetry-DPD (N, N diethyl para phenylene diamine)
8) Ammoniacal nitrogen mg/l, max.	50.0	a	Nesslerization method
9) Chemical oxygen demand (COD) mg/l, max.	250	a	Dichromate reflux

TABLE 2 - Tolerance limits for industrial effluents

Determinant	Tolerance limit	Method of test (Ref. to publications in Clause 5)	Technique of the method
1) Phenolic compounds (as phenolic OH) mg/l, max.	5.0	a	Colorimetry-chloroform extraction method
2) Cyanides (as CN) mg/l, max.	0.2	a	Pyridine pyrazolone (or barbituric acid colorimetric method)
3) Sulfides (as S) mg/l, max.	5.0	a	Methylene blue method (Reference method)
4) Fluorides (as F), mg/l, max.	15	a	Selective ion electrode method (Reference method) Colorimetry-Alizarin visual method
5) Arsenic (as As), mg/l, max.	0.2	a	A.A. Spectrophotometric method (Reference method)

Table 2 Contd.

Determinant	Tolerance limit	Method of test (Ref. to publications in Clause 5)	Technique of the method
6) Cadmium (as Cd), total, mg/l, max.	2.0	a	A.A. Spectrophotometric method (Reference method)
7) Chromium (as Cr), total, mg/l, max.	1.0	a	A.A. Spectrophotometric method (Reference method)
8) Copper (as Cu), total, mg/l, max.	3.0	a	A.A. Spectrophotometric method (Reference method)
		a	Colorimetric (Bacthocuproine) method
9) Lead (as Pb), total, mg/l, max.	1.0	a,b	Colorimetric Dithizone) method (Reference method)
		a.b	A.A. Spectrophotometric method
10) Mercury (as Hg), total, mg/l, max.	0.01	a	Flameless A.A.Spectrophotometric method
11) Nickel (as Ni), total, mg/l, max.	5.0	a	A.A. Spectrophotometric method (Reference method)
		a	Colorimetric (Heptoxime method)
12) Selenium (as Se), total, mg/l, max.	0.05	a	A.A. Spectrophotometric method
13) Zinc (as Zn), total, mg/l, max.	5.0	a	A.A. Spectrophotometric method (Reference method)
14) Radio active material			
a) Alpha emitters µc/ml, max.	10^{-8}	a	Proportional or Scintillation counter
b) Beta emitters µc/ml, max.	10^{-7}	a	Proportional or Scintillation counter

Table 2 Contd.

Determinant	Tolerance limit	Method of test (Ref. to publications in Clause 5)	Technique of the method
15) Organo-phosphorus compounds (as P), mg/l, max.	1.0	a	Gas chromatography
16) Chlorinated hydrocarbons (as Cl), mg/l, max.	0.02	a	Gas chromatography

µc/ml = *microcuries per millilitre.*

4 SAMPLING

Representative samples of the industrial and domestic effluents shall be obtained as prescribed in 4 of SLS 652.

5 METHODS OF 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 and Appendix A.

a. American Public Health Association (APHA)
Standard methods for the examination of water and waste water: 15th ed., 1980.

b. UNESCO/WHO
Global environmental monitoring systems water operational guide, 1978.

5.2 For certain determinants two test methods have been given in Table 1 and Table 2. The reference method shall be used in case of dispute.

APPENDIX A

DETERMINATION OF PARTICLE SIZE OF SUSPENDED SOLIDS

A.1 PRINCIPLE

The particle size of suspended solids is determined by wet screening of the freshly drawn sample through the specified sieve.

NOTE - Since the suspended solids in the sample is likely to coalesce on keeping, the test should be carried out on the spot. Leaves, twigs and other wind blown debris, which are extraneous to the sample should be removed.

A.2 APPARATUS

A.2.1 *Test sieves,* conforming to CS 124.

A.2.1.1 Aperture size 850 µm sieve for settleable solids.

A.2.1.2 Aperture size 3 mm sieve for floatable solids.

A.2.2 *Water bath,* of diameter slightly bigger than that of the sieve.

A.3 PROCEDURE

Hold the sieve in one hand with the other, pour gently on the mesh surface of the sieve one litre of the well mixed sample. Pour the sample in such a way that it covers the entire mesh surface. Fill the water bath with fresh water. Then holding the sieve on opposite sides with the two hands gently raise and lower the sieve through the water interface in the bath. Exercise care that while moving the sieve only half of its depth is dipped in the water. and none of the solids is floated over the edge.

The suspended matter shall be then considered passing through the sieve only if no residue is left on it.

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SRI LANKA STANDARDS INSTITUTION

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