**Foreword**

**(Formal clauses to be added at the time of finalization)**

The surface water includes both natural and constructed non-coastal above grounded open fresh and brackish water. The inland surface water offers a wider range of habitat and resources upon which many species depend. The quality of inland surface water is degrading due to harmful pollutants that are being discharged from industries and other land based sources. The discharge of these pollutants directly to water bodies without being monitored is not only leading to eutrophication, algal bloom and acidification of water bodies but also causing the disappearance of species and change in the species composition in many places.

This standard prescribes the tolerance limit of various pollutants that are discharged into inland surface water (river, pond, reservoir (dam), lake, *jheel*, canal etc.).

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( revised )'.

DRAFT INDIAN STANDARD

**Tolerance limits for inland surface waters subject to pollution**

**1 SCOPE**

This standard lays down the tolerance limits for inland surface waters subject to pollution. The inland surface water includes river, pond, reservoir (dam), lake, *jheel*, canal etc.

**2 REFERENCES**

The following standards contain provisions which through reference in this text constitute provisions of this standard. At the time of publications, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

|  |  |
| --- | --- |
| *IS No.* | *Title* |
| 3025 | Methods of sampling and test (Physical and Chemical) for water and waste water |
| (Part 1):1987 | Sampling (*first revision*) |
| (Part 4) : 2021 | Colour (*second revision*) |
| (Part 5) : 1983 | Odour (*second revision*) |
| (Part 9) : 1984 | Temperature (*first revision*) |
| (Part 11) : 1983 | pH value (*first revision*) |
| (Part 38) : 1989 | Dissolved Oxygen (*first revision*) |
| (Part 44) : 1993 | Bio-chemical Oxygen Demand (BOD) (*first revision*) |
| (Part 58) : 2006 | Chemical Oxygen Demand (COD) (*first revision*) |
| (Part 17) : 1984 | Non - Filterable residue (Total Suspended Solids) (*first revision*) |
| (Part 16) : 1984 | Filterable residue (Total Dissolved Solids) (*first revision*) |
| (Part 14) : 2013 | Specific conductance (Wheatstone Bridge, Conductance Cell) (*second revision*) |
| (Part 39) : 2021 | Oil and Grease (*second revision*) |
| (Part 52) : 2003 | Chromium (*first revision*) |
| (Part 29) : 1986 | Sulphide (*first revision*) |
| (Part 34) : 1988 | Nitrogen (*first revision*) |
| (Part 31) : 1988 | Phosphorus (*First Revision*) |
| (Part 32) : 1988 | Chloride (*first revision*) |
| (Part 24) : 1986 | Sulphate (*first revision*) |
| (Part 60) : 2008 | Fluoride (*first revision*) |
| (Part 43) : 1992 | Phenols (*first revision*) |
| (Part 49) : 1994 | Zinc (*first revision*) |
| (Part 53) : 2003 | Iron (*first revision*) |
| (Part 42) : 1992 | Copper (*first revision*) |
| (Part 59) : 2006 | Manganese (*first revision*) |
| (Part 26) : 2021 | Chlorine, residual (*second revision*) |
| (Part 54) : 2003 | Nickel (*first revision*) |
| (Part 37) : 1988 | Arsenic (*first revision*) |
| (Part 27) : 1986 | Cyanide (*first revision*) |
| Doc no. CHD/36/15686  | Vanadium |
| (Part 47) : 1994 | Lead (*first revision*) |
| (Part 56) : 2003 | Selenium (*first revision*) |
| (Part 41) : 1992 | Cadmium (*first revision*) |
| (Part 48) : 1994 | Mercury (*first revision*) |
| 7022 (Part 1) : 1973 | Glossary of term relating to water, sewage and industrial effluents: Part 1 |
| 7022 (Part 2) : 1979 | Glossary of terms relating to water, sewage and industrial effluents: Part 2 |
| 14194 (Part 2) : 2013 | Radio-nuclides In Environmental Samples - Methods of Estimation Part 1 Gross Beta activity measurement (*second revision*) |
| 14194 (Part 1) : 2013 | Radio-nuclides in environmental samples - Methods of estimation: Part 2 Gross Alpha activity measurement (*first revision*) |

**3 TERMINOLOGY**

For the purpose of this standard, the definition given in IS 7022 (Part 1), IS 7022 (Part 2) shall apply.

**4 TOLERANCES**

**4.1 Odour**

The water shall be free from objectionable odour.

**4.2** The water shall comply with the tolerances given in Table 1 when tested according to various parts of IS 3025 is given in col 4 of Table 1.

**5 SAMPLING**

Representative test samples of water shall be drawn as prescribed in IS 3025(Part1).

Table 1 Tolerance Limits for Inland Surface Water subject to Pollution

(*Clause 4.2*)

|  |  |  |  |
| --- | --- | --- | --- |
| **S No.**(1) | **Characteristic**(2) | **Tolerance for inland surface water**(3) | **Method of Test**(4) |
| 1. | pH | 6.0-9.0 | IS 3025 (Part 11)  |
| 2. | Colour (Hazen Units) *Max* | 400.0  | IS 3025 (Part 4)  |
| 3. | Odour | Free from odour | IS 3025 (Part 5)  |
| 4. | Temperature, *Max* | Shall not exceed 5.0˚C above the ambient temperature of the receiving body. | IS 3025 (Part 9)  |
| 5. | Dissolved Oxygen (as O2), mg/l, *Max* | 4.0  | IS 3025 (Part 38)  |
| 6. | Biochemical Oxygen Demand , mg/l, *Max* | 30.0 (3 days at 27oC)30.0 (5 days at 20oC) | IS 3025 (Part 44)  |
| 7. | Chemical Oxygen Demand, mg/l, *Max* | 250.0  | IS 3025 (Part 58)  |
| 8. | Total SuspendedSolids , mg/l, *Max* | 100.0  | IS 3025 (Part 17)  |
| 9. | Total Dissolved Solids, mg/l, *Max* | 2100.0  | IS 3025 (Part 16)  |
| 11. | Oil & Grease, mg/l, *Max* | 10.0  | IS 3025 (Part 39)  |
| 12. | Total Chromium (as Cr), mg/l, *Max* |  | IS 3025 (Part 52)  |
| 13. | Hexavalent Chromium (as Cr6+), mg/l, *Max* | 0.1  | IS 3025 (Part 52)  |
| 14. | Sulphide (as S2-), mg/l, *Max* | 2.0  | IS 3025 (Part 29)  |
| 15. | Ammoniacal -Nitrogen (as NH4-N), mg/l, *Max* | 50.0  | IS 3025 (Part 34)  |
| 16. | Total Kjeldahl Nitrogen (TKN as N), mg/l, *Max* | 50.0  | IS 3025 (Part 34)  |
| 17. | Nitrate (as NO3-), mg/l, *Max* | 50.0  | IS 3025 (Part 34)  |
| 18. | Dissolved Phosphates (as PO43-), mg/l, *Max* | 1.0  | IS 3025 (Part 31)  |
| 19. | Chloride (as Cl-), mg/l, *Max* | 1000.0  | IS 3025 (Part 32)  |
| 20. | Sulphate (as SO42-), mg/l, *Max* | 600.0  | IS 3025 (Part 24)  |
| 21. | Fluoride (as F-), mg/l, *Max* |  | IS 3025 (Part 60)  |
| 22. | Phenolic compounds (as C6H5OH), mg/l, *Max* | 1.0  | IS 3025 (Part 43)  |
| 23. | Total Residual Chlorine(as Cl), mg/l, *Max* | 0.5  | IS 3025 (Part 26)  |
| 24. | Zinc (as Zn), mg/l, *Max* | 5.0  | IS 3025 (Part 49)  |
| 25. | Iron (as Fe), mg/l, *Max* |  | IS 3025 (Part 53) |
| 26. | Copper (as Cu), mg/l, *Max* | 3.0  | IS 3025 (Part 42)  |
| 27. | Manganese (as Mn), mg/l, *Max* | 2.0  | IS 3025 (Part 59)  |
| 28. | Nickel (as Ni), mg/l, *Max* | 3.0  | IS 3025 (Part 54)  |
| 29. | Arsenic (as As), mg/l, *Max* | 0.20  | IS 3025 (Part 37)  |
| 30. | Cyanide (as CN-), mg/l, *Max* | 0.20  | IS 3025 (Part 27)  |
| 31. | Vanadium (as V), mg/l, *Max* | 0.20  | Reference standard is under development(Doc no. CHD/36/15686 COMPLETED P-DRAFT STAGE TO BE CIRCULATED AS WC) |
| 32. | Lead (as Pb), mg/l, *Max* | 0.10  | IS 3025 (Part 47)  |
| 33. | Selenium (as Se), mg/l, *Max* | 0.05  | IS 3025 (Part 56)  |
| 34. | Cadmium (as Cd), mg/l, *Max* | 0.05  | IS 3025 (Part 41)  |
| 35. | Mercury (as Hg), mg/l, *Max* | 0.01  | IS 3025 (Part 48)  |
| 36. | Alpha emitters, μc/ml, *Max* | 10-9 | IS 14194 (Part 2)  |
| 37. | Beta emitters, μc/ml, *Max* | 10-8 | IS 14194 (Part 1)  |