Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

IS 3025-17 (1984): Methods of sampling and test (physical and chemical) for water and wastewater, Part 17: Non-filterable residue (total suspended solids [CHD 32: Environmental Protection and Waste Management]
AMENDMENT NO. 1 DECEMBER 1999
TO
IS 3025 (PART 17) : 1984 METHODS OF SAMPLING AND TEST (PHYSICAL AND CHEMICAL) FOR WATER AND WASTE WATER
PART 17 NON-FILTERABLE RESIDUE (TOTAL SUSPENDED SOLIDS)
(First Revision)

(Page 1, clause 3.5) — Insert the following new subclause after 3.5:

'3.6 Magnetic Stirrer — with teflon coated stirring bars'.

(Page 1, clause 4.3, line 1) — Insert the following at the beginning of the clause:

'Stir volume of sample with a magnetic stirrer or shake it vigorously.'

(Page 2, clause 4.6, line 5) — Substitute 'Repeat the drying cycle to constant mass till the difference in the successive mass is less than 0.5 mg.' for 'Repeat the drying cycle till constant mass is obtained.'

(CHD12)
Indian Standard

METHODS OF SAMPLING AND TEST (PHYSICAL AND CHEMICAL) FOR WATER AND WASTE WATER

PART 17 NON-FILTERABLE RESIDUE (TOTAL SUSPENDED SOLIDS)

(First Revision)

1. Scope — Prescribes a gravimetric method for the determination of non-filterable residue. This method is applicable to all types of water and waste water.

2. Principle — Non-filterable residue is determined by passing the sample through a weighed filter and drying the filter at 103-105°C or 179-181°C. Non-filterable residue is calculated from the increase in mass of the filter.

3. Apparatus

3.1 Filters — One of following may be used.

3.1.1 Gooch crucible — 30 ml capacity with 2.1, 2.4 or 5.5 cm diameter (pore size 1.2 μm) glass fibre filter disc. (Whatman GF/C or equivalent.)

3.1.2 Crucible — Porous-bottom silica, sintered glass, porcelain, stainless steel or Alundum crucible with a maximum pore size of 5 μm.

3.1.3 Glass fibre filter disc — (Whatman GF/C or equivalent) 2.1 to 5.5 cm in diameter, pore size 1.2 μm.

3.2 Filtering Apparatus — Depending on type of filter used.

3.3 Drying Oven — With a thermostatic control for maintaining temperature up to 180 ± 2°C.

3.4 Desiccator — Provided with a colour indicating desiccant.

3.5 Analytical Balance — 200 g capacity and capable of weighing to nearest 0.1 mg.

4. Procedure

4.1 Preparation of Glass Fibre Filter Disc — Place the glass fibre filter on the membrane filter apparatus or insert into bottom of a suitable Gooch crucible with wrinkled surface up. While vacuum is applied, wash the dish with three successive 20 ml volumes of distilled water. Remove all traces of water by continuing to apply vacuum after water has passed through. Remove filter from membrane filter apparatus (or both crucible and filter, if Gooch crucible is used) and dry in an oven at 103-105°C for 1 hour. Transfer to a desiccator and weigh after half an hour. Repeat the drying cycle until a constant mass is obtained (mass loss is less than 0.5 mg in successive weighings). Weigh immediately before use. After weighing, handle the filter or crucible/filter with forceps or tongs only.

4.1.1 If determinations are to be carried out at 180°C then the filter or crucible/filter shall be dried at 180°C.

Note — If fixed non-filterable residue is to be determined subsequently then silica, Alundum or porcelain filters should be used. These should be heated to 550°C in the furnace for at least 30 minutes, cooled in the desiccator and weighed.

4.2 Sample Volume — In potable waters non-filterable residue is usually small. Relatively large volume of water is passed through filter so as to obtain at least 2.5 mg residue. For deciding volume to be taken, turbidity values may be taken into consideration. If turbidity values of a sample is less than 50 units, filter 1 litre sample and if turbidity value exceeds 50 units, filter sufficient sample so that non-filterable residue is 50 to 100 mg.

4.3 Assemble the filtering apparatus and begin suction. Wet the filter with a small volume of distilled water to seat it against the fitted support.

Adopted 25 January 1984
© July 1985, BIS
Gr 1
4.4 Shake the sample vigorously and quantitatively transfer the predetermined sample volume selected according to 4.2 to the filter using a graduated cylinder. Remove all traces of water by continuing to apply vacuum after sample has passed through.

4.5 With suction on, wash the graduated cylinder filter non-filterable residue with portions of distilled water allowing complete drainage between washings. Remove all traces of water by continuing to apply vacuum after the wash water has passed through.

4.6 After filtration, transfer the filter along with contents to an oven maintained at either 103-105°C or 179-181°C for at least 1 hour. Cool in a desiccator and weigh. Repeat the drying cycle till constant mass is obtained. Alternatively, remove crucible and filter from crucible adapter, wipe dry from outside with filter paper and dry at 103-105°C or 179-181°C in an oven. Cool in a desiccator and weigh. Repeat the drying cycle till constant mass is obtained.

5. Calculation — Calculate the non-filterable residue from the following equation:

\[
\text{Non-filterable residue, mg/l} = \frac{1000 M}{V}
\]

where

\[ M = \text{mass in mg of non-filterable residue, and} \]
\[ V = \text{volume in ml of the sample.} \]

6. Report — Report in whole numbers for less than 100 mg/l and to three significant figures for higher values. Report the temperature of determination.

7. Precision and Accuracy — Precision of the method is about 5 percent. Accuracy cannot be estimated because the non-filterable residue as determined by this method is a quantity define by the procedure followed.

EXPLANATORY NOTE

This method supersedes clause 7 of IS : 2488 ( Part 1 )-1966 'Methods of sampling and test for industrial effluents: Part I' clause 12.1 of IS : 3025-1964 'Methods of sampling and test (physical and chemical) for water used in industry' and clause 4 of IS : 4733-1972 'Methods of sampling and test for sewage effluents (first revision)'.

Reprography Unit, BIS, New Delhi, India