Designation: D 5907 – ~~96a~~03

Standard Test Method for Filterable and Nonfilterable Matter in Water[1]

This standard is issued under the fixed designation D 5907; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This test method covers the determination of filterable and nonfilterable matter in drinking, surface, and saline waters, domestic and industrial wastes. The practical range of the determination of nonfilterable particulate matter is 4 to 20 000 mg/L. The practical range of the determination of filterable matter is 10 to 20 000 mg/L.

1.2 Since the results measured by this test are operationally defined, careful attention must be paid to following the procedure as specified.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see Section 9.

2. Referenced Documents

2.1 *ASTM Standards:*

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[1] This test method is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.05 on Inorganic Constituents in Water.

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***A Summary of Changes section appears at the end of this standard.**

D 1129 Terminology Relating to 596 Guide for Reporting Results of Analysis of Water[2]
D 1192 Specification for Equipment for Sampling 1129 Terminology Relating to Water and Steam in Closed Conduits[2]
D 1192 Guide for Equipment for Sampling Water and Steam in Closed Conduits[2]
D 1193 Specification for Reagent Water[2]
D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water[2]
D 3370 Practices for Sampling Water from Closed Conduits[2]
D 3856 Guide for Good Laboratory Practices in Laboratories Engaged in Sampling and Analysis of Water[2]
D 5842107 Practice for Intralaboratory the Writing Quality Control Procedures and a Discussion on Reporting Low-Level Data[2]
Specifications for Standard Test Methods for Water Analysis[3]
E 319 Practice for the Evaluation of Single-Pan Mechanical Balances[4]
E 898 Methods of Testing Top-Loading, Direct-Reading Laboratory Scales and Balances[4]

3. Terminology

3.1 *Definitions:* For definitions of other terms used in this test method, refer to Terminology D 1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *filterable matter*—also commonly referred to as total dissolved solids. It is that dissolved matter that is capable of passing through a glass fiber filter and dried to constant weight at 180°C, as determined by following the procedures outlined in this test method.

3.2.2 *nonfilterable matter*—also commonly known as total suspended solids. It is that particulate matter that is retained on a glass fiber filter and dried to a constant weight at 103 to 105°C, as determined by following the procedures outlined in this test method.

4. Summary of Test Method

4.1 A well-mixed sample is filtered through a weighed standard glass fiber filter. The suspended solids are retained on the filter, which is dried at 105°C and weighed. The increased mass on the filter represents the nonfilterable matter.

4.2 The filtrate from 4.1 may be used to determine the filterable matter. The filtered sample (liquid phase) is evaporated to dryness and heated to 180°C in a tared vessel to a constant weight.

5. Significance and Use

5.1 Solids, both as filterable and nonfilterable matter, are important in the treating of raw water and wastewater, and in monitoring of streams.

5.2 Waste solids impose a suspended and settleable residue in receiving waters. Suspended and soluble materials provide a matrix for some biological slime and, in sufficient quantity, impair respiration of organisms. These solids may create nuisance slime beds and odors while imposing a long-term biological oxidation load over limited receiving water areas.

5.3 Knowledge of suspended and soluble materials is important in treating raw water supplies. Knowledge of solids loading can aid in determining the type or amount of treatment, or both, necessary to make the water acceptable for use. Such information may also be used to determine acceptability of water after treatment. Too little treatment may not be desirable and excess treatment costs money.

5.4 Stream monitoring is important for environmental reasons. Stream improvements, water pollution monitoring, mass wasting, algal studies, and sediment loads are but a few of the many reasons streams are monitored.

6. Interferences

6.1 For some samples, chemical reactions may cause some materials to change from one phase to another. For example, in some groundwaters, ferrous ions may form insoluble ferric hydroxides. Softened water high in carbonates may precipitate calcium carbonate. In such cases, holding time may have a critical impact upon both the filterable and nonfilterable matter. Such samples may have to be filtered in the field.

6.2 This test method is not meant to include nonrepresentative particulates such as leaves, sticks, insects, fish, etc. These should be removed before the analysis.

6.3 Certain materials may be measured poorly, or not at all. Some materials may decompose or volatilize at the required temperature. Other substances, such as glycerin or sulfuric acid, will remain liquid at the required temperature, giving variable results. Oils and greases may present similar problems and can end up in either the filterable or nonfilterable portion.

6.4 Suspended solids samples high in dissolved matter, such as saline waters, brines, and some wastes, may be subject to a positive interference by the retention of dissolved matter, such as salts and sugars, on the filter. Care must be taken in the final rinsing of the filter so as to minimize this potential interferaent. Additional washing may be necessary.

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[2] *Annual Book of ASTM Standards*, Vol 11.01.
[3] *Annual Book of ASTM Standards*, Vol 11.02.
[4] Millipore AP-40, Whatman 934-AH, Gelman type A/E, or equivalent, was specified for the round-robin.
[4] *Annual Book of ASTM Standards*, Vol 14.04.

6.5 Clogging of the filter with too fine or too much material will prolong the filtering time and retain smaller particles that would normally pass through the filter, thus giving elevated values to nonfilterable matter and low values to the filterable matter. Biological material, such as algae, may also prolong filtration time or plug the filter.

6.6 Some samples may be hygroscopic, requiring prolonged drying, extra careful desiccation, and rapid weighing. For filterable matter, samples highly mineralized or high in bicarbonate may require careful and possibly prolonged drying. For the bicarbonate, the extended drying may be needed to ensure complete conversion to carbonate.

6.7 Too much material retained on the filter may entrap water, and may also require extended drying time for the suspended solids. For filterable matter, excessive residue in the dish may cause the formation of a water-trapping crust, giving elevated values.

6.8 For some users, certain biological materials, such as algae, slimes, insects, or other small crustaceans, may be considered to be positive interferences for nonfilterable matter. Modifications or adjustments may be needed to generate a better value. An example is determining chlorophyll content to estimate the amount of algae present. Such modifications may be beyond the scope of this test method.

7. Apparatus

7.1 *Glass Fiber Filters*, without organic binder.[5]

NOTE 1—Although there is no organic binder in these filters, they may contain a wet strength resin that is partially soluble. It is therefore important to adequately prewash the filters as prescribed.

7.2 *Membrane Filter Assembly*—A borosilicate glass, stainless steel, or plastic funnel with a flat, fritted, or grid base so as to provide uniform support and filterable surface. The top section of the funnel shall fit over the edge of the filter to provide a seal. The top should be removable to allow easy access for removing the filter. A Gooch crucible with a fritted bottom may be used in lieu of the funnel.

7.3 *Planchet or Pan*, made of aluminum or stainless steel, capable of supporting the filter when it is not on the filter assembly.

7.4 *Drying Oven*, capable of maintaining a temperature between 103 and 105°C for nonfilterable matter and between 178 and 182°C for filterable matter.

NOTE 2—To prevent dust and sample from being blown around, it is preferred that the oven for the particulate matter be of a gravity convection type. If this is not possible, samples should be shielded from the forced air of mechanical convection ovens.

7.5 *Analytical Balance*, capable of measuring to the nearest 0.1 mg.[6]

7.6 *Vacuum Source*.

8. Reagents and Materials

8.1 *Purity of Water*— Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Type I or II of Specification D 1193. Type III or IV may be used if they effect no measurable change in the blank or sample.

9. Hazards

9.1 Care must be taken to ensure filter funnels and filtering flasks are in a sound state. Any tiny nick, scratch, or weakness in glass flasks or other apparatus can create a potential for an implosion hazard. Wrapping a flask is not adequate protection in case of an implosion. It is recommended that a solid shield, such as a plexiglass cage, be placed around any filtering flask.

10. Sampling

10.1 Collect the sample in accordance with the applicable ASTM standard as follows: Specification D 1192 and Practices D 3370.

11. Procedure

11.1 Prepare the glass fiber filters before use.

11.1.1 Place the glass fiber filter on the membrane filter assembly, or insert into the bottom of a suitable Gooch crucible, with the wrinkled surface up. While a vacuum is applied, wash the disc with three successive volumes of water. Each volume of water should be equal to 3 mL for each square centimetre of filterable surface area. For standard 47 mm filter holders with 35 mm diameter funnels, this would be 30 mL for each wash for a total of 90 mL. Continue the vacuum until the free water has been removed. Discard the washings.

NOTE 3—Proper washing is important for removing loose fiber and wet strength resins. One 90-mL wash is not as effective as three 30-mL washes.

NOTE 4—On some filters it may be difficult to tell which is the wrinkled side. Usually the opposite side has faint markings of the wire mesh used to manufacture the filter mat.

~~[5] The balance prescribed in this test method should be tested periodically according to Practice E 319~~

[5] Millipore AP-40, Whatman 934-AH, Gelman type A/E, or ~~Test Method E 898.~~ equivalent, was specified for the round-robin.

~~[6] Alpha-trol solution available from Alpha-trol, Inc., P.O. Box 867, Levittown, PA 19058. Another source of solution has been identified. Should satisfactory data from other sources be made available, such data will be included~~

[6] The balance prescribed in ~~the precision and bias statement.~~ this test method should be tested periodically according to Practice E 319 or Test Method E 898.

11.1.2 Skip 11.1.3 and 11.1.4 if only filterable matter is being determined.

11.1.3 Release the vacuum and carefully remove the filter with forceps. Place the filter on a planchet, and dry in an oven at 103 to 105°C for 1 h. Gooch crucibles with filter may be handled without the planchet.

11.1.4 Remove from the oven and place in a desiccator until cool. If the desiccation time exceeds 12 h, reheat and desiccate again. Weigh the filter plus planchet to the nearest 0.1 mg just before using. After oven drying, the filter shall be handled only with forceps, and the planchet or crucible shall be handled only with forceps, tongs, or lint-free gloves.

11.2 *Preparation of the Evaporating Dish*:

11.2.1 If filterable matter is to be determined, heat a clean dish to 178 to 182°C in an oven for 1 h. After removing from the oven, treat as in 11.1.3.

NOTE 5—The dish should be as small as practical to contain the volume of the sample plus the rinses. The relative mass of the dish needs to be kept at a minimum in order to be able to measure small mass differences with any accuracy. This is because of the inherent difficulties of trying to control temperature and moisture on a large mass within the requirements of the test. For larger volumes, it may be more practical to evaporate smaller increments, refilling the dish when dry until all the sample is transferred.

NOTE 6—The dish should be made of a material that is inert to the sample. Materials such as aluminum will oxidize when heated with many liquids, increasing the mass of the pan. Glass or light weight ceramic material is generally preferred.

11.3 Determine the proper sample volume.

11.3.1 Sample volume determination for nonfilterable matter.

11.3.1.1 Start with a volume of sample equal to about 10 mL/cm^2 of filterable surface area. For the standard 47 mm filter holders with 35 mm diameter funnels, this would be about 100 mL. If this fails to yield at least 2.5 mg of dry solids on the filter, increase the sample volume until that mass is attained, a volume of 1 L is reached, or the "break point" in 11.3.1.3 is reached. Do not exceed 200 mg on the filter.

11.3.1.2 For other filter sizes, maintain at least 1 mg of dry solids per 4 cm^2 of filterable surface area, with a minimum of 2.5 mg.

11.3.1.3 If the filtration time exceeds 5 min, develop a "break-point" curve (see 11.3.3). This process needs to be done only when the character of a sample is unfamiliar or changes.

11.3.2 Sample volume determination for filterable matter.

11.3.2.1 Choose a sample volume to yield between 2.5 and 200 mg. If more than 5 min is needed for the filtration, perform the "break point" determination as per 11.3.3.

NOTE 7—If the solids are expected to be high, a known *proportion* of the total material, sample plus wash solution, that passed through the filter may be used for the determination. For example, if 200 mL of sample was filtered and only 190 mL of liquid passed through the filter (with all free filterable liquid passing through, leaving 10 mL of nonfilterable solids retained on the filter), the total volume of filtrate would be 250 mL, including the wash water. If a 100-mL portion of the filtrate could be used for the filterable solids test, the final mass of dried solids weighed would have to be divided by 0.4 to account for the 40 % proportion of the sample used.

11.3.3 *Break-Point Determination*:

11.3.3.1 Place filter in the filtering apparatus. For this procedure, the filter needs no preparation. Add a small, known volume of sample that will filter rapidly and time how long it takes to filter.

11.3.3.2 Repeat 11.3.3.1, increasing the volume until it can be determined at what point the filtration rate drops off rapidly.

11.3.3.3 Plot the time versus the volume filtered. Select the proper volume as that just short of the time that a significant change in filtration rate occurs. An example of a break point curve is shown in Appendix X1.

NOTE 8—If at least 2.5 mg of material cannot be retained on the filter because of plugging, a larger diameter filtration system is suggested. Fritted membrane style filter holders range in sizes up to 9 cm in diameter.

11.3.4 Analyze sample volumes of less than 20 mL by diluting 100 mL to 1 L and running the diluted sample. This is to assure that a representative sample is obtained. Pipetting is generally discouraged since the pipet tip can act as a filter.

11.4 Assemble the filter apparatus with the prepared filter (see 11.1) and start the suction. If the filter is not sealed around the edges by the funnel, such as in the case with a Gooch crucible, wet the filter with a small volume of water to seat it to the base or support. If filterable matter is to be determined, be sure the suction flask is clean.

NOTE 9—If the sample size is small, it may be convenient to place a smaller container, such as a large test tube, into the vacuum flask in order to catch the sample and rinses for filterable matter.

11.5 Mix the sample thoroughly, and quickly transfer a volume of sample as determined in 11.2 into a "to contain," or TC, graduated cylinder. Pour this measured sample onto the filter and continue to apply suction until all traces of water have passed through.

NOTE 10—Because of the nature of TSS, it is important to thoroughly mix each sample immediately before every aliquot is taken. Many suspended solids settle rapidly, giving a distorted sample if not carefully mixed and quickly sampled.

11.6 With the suction still on, wash the graduated cylinder, the filter, and particulate matter, and the funnel wall with three portions of water, allowing complete drainage between washing. Each portion of wash water should be about 2 mL/cm^2 of filterable surface. For a 47 mm filter with a 35 mm diameter funnel, the volume of each portion should be 20 mL, for a total of 60 mL. If filterable matter is being run, save the wash water with the sample.

TABLE 1 Nonfilterable Matter (TSS)[A]

Number of Laboratories	Expected Amount in mg/L	Measured Amount in mg/L	S_T, in mg/L	S_O, in mg/L	Bias, in mg/L	Bias, %	Statistically Significant
6	5	4.75	0.23	NA	−0.25	−5	yes
11	10	9.4	0.69	0.94	−0.6	−6	yes
11	15	14.8	1.41	0.94	−0.2	−1	no
11	30	28.9	1.50	0.56	−1.1	−4	yes
10	36	34.6	0.98	0.56	−1.4	−4	yes
11	50	49.2	2.05	1.79	−0.8	−2	no
11	67.4	65.3	2.53	1.79	−2.1	−3	yes
11	70	68.7	2.82	1.63	−1.3	−2	no
10	80	78.7	2.97	1.63	−1.3	−2	no

[A] NA = not available. There is no acceptable Youden pair for this sample set.

NOTE 11—For nonfilterable matter samples with high dissolved solids contents, such as seawater and brine solutions, small increments of extra wash water may be required. Tests such as conductivity, chloride, dissolved solids, etc. can be used to determine when there are no significant dissolved solids in the wash water. For filterable matter, this generally is not a significant problem.

11.7 After the filter has been sucked dry, release the vacuum and carefully remove the filter from the filtering apparatus and place on the planchet, or remove the Gooch crucible from the crucible holder.

11.8 If filterable matter is being determined, carefully transfer the contents from the filtering flask into the evaporating dish (see 11.2). Rinse the filtering flask three times with a small portion of water and add the rinse to the evaporating dish.

11.9 If nonfilterable matter is being determined, dry the filter at least 1 h at 103 to 105°C. The drying time should be long enough to ensure a constant weight. Place in a desiccator, cool, and weigh to the nearest 0.1 mg as in 11.1.3.

NOTE 12—The drying time should be checked on new types of samples and periodically on familiar samples to be sure that it is sufficient for the mass to be constant; that is, the difference is less than 0.5 mg, or 4 % of the previous weighing, whichever is greater.

11.10 Evaporate the liquid for the filterable matter on a steam bath or in an oven at 103 to 105°C. After the liquid is gone, dry the evaporating dish at 178 to 182°C for at least 1 h. The drying time should be long enough to ensure a constant weight. Place in a desiccator, cool, and weigh to the nearest 0.1 mg as in 11.1.3.

NOTE 13—The drying time should be checked on new types of samples and periodically on familiar samples to be sure that it is sufficient for the mass to be constant; that is, the difference is less than 0.5 mg, or 4 % of the previous weighing, whichever is greater.

11.11 With each batch of samples that are run, a blank shall be run. The blank shall be taken through the process without the addition of a sample in 11.4. If a blank filter shows any increase in mass or a loss of greater than 0.4 mg, rerun the samples associated with it. If the mass of a blank evaporating dish varies by more than ±0.5 mg from the initial mass, rerun the samples associated with it. The blank result is not subtracted from the sample.

NOTE 14—A blank filter carried through the process generally loses a mass of about 0.2 mg. So, blank requirements represent the range of − 0.2± 0.2 mg.

12. Calculation

12.1 Calculate the amount of nonfilterable matter as follows:
total nonfilterable matter, in mg/L

$$= \frac{(\text{mg of residue} + \text{filter}) - \text{mg of filter}}{\text{mL of sample filtered}} \times 1000 \quad (1)$$

12.2 Calculate the amount of filterable matter as follows:
total filterable matter, in mg/L

$$= \frac{(\text{mg of residue} + \text{dish}) - \text{mg of dish}}{\text{mL of sample filtered}} \times 1000 \quad (2)$$

13. Report

13.1 Do not report results smaller than the nearest milligram per litre. The precision and bias data from the round-robin suggest the method is good to two significant figures at most. There should be supporting data available in the laboratory before reporting more significant figures.

14. Precision and Bias

14.1 The single-operator precision and overall precision and bias of this test method are given in Table 1 for nonfilterable matter and Table 2 for filterable matter. The material tested was a purchased commercial suspended solids material in an unspecified

TABLE 2 Filterable Matter (TDS)

Number of Laboratories	Expected Amount in mg/L	Measured Amount in mg/L	S_T, in mg/L	S_O, in mg/L	Bias, in mg/L	Bias, %	Statistically Significant
6	37.5	36.7	2.8	2.1	−0.8	−2	no
6	56.2	54.8	3.1	2.1	−1.4	−2	no
6	112	101	12	15	−11	−10	no
6	135	126	21	15	−11	−8	no
6	188	173	16	9.3	−15	−8	no
6	253	228	11	9.3	−25	−10	yes
6	262	243	18	2.9	−19	−7	no
6	300	279	21	2.9	−21	−7	no

mixture of salt.[7] The material is only available at the maximum concentration tested. Other concentrations were created for testing by diluting the original solution. The precision and bias statement reflects only the results for this specified matrix and may not reflect other matrices. The material tested was the only material known to the committee to be available in a liquid form that can test all aspects of the test method. The limit of available known material in a form that can test all aspects of this test method prohibits testing the full range of the method.

14.2 Six independent laboratories and operators successfully completed the round robin study for filterable matter. Six to eleven independent laboratories successfully completed the round robin study for nonfilterable matter. The precision and bias evaluation for this test method was conducted using a Youden pair design and conforms to Practice D 2777–86. Under the allowances made in 1.4 of D 2777–98, these precision and bias data do meets existing requirements for interlaboratory studies of Committee D-19 test methods. Information on low-level results from laboratories that survived the ranking tests, but not meeting full requirements of the test method, is given in Appendix X2.

14.3 A duplicate and known control sample should be run each day that a sample is analyzed. The duplicate and control sample shall meet satisfactory limits as established by the control chart before an analysis is considered satisfactory.

14.4 Until such time as other quality assurance/quality control (QA/QC) procedures are established, it is recommended that the user use ~~Practice D 4210 and~~ Guide D 3856 as a guides for establishing QA/QC.

14.5 Before this test method is applied to the analysis of samples, the analyst shall establish his/her own precision and bias data.

15. Quality Control (QC)

15.1 In order to be certain that analytical values obtained using these test methods are valid and accurate within the confidence limits of the test, the following QC procedures must be followed when analyzing filterable and nonfilterable matter.

15.2 *Calibration and Calibration Verification*

15.2.1 The balance used should be calibrated internally or with known weights prior to use.

15.2.2 Verify balance calibration with weights prior to use.

15.3 *Initial Demonstration of Laboratory Capability*

15.3.1 If a laboratory has not performed the test before, or if there has been a major change in the measurement system, for example, new analyst, new instrument, etc., a precision and bias study must be performed to demonstrate laboratory capability.

15.3.2 Analyze seven replicates of a standard solution prepared from an Independent Reference Material containing a mid-range concentration of filterable or nonfilterable matter. The matrix and chemistry of the solution should be equivalent to the solution used in the collaborative study. Each replicate must be taken through the complete analytical test method. The replicates may be interspersed with samples.

15.3.3 Calculate the mean and standard deviation of the seven values and compare to the acceptable ranges of bias in Table 1 for nonfilterable or Table 2 for filterable matter. This study should be repeated until the recoveries are within the limits given in Table 1 for nonfilterable or Table 2 for filterable matter. If a concentration other than the recommended concentration is used, refer to Practice D5847 for information on applying the F test and t test in evaluating the acceptability of the mean and standard deviation.

15.4 *Laboratory Control Sample (LCS)*

15.4.1 To ensure that the test method is in control, analyze a LCS containing a mid-range concentration of filterable or nonfilterable matter with each batch or ten samples. If large numbers of samples are analyzed in the batch, analyze the LCS after every ten samples. The LCS must be taken through all of the steps of the analytical method including sample preservation and pretreatment. The result obtained for the LCS shall fall within ± 15 % of the known concentration.

15.4.2 If the result is not within these limits, analysis of samples is halted until the problem is corrected, and either all the samples in the batch must be reanalyzed, or the results must be qualified with an indication that they do not fall within the performance criteria of the test method.

15.5 *Method Blank*

[7] Alpha-trol solution available from Alpha-trol, Inc., P.O. Box 867, Levittown, PA 19058. Another source of solution has been identified. Should satisfactory data from other sources be made available, such data will be included in the precision and bias statement.

15.5.1 Perform a blank as stipulated in 11.11. If those results cannot be attained, halt analysis of samples until the cause can be determined and eliminated. Either all the samples in the batch must be reanalyzed or the results must be qualified with an indication that they do not fall within the performance criteria of the test method.

15.6 *Matrix Spike (MS)*

15.6.1 Filterable and nonfilterable matter cannot be feasibly spiked into samples.

15.7 *Duplicate*

15.7.1 To check the precision of sample analyses, analyze a sample in duplicate with each batch. The value obtained must fall within the control limits established by the laboratory.

15.7.2 Calculate the standard deviation of the duplicate values and compare to the precision determined by the laboratory or in the collaborative study using an F test. Refer to 6.4.4 of Practice D 5847 for information on applying the F test.

15.7.3 If the result exceeds the precision limit, the batch must be reanalyzed or the results must be qualified with an indication that they do not fall within the performance criteria of the test method.

15.8 *Independent Reference Material (IRM)*

15.8.1 In order to verify the quantitative value produced by the test method, analyze an Independent Reference Material (IRM) submitted as a regular sample (if practical) to the laboratory at least once per quarter. The concentration of the IRM should be in the concentration mid-range for the method chosen. The value obtained must fall within the control limits established by the laboratory.

16. Keywords

156.1 dissolved matter; dissolved solids; filterable matter; nonfilterable matter; suspended matter; suspended solids

APPENDIXES

(Nonmandatory Information)

X1. EXAMPLE GRAPH ILLUSTRATING A BREAK-POINT DETERMINATION

X1.1 Fig. X1.1 illustrates a break-point determination.

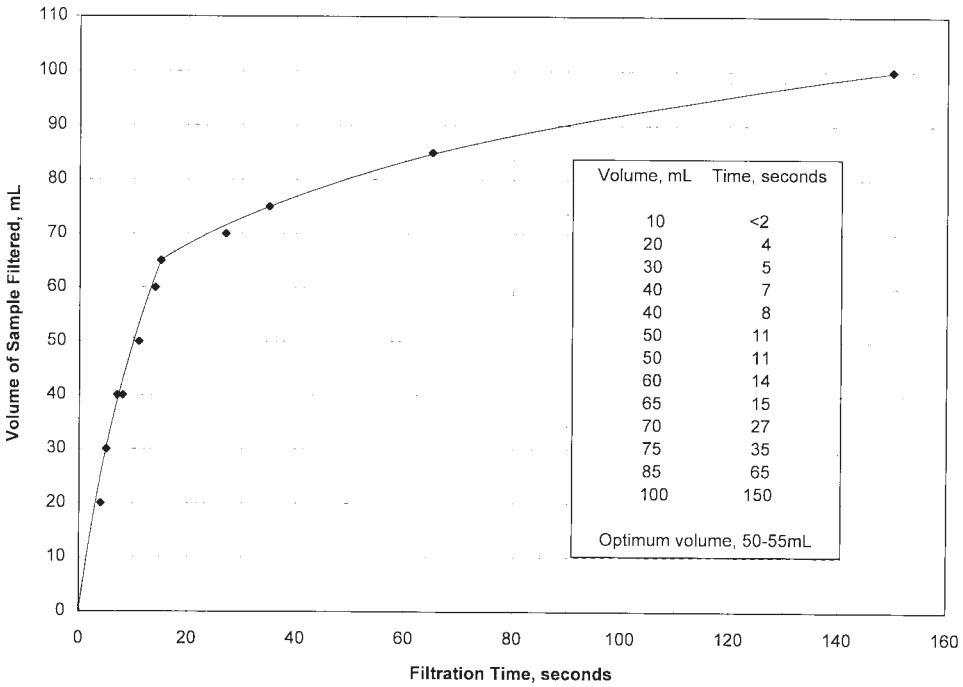

FIG. X1.1 Example of a Filtration Study for TSS Breakpoint

X2. INFORMATION ON LOW-LEVEL RESULTS

TABLE X2.1 Nonfilterable Matter (TSS)

Number of Laboratories	Expected Amount in mg/L	Measured Amount in mg/L	S_T, in mg/L	S_O, in mg/L	Bias, in mg/L	Bias, %	Statistically Significant
10	2	1.5	0.36	0.16	−0.5	−25	yes
10	5	4.6	0.31	0.16	−0.4	−8	yes

TABLE X2.2 Filterable Matter (TDS)

Number of Laboratories	Expected Amount in mg/L	Measured Amount in mg/L	S_T, in mg/L	S_O, in mg/L	Bias, in mg/L	Bias, %	Statistically Significant
6	7.5	7.6	1.8	1.9	0.1	+ 1	no
6	18.8	17.9	2.7	1.9	−0.9	−5	no

X2.1 Table X2.1 and Table X2.2 are for informational purposes only and are not meant to validate the test method at these low levels (the 2 and 5 mg/L TSS samples and the 7.5 and 18.8 mg/L TDS samples). Some of the information for these low-level sample values came from data that did not meet the requirements of the test method, mainly having insufficient mass at the end of the test.

SUMMARY OF CHANGES

Committee D19 has identified the location of selected changes to this standard since the last issue (D 5907 – 96a) that may impact the use of this standard.

(1) Section 14.2 was modified.
(2) Section 15 was added to the test method.