

T 656 cm-07

TENTATIVE STANDARD – 1930
OFFICIAL STANDARD – 1931
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CLASSICAL METHOD – 1983
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This Test Method may include safety precautions which are believed to be appropriate at the time of publication of the method. The intent of these is to alert the user of the method to safety issues related to such use. The user is responsible for determining that the safety precautions are complete and are appropriate to their use of the method, and for ensuring that suitable safety practices have not changed since publication of the method. This method may require the use, disposal, or both, of chemicals which may present serious health hazards to humans. Procedures for the handling of such substances are set forth on Material Safety Data Sheets which must be developed by all manufacturers and importers of potentially hazardous chemicals and maintained by all distributors of potentially hazardous chemicals. Prior to the use of this method, the user must determine whether any of the chemicals to be used or disposed of are potentially hazardous and, if so, must follow strictly the procedures specified by both the manufacturer, as well as local, state, and federal authorities for safe use and disposal of these chemicals.

Measuring, sampling, and analyzing white waters

1. Scope and significance

1.1 This method presents procedures of white water evaluation so that different mills may use substantially the same procedures and thus establish a common basis of comparison. The complete method is intended to evaluate as accurately as possible paper mill white waters and to separate fibrous and nonfibrous constituents. For routine testing only those parts dealing with total solids, suspended and dissolved, correlated with rate of flow, for determination of inorganic and organic materials as mineral fillers, fibers, etc., may be adequate. The complete procedure, however, should serve as an excellent periodic check of routine methods. When checks are made, it is recommended that they cover periods of 1 to 2 weeks.

1.2 This method is not intended for the analysis of environmental samples. Please refer to the proper published procedures designed for the analysis of environmental samples collected for regulatory purposes. If in doubt as to which method to choose, refer to the appropriate (Code of Federal Register) CFR reference for your samples.

2. Measurement of white water volume

2.1 The effluent from each manufacturing unit, such as the paper machines, wet machines, blow pits, etc., should be kept as separate groups and each discharged through a metering device of either the recording or integrating type. The average rate of flow can be obtained either by a recorder or by taking readings at 15- or 30-min intervals for a 24-h period.

2.2 Calculate the flow of white water and report in terms as follows:

$$\frac{\text{liters per minute} \times 1440}{\text{net kilograms of product per 24 h}}$$

=

liters of white water
discharged per
kilogram of
product

or

$$\frac{\text{gallons per minute} \times 2,880,000}{\text{net pounds of product per 24 h}} = \frac{\text{gallons of white water discharged per ton of product}}{\text{of product}}$$

3. Sampling

3.1 To secure a representative sample at a white-water outlet, take portions where there is good agitation, such as from a small box receiving the discharge of the metering weir. Obtain a composite sample for each 24-h period either by an automatic sampler or by combining portions collected at 15- or 30-min intervals. Take increments for a composite sample, proportional to the flow and representative of typical conditions. If there are wide fluctuations in rate of flow, give particular attention to the measuring device to avoid accumulation of solids during periods of low flow.

3.2 Take a large enough composite sample, preferably 5000 mL (or about 1.5 gal) to furnish an adequate quantity for analysis. Should the sample be likely to decompose before analysis, add a small amount (1 or 2 mL/L) of chloroform or other preservative to protect it. However, with chipboard and similar grades, decomposition is often very rapid, and the sample should be analyzed within 2 h after collection instead of depending on a preservative. In hot weather it may be advantageous to pack such samples in ice immediately after collection and before analysis.

4. Procedure

4.1 Total suspended solids

4.1.1 For paper machine and groundwood mill white water

4.1.1.1 Using a rather thick but fast-filtering qualitative filter paper which has been dried to constant weight at $105 \pm 3^\circ\text{C}$, filter a well-mixed composite sample of not less than 2000 mL through a 15-cm Büchner funnel, using suction. (Where large quantities of filler are used, the amount of sample may be reduced.) If this filtrate is cloudy, filter a second time. Take care that none of the suspended solids (fiber and filler) pass over the edge of the filter paper. Wash the residue on the paper with several small portions of distilled water. Remove the paper, wiping off with it any deposit on the filter walls. Dry the filter paper and contents to constant weight at $150 \pm 3^\circ\text{C}$. Do not prolong the drying unnecessarily. Save the filtrate.

4.1.1.2 For the suggested volume, a balance having practical sensitivity of 1 mg is sufficiently accurate. A balance adapted for mounting on a drying oven greatly facilitates this work.

4.1.1.3 Calculate the moisture-free total suspended solids present, and report as follows:

$$\frac{\text{grams of dry suspended solids} \times 1000}{\text{mL of sample taken}} = \frac{\text{kilograms of dry total suspended solids per 1000 L of white water}}{\text{of product}}$$

or

$$\frac{\text{grams of dry suspended solids} \times 8345}{\text{mL of sample taken}} = \frac{\text{pounds of dry total suspended solids per 1000 gal of white water}}{\text{of product}}$$

4.1.2 For sulfite blow pits, sulfate mill diffusers, and similar wastes. Since the filter paper in the foregoing would retain, in addition to pulp fiber, chemicals and incrustants which cannot properly be regarded as pulpmaking or papermaking material, use a disk of 200-mesh wire cloth mounted above the wire of the usual handsheet machine. With this exception follow the weighing and drying procedure as outlined above for the use of filter paper. In this case calculate only the fiber content and discard the filtrate.