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Technical Association of Pulp and Paper Industry
Standard Method T 204-os-76

Standard Test Method for Dichloromethane Solubles in Wood[1]

This standard is issued under the fixed designation D 1108; 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 the dichloromethane soluble content of wood, which is a measure of the waxes, fats, resins, oils, and similar materials.

1.2 *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.* Specific precautionary statements are given in 4.1.

2. Significance and Use

2.1 Dichloromethane extractable content of wood is a measure of such substances as waxes, fats, resins, phytosterols, and nonvolatile hydrocarbons. The amount is influenced by seasoning or drying the wood.

3. Apparatus

3.1 *Filtering Crucibles*—Alundum or fritted-glass filtering crucibles of coarse porosity shall be used.

3.2 *Extraction Apparatus*—A compact form of Soxhlet extraction apparatus, with ground-glass joints, is preferable. The apparatus shall consist of the following items:

3.2.1 *Soxhlet Extraction Flask*, having a capacity of 250 mL.

3.2.2 *Soxhlet Extraction Tube*, 45 to 50 mm in inside diameter, having a capacity to the top of the siphon of approximately 100 mL and a siphon tube approximately 55 mm in height. Extraction tubes of these dimensions siphon more rapidly than extractors with higher siphon tubes.

3.2.3 *Condenser*.

4. Reagent

4.1 *Dichloromethane*, 98 %, $CH_2 Cl_2$, USP

NOTE 1—Dichloromethane has been determined to be a suitable substitute for ether. It is much safer to use and thus recommended for this procedure. (**Warning—**Dichloromethane causes narcosis when inhaled and can be irritating to the eyes. Proper caution should be used.)

5. Test Specimen

5.1 The test specimen shall consist of 2 g of air-dried sawdust that has been ground to pass a 425-µm (40 mesh sieve) and be retained on a 250-µm (60 mesh) sieve.

6. Procedure

6.1 Weigh two 2-g test specimens in tared Alundum or fritted-glass crucibles. Dry one specimen in an oven for 2 h at 100 to 105°C; then place in a loosely stoppered weighing bottle, cool in a desiccator, and weigh. Continue the drying for 1-h periods until the weight is constant. Calculate the proportion of moisture-free sawdust in the air-dry specimen.

6.2 Place the other specimen in a Soxhlet extraction apparatus having a tared Soxhlet extraction flask. Set a small disk of fine-mesh screen wire in the top of the crucible to prevent loss of sample. Extract with 150 mL of dichloromethane for 6 to 8 h, keeping the solvent boiling briskly. This should provide at least six to eight siphonings per hour.

6.3 After evaporating the solvent from the extraction flask, dry the flask and contents in an oven for 1 h at 100 to 105°C, cool in a desiccator, and weigh. Continue the drying until there is no further loss in weight.

7. Calculation and Report

7.1 Report the results as percentage by weight of dichloromethane soluble matter in the moisture-free wood, calculated as follows:

$$\text{dichloromethane soluble matter, \%} = (W_2/W_1 P) \times 100 \qquad (1)$$

where:

W_2 = weight of dried extract (6.3),
W_1 = weight of test specimen used in 6.2, and
P = proportion of moisture-free sawdust in the air-dry specimen 6.1.

7.2 Base the results on the average of at least two determinations.

8. Precision and Bias [2]

8.1 Values obtained in a round robin test involving five laboratories and two woods indicated a repeatability of 4 % and a reproducibility of 21 %.

[1] This test method is under the jurisdiction of ASTM Committee D7 on Wood and is the direct responsibility of Subcommittee D07.01 on Fundamental Test Methods and Properties.

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[2] Data for this section obtained from the Technical Association of the Pulp and Paper Industry, P.O. Box 105113, Atlanta, GA 30348.

8.2 Bias is unknown.

9. Keywords

9.1 dichloromethane; wood