

T 264 cm-07

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OFFICIAL STANDARD – 1945
OFFICIAL TEST METHOD – 1982
REVISED – 1988
CLASSICAL METHOD – 1997
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Preparation of wood for chemical analysis

1. Scope

1.1 This method describes a procedure for further preparation of wood that has been sampled for analysis in accordance with TAPPI T 257 “Sampling and Preparing Wood for Analysis.”

1.2 A method for determination of moisture content in wood is described.

2. Summary

Wood is ground to particles and extracted successively with acetone and hot water.

NOTE 1: Due to health hazards associated with the use of benzene, the ethanol-benzene mixture used previously has been replaced with acetone. The acetone extractives content is generally lower than that obtained with the ethanol-benzene mixture. However, subsequent extraction with hot water removes most of the compounds soluble in ethanol-benzene mixture but not in acetone, such as polyphenols and low molecular weight carbohydrates. The type and amount of extractives with successive extraction with acetone and water will, in most cases, be comparable to that removed with ethanol benzene mixture and water.

3. Significance

3.1 Classification

3.1.1 Wood for chemical analysis should be ground to a fine particle size to permit complete reaction of the wood with the reagents used in the analysis. T 257 specifies that the wood should be ground to pass a 0.4-mm (40-mesh) screen.

3.1.2 Chemical methods for analysis of wood typically call for utilization of the entire amount of material without further fractionation. The fine material might contain a disproportionate quantity of some wood constituents, and its removal could alter the chemical composition as analyzed.

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3.1.3 In some chemical methods, the fine material interferes with the analysis. It clogs fine filters or passes through coarse filters, producing erroneous results. Comminuted wood samples need to have fines removed by fractionation.

3.2 Extraction

3.2.1 Wood extractives are materials soluble in neutral solvents and are not generally considered as part of the wood substance. These materials should be removed before any chemical analysis of wood substance, except where the extraction process and subsequent washing could interfere with certain chemical analysis.

3.2.2 The acetone removes mainly wood resin material, including fatty and resin acids, sterols, waxes and fats. Hot water is used to extract tannins, gums, sugars, starches, and coloring matter.

4. Apparatus

4.1 *Extraction thimbles*, alundum or fritted glass, coarse porosity; or pre-extracted paper.

NOTE 2: Fritted glass thimbles must be cleaned after each use by soaking overnight in a chromic acid cleaning solution.

4.2 *Extraction apparatus*, with ground glass joints, consisting of:

4.2.1 *Extraction flask*, 250 mL.

4.2.2 *Soxhlet extraction tube*, inside diameter 30-40 mm, capacity to top of siphon about 100 mL.

4.2.3 *Graham or Allihn type condenser*.

4.3 *Glassware*, weighing bottle, glass, preferably “shallow” type or weighing dish, aluminum; filtering flask, 1000 mL; Büchner funnel.

4.4 *Heating device*, to contain hot water; or steambath or electric heating mantle.

4.5 Chemical fume hood, having a face velocity of at least 24.4 m/min (80 ft/min) or as required by local safety regulations.

5. Reagents and materials

5.1 Acetone, reagent grade, minimum purity of 99.5% CH_3COCH_3 by volume, having a residue after evaporation of less than 0.001%. Water, Type II reagent water as described in ASTM D1193 or better. The relevant properties of Type II reagent water as follows:

Total matter, max:	0.1 mg/L
Electrical conductivity, max:	1.0 $\mu\text{S}/\text{cm}$ at 25°C
Minimum color retention time of potassium permanganate:	60 min
Maximum soluble silica:	not detectable

6. Safety precautions

6.1 Acetone is highly flammable; therefore approved electric or steam heating has been specified. This entire procedure must be performed in a chemical fume hood. Caution should be taken to avoid an open flame. Care should be taken to avoid inhalation, ingestion, or body contact. It is recommended to wear plastic gloves suitable for acetone. Be sure to refer to the chemical caution statement on page 1.

7. Sampling and test specimens

7.1 In accordance with T 257, obtain a composite sample of wood meal.

7.2 Take a specimen for extraction, sufficient for the chemical analyses to be performed including moisture determination.