

	TRACE-PM 10.17 Wood Identification	
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	Document Manager: Cheryl Lozen	Approved By: Jeffrey Nye

10.17 Wood Identification

10.17.1 Introduction

Wood may arrive in the laboratory as large pieces of lumber, sawdust, fire debris, or some other form. The examination ranges from identifying as wood to identifying the species of wood. Wood can be considered as the hard fibrous substance which makes up the greater part of stem (trunk) and branches of trees beneath the bark and displaying annual growth rings.

10.17.2 Safety Considerations

Standard laboratory precautions

Chemical	NFPA
Xylene	2-3-0
Permout	3-3-0
1% Safranin O	1-0-0
Ethanol	0-3-0
Glycerine	1-1-0

razor blades, single edge - sharps precautions

10.17.3 Preparations

Obtain the necessary case information to proceed with the analysis.

- Commercial or in-house 3-section wood standard slides.
- Single edge razor blades.
- Slides and cover slips.
- Hand lens.
- Stereomicroscope.
- Compound microscope/comparison microscope.

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10.17.4 Minimum Standards and Controls

Examination past softwood vs. hardwood shall be confirmed using commercial or in-house known samples.

If a species of wood cannot be determined, the results are the last positive step that can be made.

10.17.5 Instrumentation

Standard Laboratory Instrumentation.

10.17.6 Procedure or Analysis

10.17.6.1

Observe the wood with a hand lens or stereomicroscope. Locate the longitudinal axis of the wood, containing the radial and tangential views. Moisten the wood with water and, using a sharp knife or razor blade, cut a transverse section to the longitudinal axis.

10.17.6.2

Examine the transverse section (cross section) for wood rays appearing as light lines radiating from the center of the tree or branch. This will orient the wood for radial sections.

10.17.6.3

Moisten the wood on the radial surface and using a sharp razor blade, cut a series of thin sections parallel to the wood rays. Sections which curl on the razor blade are usually about the right thickness.

10.17.6.4

Turn the wood block 90° and moisten the surface which is perpendicular to the wood rays. This is the tangential surface. Make a series of thin sections using a sharp razor blade.

10.17.6.5

Now return the transverse section (cross section) and either cut a series of thin sections with a very sharp razor blade or simply examine the features visible under a stereomicroscope.

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10.17.6.6

All thin sections can be stained by immersion in 1% Safranin solution for a few minutes followed by blotting on filter paper. Dry by immersing in ethanol for a minute, followed by blotting on filter paper.

10.17.6.7

Thin sections can be mounted in permanent mounts using thinned Permout and a hot plate. Place the sections on a microscope slide, cover with thinned Permout, and add a coverslip. Place the slide on a hot plate and allow some of the thinned Permout to boil, expelling air from the sections. Remove the slide from the hot plate and allow it to cool and harden. The amount of Permout necessary is only that amount which will allow a thin preparation. Cover slips can be pressed down to expel excess Permout to obtain a thin preparation if necessary. Temporary mounts are made in the same manner but substituting glycerine thinned with xylene for the "Thinned Permout".

10.17.6.8

Proceed to examine the features using the keys in this procedure and a compound or comparison microscope. (This presupposes a knowledge of wood structure which can be gained from the books listed in the references.)

10.17.6.9

For each of the diagnostic features used in identifying the questioned wood, compare these features to the 3-section wood standard slides.

10.17.6.10

Examination of sawdust or tiny fragments of wood may be limited in scope, due to the absence of a cross sectional view of the wood, and the limited size of each piece examined. This may result in a limited identification, or the identification of a group of woods, one of which might be the source of the sawdust. This type of examination becomes a process of elimination based on the observations that could be made during the examination. Since the long axis of wood fragments contains the transverse and radial views, most useful in soft wood identification, it may still be possible to make an identification of tiny pieces of wood.

10.17.6.11

Refer to Appendix 10.17 A: Key 1 To Common U.S. Woods

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10.17.6.12

Refer to Appendix 10.17 B: Key 2 To Common U.S. Woods

10.17.7 References

Core, H. A.; Côté, W. A.; Day, A. C. Wood Structure and Identification, 2nd ed.; Syracuse University: Syracuse, NY, 1979.

Panshin, A. J.; de Zeeuw, C. Textbook of Wood Technology, 3rd ed.; McGraw-Hill: New York, 1970; Vol. 1.