

Wood sample treatment in Soxhlet

Wood pretreatment for carbon dating

While analyse of radiocarbon of modern wood it is important to know that radiocarbon content may be quite contrast between neighboring annual tree rings. Wood after it is formed obtains some soluble material during each next vegetation season. It changes total radiocarbon concentration in tree rings initially formed. That is why wood sample is pretreated before benzene synthesis to remove extractive components of wood tissue.

To achieve high purification ratio as an extractor is used [Soxhlet extractor](#). Maximum wood purification factor is achievable when combined extraction solvents are used like mixture of benzene and alcohol.

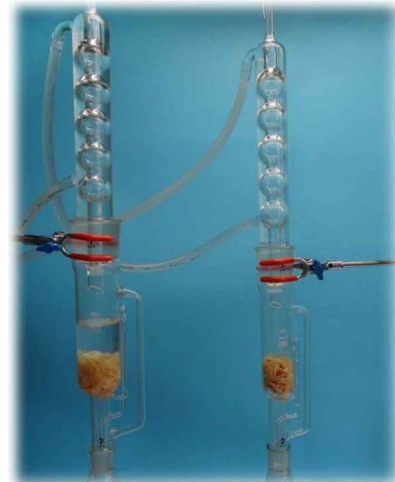
[Soxhlet extractor](#) - is a laboratory chemical equipment, which was invented by Franz Soxhlet in 1879. Soxhlet extractor is used to dissolve when the desired compound has a limited solubility in the solvent.

The solvent is heated in the distillation flask. Solvent vapors are moved up to the distillation arm, and fill the chamber filled with solid material. Solvent vapors are cooled in a condenser at the top. Liquefied solvent drips into the camera and slowly fills the solid material. Part of the desired compound is then dissolved in a warm solvent. When the camera of Soxhlet almost complete, it is automatically cleared after the siphon hose, and the solvent is returned to the distillation flask. This

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Early and late wood have different properties which are even visually distinguishable. Annual growth wood is clearly seeing and could be separated by sharp knife.

Thin wood chips you have cut by your hands aiming carbon dating require pretreatment.

When we use standard apparatus - [Soxhlet extractor](#), we use **200 ml** working chamber and 500 ml distillation flask: wood sample is about 20 - 25 g, optimized working cycle lasts 20-25 min depending on heating regime and solvent kind used. That corresponds to use of solvent during of **12-18 working cycles** as for 5-6 hours operation. When we use **100 ml** working chamber and 500 ml distillation flask. Wood sample is about 10 -12 g, optimized working cycle lasts 10-12 min depending on heat regime and solvent kind used. That corresponds to use of solvent during of **20-30 working cycles** as for 5-6 hours operation.

Washing of wood sample during 5-6 hours cleans each wood chip very much and makes it even almost transparent visually.

Heating process around of distillation flask is simply optimized by **plate heater with sand bath**. Extracting agent is evaporated here and after each complete cycle returns back.

Wood cleaning by solvent extraction

The process of replacing the pure solvent is the main regulator of the technology, which is applied here. It looks fascinating. You are ready to watch its flow again and again. See it below.

Wood sample washing

Entire Soxhlet apparatus (set of two)



Plate heater and distillation flask

