Hygroscopic Material

Stiff and bendable wood

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Hygroscopy is the phenomenon of attracting and holding water molecules via either absorption or adsorption from the surrounding environment, which is usually at normal or room temperature. If water molecules become suspended among the substance's molecules, adsorbing substances can become physically changed, e.g. changing in volume, boiling point, viscosity, or some other physical characteristic or property of the substance.

Plant cells making up wood have a cell wall made up of **cellulose.** When the wood is dry, the cellulose is rigid (stiff) and brittle. If you bend it you may crack it easily.

When wood absorbs water, its cellulose because soft and bendable.

You can make beautifully shaped wooden furniture by causing the wood to absorb water. Once the wood is bent into the desired shaped, the water in the cellulose is evaporated by heat. The wood dries out and the cellulose becomes rigid.

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Materials:

1. Craft sticks
2. Water
3. Cooking pot and cover
4. Tongs
5. A ceramic cup or glass

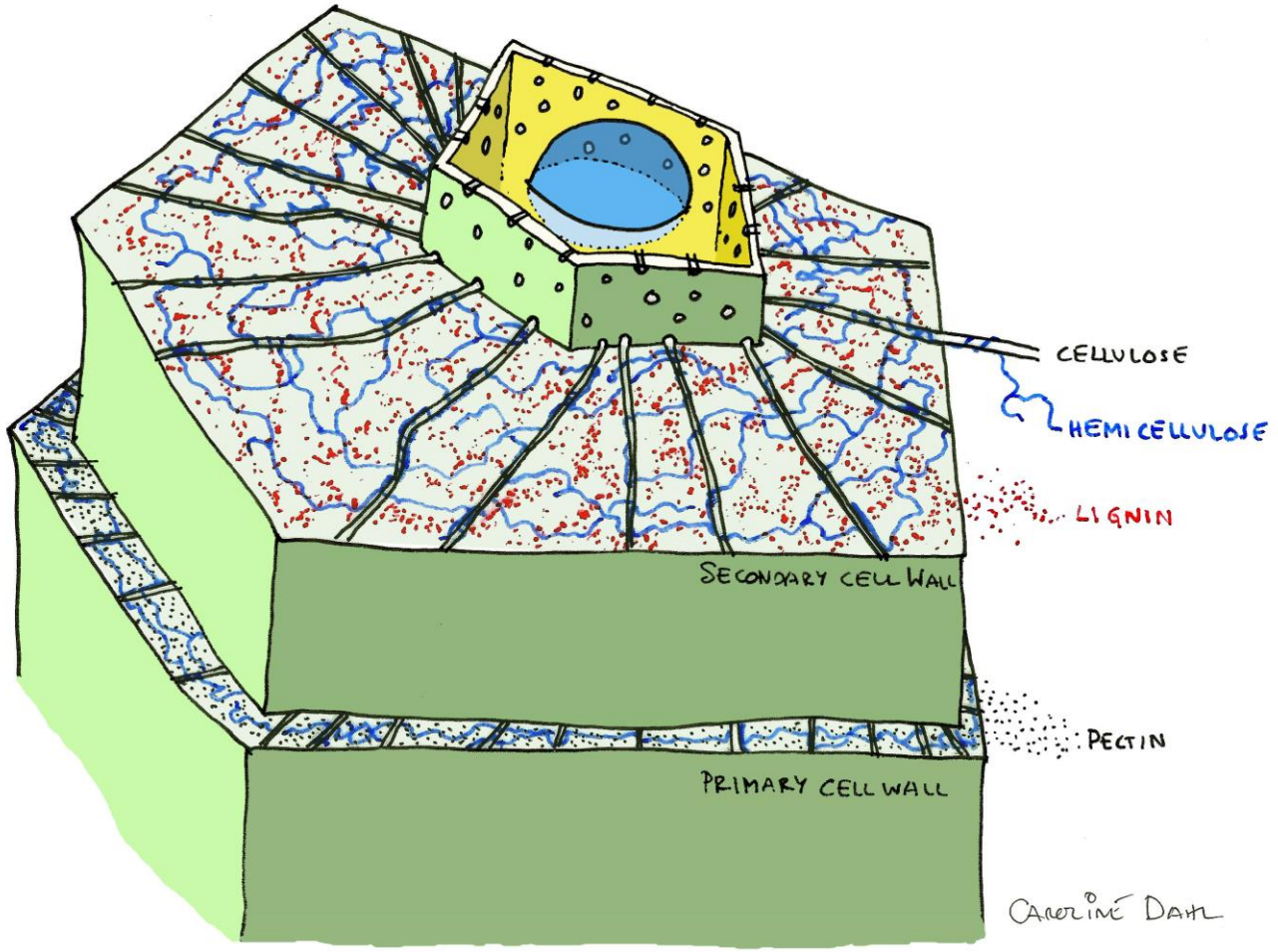
Instructions

1. Cook the craft sticks on low heat for 45 minutes to an hour.
2. Use a tongs to safely remove the craft sticks from the hot water. Let sit for 30 seconds.
3. Using a glass or cup with an inside circumference slight longer than the craft stick, insert and bend the craft stick against the cup's inner wall giving the stick a ring shape.
4. Repeat the process for each stick.
5. After the sticks dry overnight, remove them from the cup.
6. The craft sticks will now be rings with which you can form a chain!

Terms

Hygroscopy is the phenomenon of attracting and holding water molecules via either absorption or adsorption from the surrounding environment

Cellulose is the main substance found in plant cell walls and helps the plant to remain stiff and strong.



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Questions

1. Why does water make the wood bendable?

2. If a person took a long bath, would the person be more bendable?

3. How do we know if a ram's horn is hygroscopic or not?