




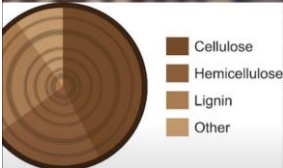
How to Make Paper Transcript







Shot 3 November 2018, Length 5:56

Theme: *Paper-making has centuries of history and many technologies. Modern paper-making, from wood, is only about a century old. Wood is a renewable resource and paper uses lower quality trees than those used for lumber and veneer. So, it's a critical market in the effort to manage forests as well as possible.*

Main Points

- Basic process is tree harvest, log debarking & chipped, cooking chips to pulp, diluting pulp and spraying onto a large screen, water removal and drying, winding, rewinding, roll-cutting, and finally, loading onto trucks.
- Paper is a renewable forest product that helps keep forests healthy by providing a market for lower quality and smaller diameter wood that is harvested during management operations.
- Paper, paperboard, cardboard, and related products are especially climate-friendly when they displace products made of plastic or other non-renewable raw materials.
- Paper-making is a water, power, and heat intensive process. The water is treated and released. Power and heat are provided largely from either natural gas or wood products.

VIDEO	AUDIO
	<p>Hi! Did you ever wonder where paper products come from? Things like books or magazines, paper cups, paper towels. Some really important things we like to have around the house. Paper is important. So, hang with us and we'll explore the paper-making process on this episode of "BeLEAF It or Not!".</p>
<p>OPEN</p>	
	<p>B: Not all that long ago, paper was made from old cotton rags or other plant materials. It was expensive and time-consuming to make. You know Georgia, for most people, having paper was actually a luxury.</p> <p>G: That's right Bill! You know, cultures throughout the world, at some point or another, have made paper from different kinds of products. Even a hundred years ago, American paper companies would hire people to go door to door to collect rags to make paper.</p> <p>B: That's right. And then, the chemists and manufacturers started looking for other materials to make paper and they started looking at wood fiber.</p>
	<p>B: Wood is made-up of three basic kinds of materials. Cellulose is what paper-makers use because of the long fibers. Hemicellulose fibers are much shorter and also are used in most paper products. Then lignin is sort of the glue that holds everything together. It's not used in paper. But, it is used for a lot of different chemicals.</p>

	<p>B: Trees harvested from the forest are trucked to a pulp and paper mill, like this one here.</p> <p>G: Now, sometimes, trees are chipped in the forest and trucks deliver chips to a mill. Just look at how those chip trucks are emptied!</p> <p>B: Holy cow! Is that cool, or what? Man, I sure hope the driver didn't leave his coffee mug in the cab!</p>
	<p>G: See those chip piles over there? Under the pile, there's a hole that sucks-in chips, and they are moved into the pulp mill.</p> <p>B: Ooh. And then, logs that are delivered have to have their bark removed and then they get chipped. That happens inside the mill. So, let's take a look at that OK!</p>
	<p>G: So, you can see how those logs are getting turned around in those big drums? That's how the bark gets removed. Bark is no good for paper-making.</p> <p>B: So what happens to all the bark? There must be tons and tons of it!</p> <p>G: Yeah, but it's not wasted! It's burned to help provide energy.</p> <p>B: Cool! Shall we see what happens to all those wood chips?</p> <p>G: You bet! Let's go take a peek!</p>
	<p>B: There are a couple of different ways to cook the wood chips down to a soupy mixture called pulp. It kinda looks like a big pot of spitballs.</p> <p>G: Yeah, look at that. Oh that's kinda gross Bill!</p> <p>B: Oh yeah, but take a look at this! The white pulp has been bleached. The brown pulp has not. Sometimes, bright white paper is needed. Other products can use the brown pulp.</p>
	<p>G: OK. So Bill, what happens after all this pulp is made? How do we get paper from pulp?</p> <p>B: Oh! That's a really good question, Georgia. The pulp gets diluted with water. Lots and lots of water! And then, the juice is sprayed onto a fine screen. Big screen.</p> <p>G: Ah yeah. You know, that's a really BIG machine. Look at how far you can see! These giant machines remove the water and dry the huge sheet of paper. The process makes paper at very specific densities and thicknesses. A lot of math and engineering is involved.</p> <p>B: Oooh. Math and engineering.</p>
	<p>B: Well, at the end of the machine, the paper is rolled onto these mongo winders. Each finished roll weighs many tons and need to be moved using huge cranes.</p> <p>G: Sometimes, the rolls are re-wound after adding a coating. The coating allows the paper to be better used for inks.</p>

	<p>B: Finally, these huge rolls are cut to sizes that are wanted by different customers. G: Wow. Take a look at those robots! Wow! They wrap and label each of those smaller rolls.</p>
	<p>B: Finally, the rolls “roll” into a loading room, where forklifts them pick ‘em up and drive them into a semi-truck. G: That kind of looks like stowing away something on a spaceship! B: Yeah, it kinda does, doesn’t it Georgia. Yeah, making paper involves a lot technology, computers, robots, and engineering.</p>
	<p>B: So, that’s how paper is made. G: It’s amazing how people have figure out how to use this process to make all of these different products that we rely on all the time. B: And, as a forester, it’s a great feeling to know that it’s also good for the forest. G: That’s amazing. B: Good! G: Indeed. B: Well then. Join us on the next episode of “BeLEAF It or Not!” G: And don’t forget to subscribe to our channel.</p>
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