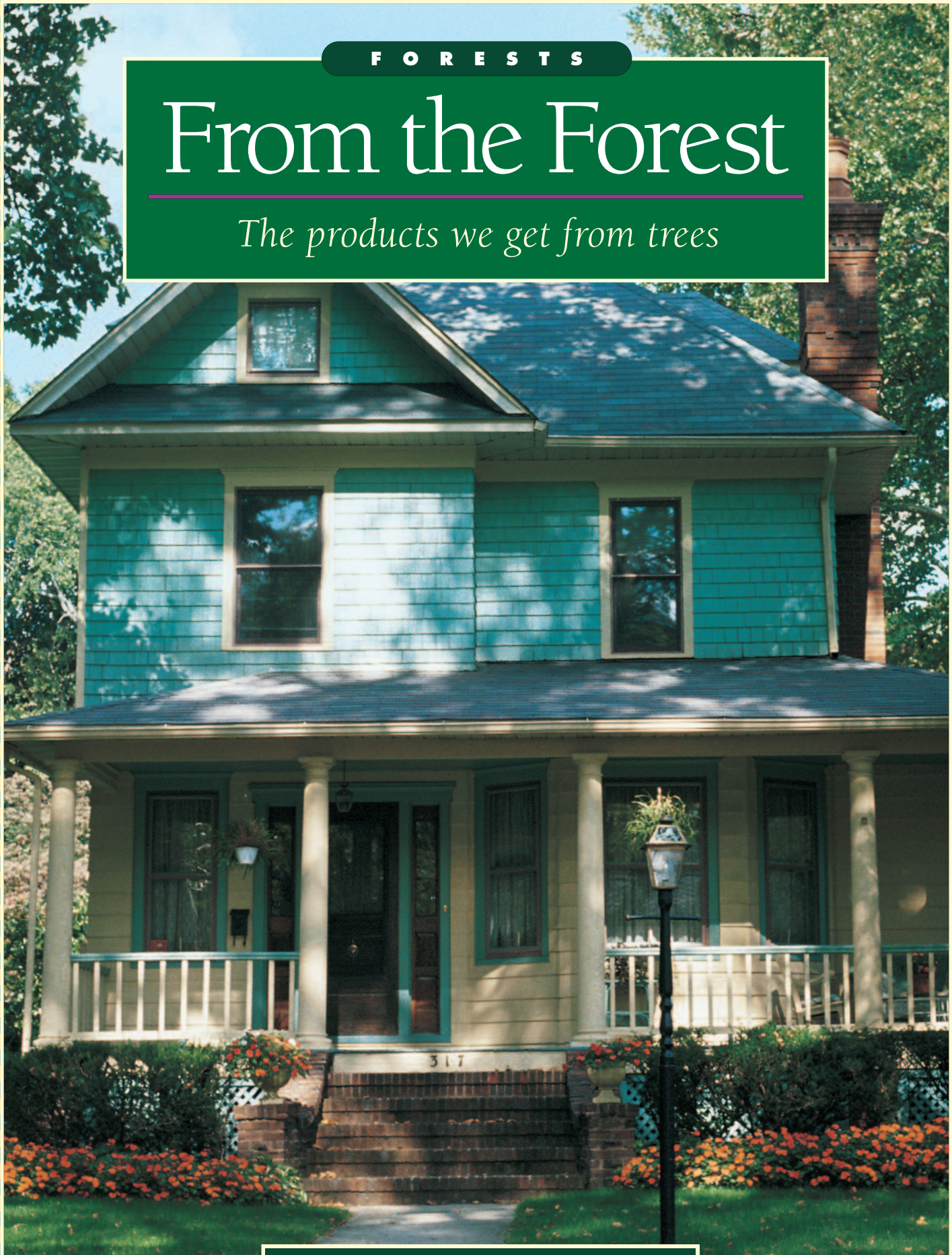
FORESTS

From the Forest

The products we get from trees



EDUCATIONAL IN NATURE®

"Wood" You Believe It?

Did you know more than 5,000 products we use every day are made from trees? Some wood products are easy to recognize — furniture, pencils, baseball bats, guitars, houses and paper. Others may surprise you.

WORDS TO KNOW

cellulose - wood fiber

lignin - a glue-like chemical that holds a tree's wood fibers together

synthetic - not found in nature

PICTURE THIS!
Photographic slides and film also come from trees.

TREES ARE TASTY
Ice cream and salad dressings use a part of the tree called cellulose to make them thick, smooth and creamy.

WEAR A TREE
Fabrics such as rayon are made from tree fibers.

PERFORM BETTER
Dancers put rosin from trees on the bottom of their shoes so they don't slip. Baseball players also use rosin to keep their hands dry.

TWICE A DAY
Apples are not the only things we get from a tree that are good for your teeth. Toothbrushes and toothpaste both come from wood products.

THERE GOES A TREE!
Tires, steering wheels and molded armrests in cars and trucks are all made from trees or wood fiber products.

From the Forest

Trees supply thousands of products for our daily lives. We eat fruits and nuts from trees, use decorative woods for jewelry and art projects, and make practical items like books and fences from wood. Wood is used as a fuel for cooking and heating in stoves, fireplaces and barbecue grills. Houses, paper and boxes are made from trees, and the fibers and chemicals from wood are used to make products such as rayon fabric and rubber balls.

RED MAPLE

How can so many different products come from trees? It's because of the tree's structure. Trees are made up of cellulose fibers that are held together with a glue-like substance called lignin. This makes the tree strong enough to use for building houses and furniture. When wood is cooked, the cellulose is separated from the lignin to make wood pulp. This pulp is made into paper. The lignin can be used to make different chemicals that go into products like cosmetics, medicines and some foods.

LOBLOLLY PINE

Since so many products are made from wood and wood fiber, the average American uses the equivalent of a 100-foot tree every year!

Building Produ

People have used wood to build shelter since ancie
They first used whole logs or large timbers. As tech
developed, people were able to make
and use thinner or lighter types
of wood and wood fiber
products for building.

Chem

Trees are a natural sup
such as turpentine a
of trees. Lignin is ar
Cellulose, the wood
paper, is also used in r

Paper

Trees are used to make pulp and paper products — notebook paper to write on, diapers for your baby brother or sister, packaging to protect frozen foods, napkins to wipe mustard from your books and magazin paper cups to drin envelopes to carry the country and a

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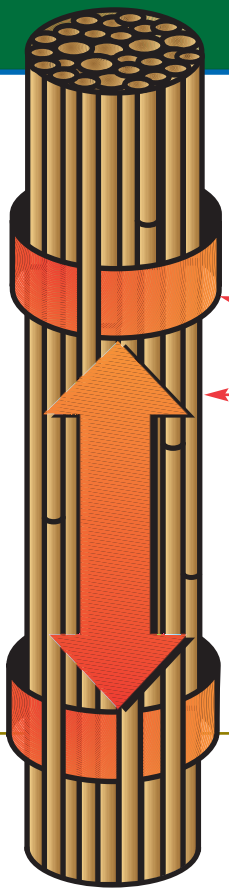


NATURE'S STRENGTH

Did you ever wonder what makes wood so strong? It's the combination of wood fiber and the lignin, or glue, that binds the wood fibers together. Wood fibers grow vertically and it is in this direction that wood is strongest. People use the strength of wood products to build schools, houses, office buildings, stores and even tree houses.

NEW HOME CONSTRUCTI

icals

pply of valuable chemicals. Chemicals
nd rosin come from the sticky sap
nother chemical we get from trees.
fiber used for making pulp and
many products.

CHEMICALS FROM TREES

How can we create so many different chemical products from trees? When chemicals are removed from the tree and mixed with other chemicals, a chemical reaction occurs. The energy from this reaction can create a completely different chemical. This is how chemicals from trees can be used to make products as different as artificial vanilla flavoring and frames for your eyeglasses.

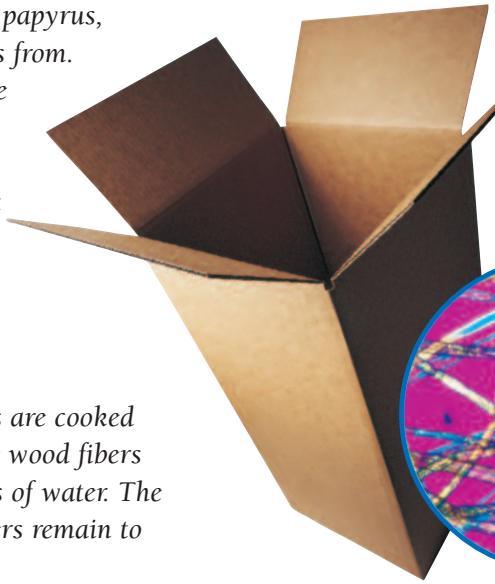
COPYING NATURE

Scientists find useful compounds that tre naturally and th them in a fa materials. came fr willow has b

mouth,
nes to read,
k from, and even
messages across
around the world.

PAPER HISTORY

In ancient times, people wrote on animal skins, bones and clay tablets. Around 3500 BC, the Egyptians wrote on a woven mat of reeds called papyrus, which is where the word paper comes from. Around 2,000 years ago, the Chinese discovered that they could make a thin paste of mulberry bark, hemp and rags and let it dry into a sheet in the sun. Many types of paper are now made from wood.



MAKING PAPER

Logs are chipped into small pieces of wood. These chips are cooked with chemicals that dissolve the glue-like lignin holding the wood fibers together. This leaves a pulp made of cellulose fibers and lots of water. The pulp is put on a screen to let the water drain away. The fibers remain to form a sheet of paper that is dried and put on a roll.

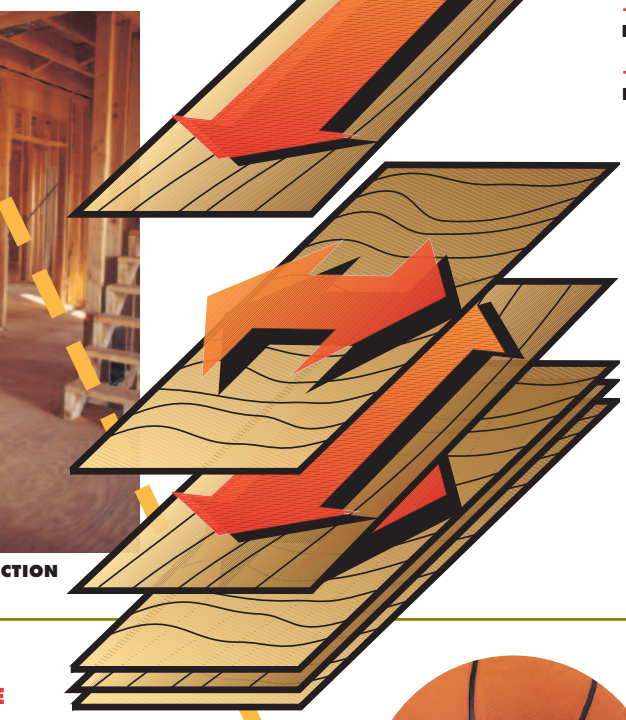
PLYWOOD

PARTICLEBOARD

GOING WITH THE GRAIN

Many building products are made to take advantage of the strength of the wood grain. Plywood is made by stacking layers of veneer — thin sheets of wood — with the wood grain at right angles to each other. This makes a plywood panel strong both up and down and from side to side.

Other engineered building products such as particleboard are made of wood chips or shavings mixed with a special glue. By eliminating the wood grain, we can make products that have excellent strength in all directions.



CTION

ful
trees make
then learn to make
factory from synthetic
ls. Aspirin originally
from a substance in
ow bark. Rubber also
s been "copied" in a factory.

USING CELLULOSE IN MANY PRODUCTS

Cellulose fibers are converted and used in many products. Cellulose gum is what makes toothpaste "paste" and helps it stay on the toothbrush. In parmesan cheese, cellulose powder keeps the grated cheese from getting lumpy. Shampoo would be just watery soap without cellulose to make it thick.

WHAT KIND OF TREE IS IN MY PAPER?

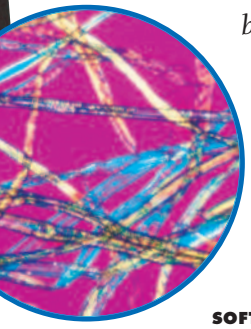
Different kinds of paper are made from the fiber of different kinds of trees.

Products like bath tissue, napkins and towels that need to be soft, smooth or absorbent are made primarily from hardwood trees such as oaks and maples. These fibers are cooked for a long time.

Bags and boxes have to be strong and last a long time. These items are made from softwood trees like firs and pines. The fibers are cooked for just a short time to keep their strength.

Writing paper, checks and envelopes are made of a combination of hardwood and softwood trees. Softwood fibers make the paper strong so it doesn't tear too easily. Hardwood fibers make it smooth so you can write on it.

HARDWOOD FIBERS ARE SHORT AND STIFF



SOFTWOOD FIBERS ARE LONG AND FLEXIBLE

From the Forest

FORESTS

ACTIVITIES & Extras

Yikes! There's a forest in my house!

This house contains all the items from the following list. Can you find them?

- shutters
- fireplace mantel
- bed
- curtain rod
- crib
- books
- skateboard
- birdhouse
- hardwood floors
- rocking chairs
- guitar
- pool cue
- sofa
- hat rack
- sled
- trunk
- stools
- seesaw
- pool table
- desk lamp
- fruit in bowl
- boxes
- picket fence
- high chair
- swingset
- boots
- picture frame
- rake handle
- umbrella
- linoleum kitchen tile

TREE TREATS

1 cup vanilla ice cream
1/4 cup orange juice
1 teaspoon cinnamon
1/4 cup almonds or pecans
1 banana

Mix the ice cream, orange juice, cinnamon and banana in a blender (make sure an adult is there to help). Top with nuts for a tasty tree treat.

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