

Thème 2A - Défi énergétique

A surfboard story

Documents from California Education and the Environment Initiative - <https://californiaeei.org/>

Question: Using these documents and your knowledge, explain how making a surfboard possibly affects sustainable development.

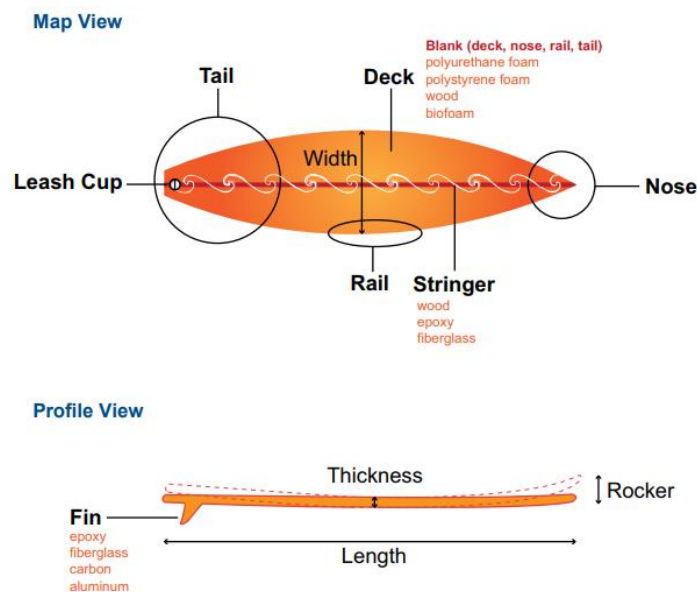
If you have walked along a California beach, you have probably seen surfers paddling out to catch a wave. As you watched their surfboards bob up and down in the water, did you ever wonder what makes them so tough and lightweight?

5 A – How modern surfboards are made

A big part of surfboards is polyurethane, which is a chemical compound used in foams, elastics and resins and which comes from the natural resource oil. This oil was formed long ago in ancient oceans. Marine animals that died millions of years ago drifted down to the ocean floor.

10 Heavy layers of sediments trapped the dead animal's bodies in airtight pockets. These heavy layers pressed down and over long periods of time created fields of oil.

In the surfboard factory, workers heat the polyurethane in a mould for 25 minutes. After it cools, builders use this foam to make the core of the surfboard. They slice this core called a « blank », in two, lengthwise, like deli bread. A 1/8-inch piece of wood acts as the « meat » in this « surfboard sandwich » when builders glue it into place. This wooden « stringer » will prevent the surfboard from breaking in half.



B - Surfboard design blueprint

C – Comparison of materials used to make surfboards

Materials	easy to shape	buoyant	light/ heavy	strong	smooth finish	expensive	made from
polyurethane	++	+	light	++	++	-	oil
polystyrene*	+	++	very light	+	+	+	oil
wood**	+	++	very heavy	++	+	++	wood
biofoam***	++	++	light	+	++	++	sap of plants

*Some polystyrene absorbs a lot of water. To make it stronger and more waterproof, manufacturers seal the outside of polystyrene blanks with fiberglass. But even a tiny hole in the fiberglass shell can ruin a surfboard.

**Wood is a renewable resource in well-managed forests.

***Biofoam can vary in colour and in how paint sticks to it. Biofoam can be mixed with polyurethane to make the material stronger and more even in colour.

Buoyant = that floats

Foam = here, material that is filled with bubbles.

Sap = plant or tree fluid.

Stringer = support structure