

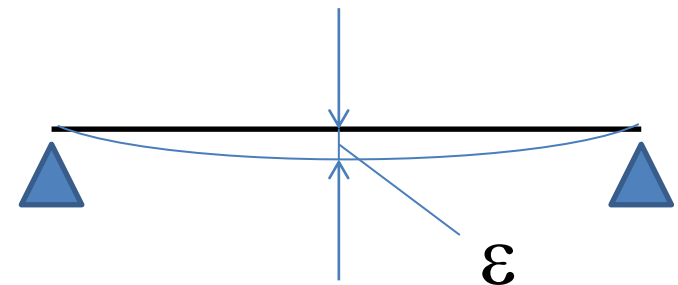
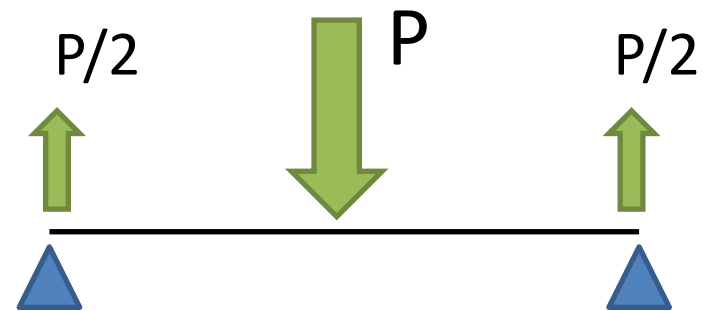
BASIC MECHANICS OF LONGBOARDING

This is the most schematic representation of a longboard.

P is the weight of your body over the board (at its center) and $P/2$ are the reaction forces of the road, who passes by the wheels and trucks to the board.

When we talk about **flex** we are just thinking about how much the force P will **deform** the board under our feet.

We will call that deformation ϵ the greater this value is, the more flexible the board will be.



Which geometrical features influences flexibility?

- **Wheelbase.** The larger it is and the more it will be flexible.
- **Concave** of the board. The more it is concave and the less it will be flexible.
- **Width** of the board. The more it is wide and the less it will be flexible.
- **Thickness** of the board. The more it is thicker and the less it will be flexible.

That's why a downhill board has short wheelbase (also for the control of the slides) and deep concave, large width and it's very thick.

A pintail, instead, is with large wheelbase, flat, with small width and not very thick.

Flexibility is influenced also by **materials** with which is built the board.

Traditional longboards are built with wood (maple or birch are the best), 5 to 8 layers can be used to obtain the desired thickness.

More layers are present and the higher is the quality of the board. The thickness of every single layer can be between 1.2 and 3 mm.

We decided to build innovative longboards mantaing the traditional **maple wood** of the Balkans (used for the construction of violins), together with synthetic fibers and **epoxy resin**.

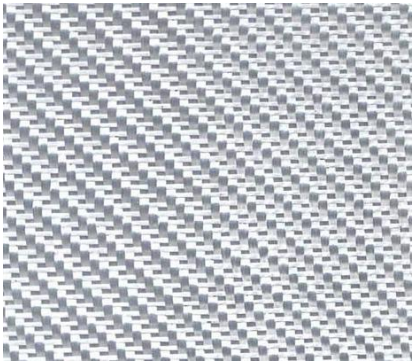
There are 3 types of synthetic fibers:

- **Fiberglass**
- **Carbon fiber**
- **Kevlar**

Let's see the difference between them ...

FIBERGLASS

It's the heaviest, the **most flexible**, absorbs vibrations very well, when it is impregnated with resin became transparent



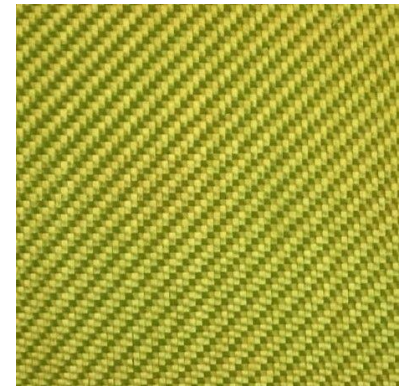
CARBON FIBER

It's the **lightest**, the most **rigid**, very difficult to break, vibrates a lot at high speeds, It gives great sensibility to the rider.



KEVLAR

It has intermediate flexibility between fiberglass and carbon fiber, and also about weight. It can deform a lot before braking.



CONCLUSIONS

Combining different materials with geometrical features we can obtain **infinite combinations**. Each Stradivarius is built with 10 to 20 layers of wood mixed with synthetic fibers. That's why every board that we build is **unique** not only for his aesthetics but also for his mechanics.



Superleggero Blackstone