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# What Are Sneakers Made Of?

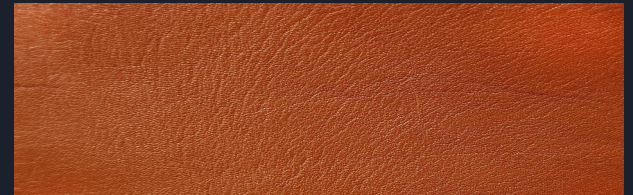
# The Materials That Are In A Sneaker

The materials are leather, textiles, rubber, plastic and foam. In the next few slides we will tell you about the the materials that were just listed.



# Leather

Leather is a durable and flexible material, created by tanning animal rawhide and skins. The most common raw material is cattle hide. It can be produced at the making of objects on a large scale using machinery (manufacturing) scales, ranging from artisan (a worker in a skilled trade, especially one that involves making things by hand) to modern industrial scale.



# Textiles

(If you don't know what a Textile is, it's a cloth or woven fabric.) Textiles are made of many different materials, with four main sources: Animal (wool or silk), Plant (cotton, flax, jute or bamboo) Minerals (glass or fiber) and Polyester. The first two are natural ( Animal and Plant.) In the 20th century , they were supplemented by artificial fibers (an artificial fiber is a thread like material invented by human researchers. Such fibers do not exist naturally. Some examples of artificial fibers include nylon, rayon, dacron and orlon) made from petroleum (crude oil).



# Synthetics

Synthetics are fake/artificial objects of something else, example: there is natural leather and artificial/synthetic leather. Synthetics are made up of useful chemical reactions. Synthetics are used so sellers make more and save more money.



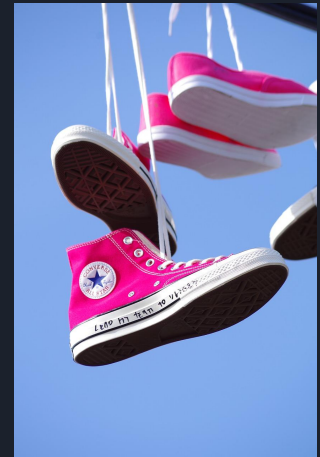
(Synthetics are not solid materials, they are a fake version of another material, synthetics are made from different types of chemicals.)

# Rubber

This is a rubber tree!



Where does natural rubber come from? Well... the rubber tree, *Hevea brasiliensis* originally came from Brazil, from where it was introduced to such countries of the Far East as Malaysia, Indonesia, Burma, Cambodia, China, and Vietnam. Rubber can also be man made by petroleum and other minerals.





# Plastic

The main ingredient in most plastic material is a derivative from crude oil and natural gas. There are many different types of plastic, clear, cloudy, solid colour, flexible, rigid, soft, etc. Plastic products are often a polymer resins, which is then mixed.





# Foam

Otis Ray Mcintire  
Was born 24th of  
August 1918 and died  
2nd of Febuary 1996,  
he was the inventor of  
styrofoam.

Foam is made from all types of chemicals including, polyol, polyisocyanates and water. How far my information goes Foam is made up of 10% water, 50% polyol and 40% Polyisocyanates. Foam originally came from the united states made by a man named Otis Ray Mcintire. Otis Ray Mcintire ended his career in 1981.



This is a foam  
sponge



This is Otis  
Ray  
Mcintire



Some foam is made by petroleum which is a nonrenewable resource.





# Nonrenewable or Renewable?

Nonrenewable	Renewable
<ul style="list-style-type: none"><li>-Nylon</li><li>-Polyester</li><li>-Acrylic</li><li>-Rayon</li><li>-Glass</li><li>-Coal</li><li>-Petroleum</li><li>-Rubber</li></ul>	<ul style="list-style-type: none"><li>-Fiber</li><li>-Leather</li><li>-Rubber</li></ul>



# Where These Non-Renewable Resources Came From

Petroleum (makes Polyester) was found in Oil Creek, Pennsylvania, U.S.A.

Coal was originally discovered in China about 5,000 years ago.

Sand came from a distant mountain that was withered by wind. Sand also comes from shells and rocks on the ocean floor, broken down by ocean waves.



# Canada Resources

Petroleum (makes polyester) in Canada would be mined in Alberta.

Coal was first mined in Vancouver island.

Sand was first collected in Qubec or Nunavut.



# Important Materials To This Slide Show

Plastic, Foam and Rubber are the materials this slide should be focused on so let's get into those materials.

Plastic is created by crude oil which is pumped by big pipes and is then sent to an oil refinery. Plastic is also made by natural gas which is extracted from bodies of water or rock formations.

Energy and water is used to alter the structure. Monomers combine to form a Polymer chain, millions of these chains are formed at once. They create a mass known as a Resin, Resins come in different shapes and sizes but pellets are used to make plastic.

Using high heat and pressure the pellets are then melted, then ejected into a mold. Air then expands the mold like if you're blowing up a balloon. As it cools down it takes its shape.



## Important Materials To This Slide Show 2

Rubber can be artificial, the way to make rubber artificially is totally different.

The process was created in 1909, now synthetic rubber is usually a computer process., this process is monitored by a human which sees the process with live camera photos. The plant is 400 metres, there are a dozen of other storage tanks, for raw materials and 7 reactor units. The raw materials include a petroleum liquid called Butadiene, and solvent called Hexane. They then pipe the raw materials through columns to boil off the water.

Then they combine the butadiene and hexane, then they would add a catalyst, this triggers a reaction that adjusts the chemistry. This is now polybutadiene which is a synthetic rubber that is used to make tires.



## Important Materials To This Slide Show 3

We talked about Rubber we have talked about plastic but now it is time to talk about foam...

Foam is made by reacting diisocyanates and polyols, these materials are both derived from crude oil, but polyols can also be made out of natural oils, when mixed they react and foam. During the production isocyanates and polyols react and are not in the foam that goes to the market. This may seem like a simple process but the process of foam is rather impressive. A factory produces around 8,000 tons of foam. It all begins with the delivery of raw materials, these materials are delivered as liquids to storage tanks.



## Important Materials To This Slide Show 4

Individual substances are then pumped from tanks to the production area, using the pipe system. The whole process is computer controlled so, quantities are determined by the exact formulation of the foam being produced. The mixing head is where the real process begins. Isocyanates, polyols, pigments and others are mixed together in the mixing head. The mixture is poured onto a conveyor belt, this is where it starts to foam, this actually forms a foam block along the conveyor belt. Because foam production is a continuous process any foam block on the conveyor belt could be endless. However to make the conversion of foam in later stages easier, the block is cut into sections up to 120 metres in length.



# Important Materials To This Slide Show 5

Then it is cooled and cured for up to 24 hours before being transported to storage houses. At the storage house the foam can be cut into short blocks, compressed, packed and shipped to customers for use at their premises. Foam can be transformed into a variety of products, most of the processing is mechanical. Using high precision cutting equipment, foam can be given an endless number of shapes. Blocks up to 120 metres long can be cut into thin layers with extreme precision along the length of the block. Cutting machines make precision cutting for smaller pieces. Foam can be combined with other materials. The variation of foam is about endless. It is the job of the foamer to adapt to his process. Foam is tested its conformity to requirements. A large number of foams are made for bedding and furniture made by Certi Pur, this is a program.





# We Hope You Learned About Sneakers!

This slide was packed with information. We hope you learned lots! After a ton of research we hope you enjoyed and learn more in the future! We hope you know we also learned lots on this adventure as well!



# Sources

1. This information came from, plastic- This is plastics, youtube, google
2. Foam-youtube-Polyurethane foam how is it made, youtube, google
3. Rubber-Google, youtube.

Everything else is Google!



Bye!!!!!!