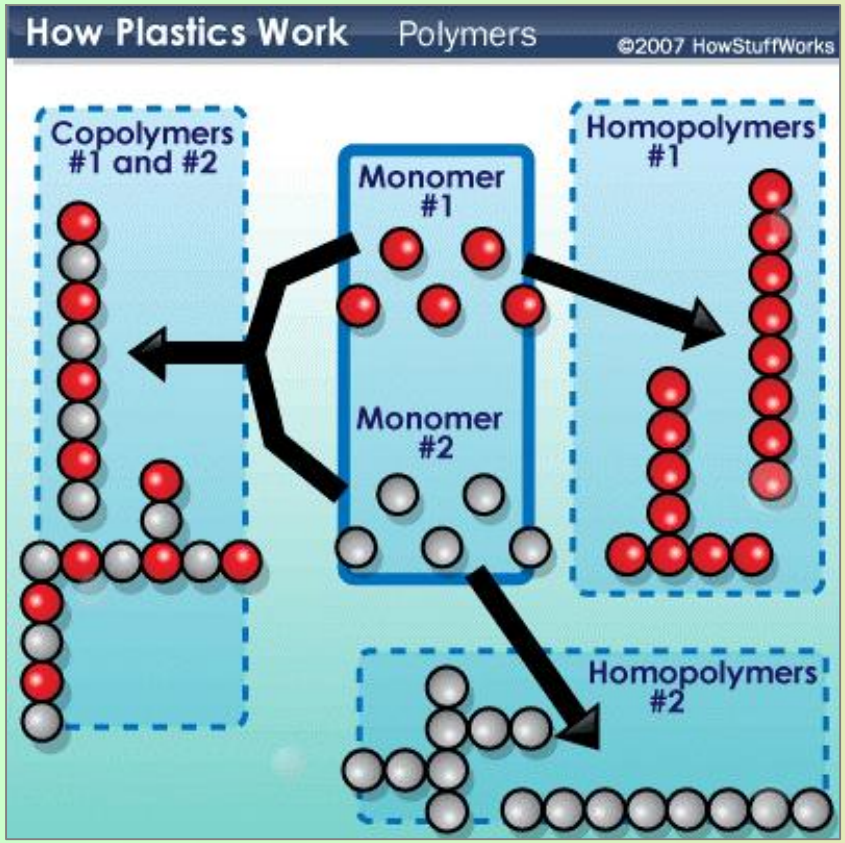
Rafa Muñoa
Lizardi Institutua
Zarautz

Plastics

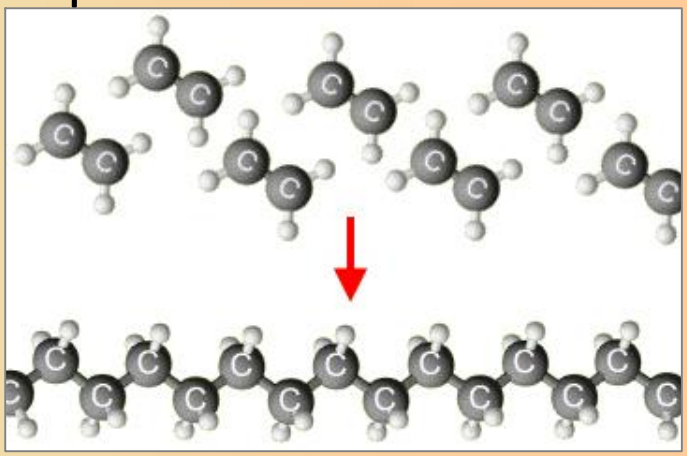


http://static.howstuffworks.com/gif/plastic-7.gif

Introduction

Plastics are made from oil. Oil is a carbon-rich raw material, and plastics are large carbon-containing compounds.

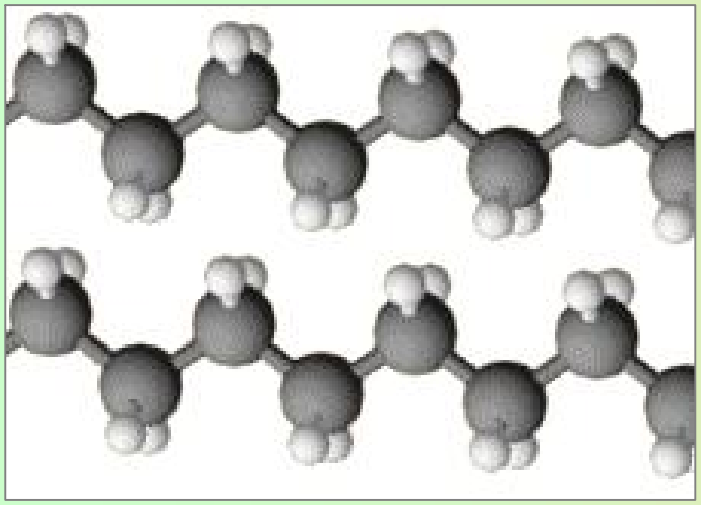
They're large molecules called polymers, which are composed of repeating units of shorter carbon-containing compounds called monomers.



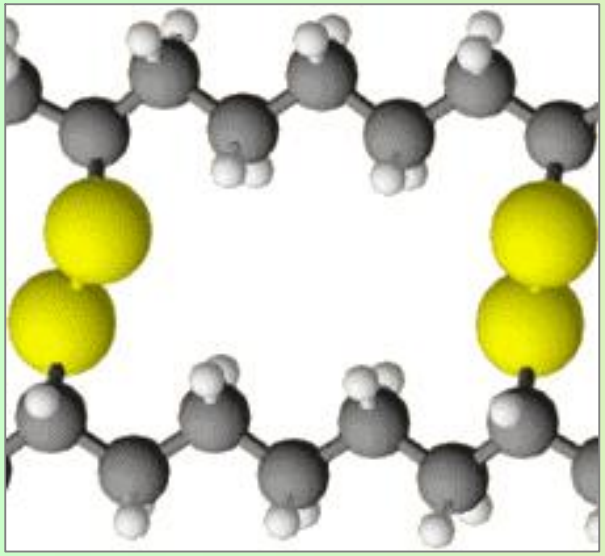
http://www.bbc.co.uk/schools/gcsebitesize/science/images/ocrchem17.gif

Rafa Muñoa
Lizardi Institutua
Zarautz

Plastics



http://www.bbc.co.uk/schools/gcsebitesize/science/images/ocrchem18.gif



http://www.bbc.co.uk/schools/gcsebitesize/science/images/ocrchem19.gif

Polymer chains

Polymer with no cross- links

Many polymers, such as poly(ethene), contain long molecules that lie side by side. These can uncoil and slide past each other, making the material flexible.

Polymer with cross- links

This type of polymers molecules cannot slide over each other so easily. This makes materials tougher and less flexible, and they cannot be easily stretched.

Vulcanised rubber has cross-links. Its polymer molecules are cross-linked by sulfur atoms. It is tough but flexible, and used for making tyres.

Rafa Muñoa
Lizardi Institutua
Zarautz

Plastics

http://blog.ecolect.net/wp-content/uploads/2009/01/recycleplastic.jpg

Recycling

Because plastic doesn't react chemically with most other substances, it doesn't decay.

Therefore, plastic disposal poses a difficult and significant environmental problem. Plastic hangs around in the environment for centuries, so recycling is the best method of disposal.

However, new technologies are being developed to make plastic from biological substances like corn oil. These types of plastics would be biodegradable and better for the environment.

Rafa Muñoa
Lizardi Institutua
Zarautz

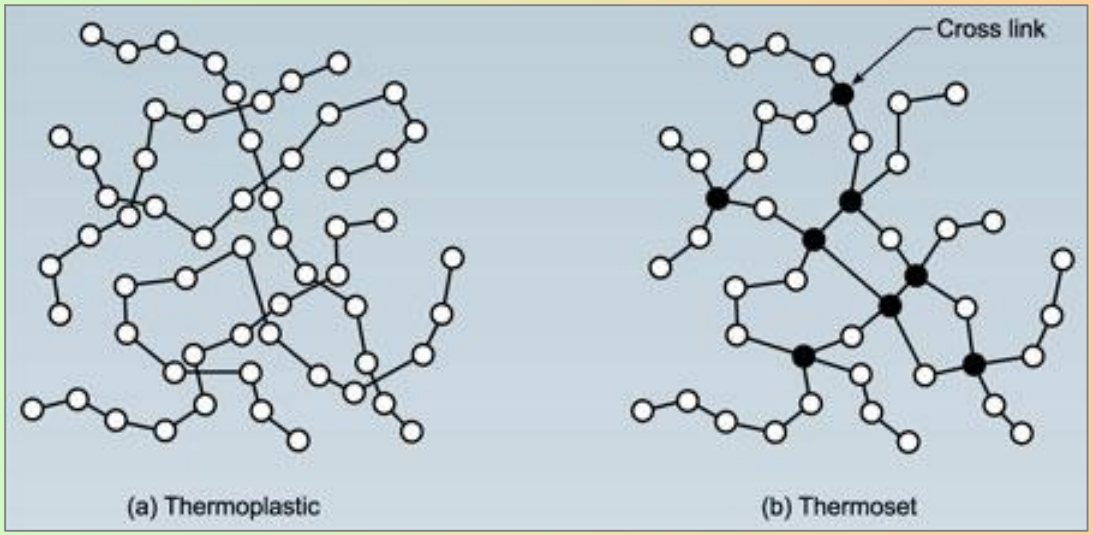
Plastics

Thermoset plastics

http://www.mcmusa.net/images/part_collage.jpg

Types of plastics

Plastics can be divided into two major categories:
1. Thermoset or thermosetting plastics. Once cooled and hardened, these plastics retain their shapes and cannot return to their original form. They are hard and durable. Thermosets can be used for auto parts, aircraft parts and tires.



http://wwwreno.nrc-cnrc.gc.ca/obj/irc/images/ctus/ctu30/p2-e.jpg

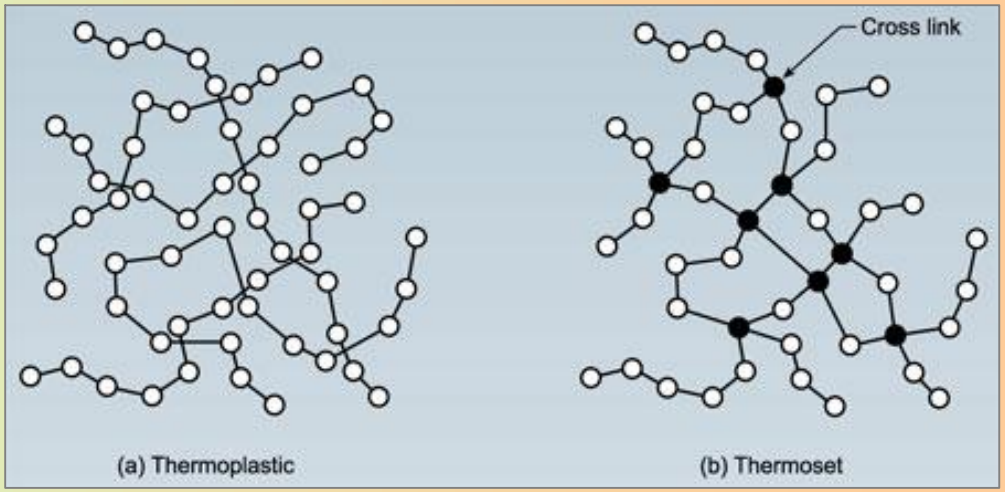
Rafa Muñoa
Lizardi Institutua
Zarautz

Plastics

http://www.novi-alati.hr/site/images/stories/proizvodi/polymer.jpg

Types of plastics

2. Thermoplastics. Less rigid than thermosets, thermoplastics can soften upon heating and return to their original form. They are easily molded and extruded into films, fibers and packaging.



http://wwwreno.nrc-cnrc.gc.ca/obj/irc/images/ctus/ctu30/p2-e.jpg