Learning Guide for Lecture 3F – Plastics II

Review

What is a polymer?

What is a monomer?

What is a copolymer?

What natural polymers are formed from the following monomers?

nucleotides:

glucose:

amino acids:

What do we call artificial polymers?

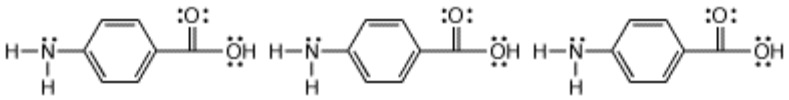
Why are they so useful?

How are condensation polymers formed?

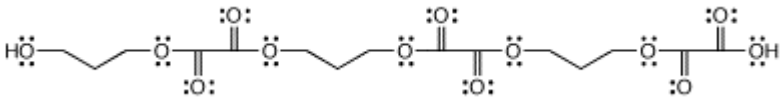
What reactions can be used to form condensation polymers?

How are addition polymers formed?

Draw the polymer that would be formed by joining the following monomers together.



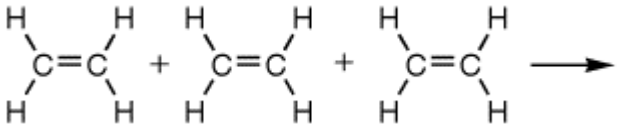
What monomer(s) is the following polymer made from?



Are either of these copolymers?

<u>How are addition polymers formed?</u>

Addition polymers are formed when monomers containing C=C's react to form a carbon chain.



What happened?

Since this is an organic molecule, it can also be represented with condensed structures, or line structures.

condensed structures:

line structures:

There are two kinds of polyethylene:

high density polyethylene (HDPE)

contains:

properties:

products:

low density polyethylene (LDPE)

contains:

properties:

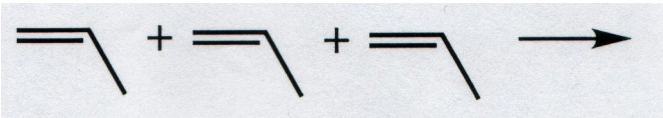
products:

<u>Other Examples of Addition Polymers</u>

Other addition polymers are made the same way as polyethylene.

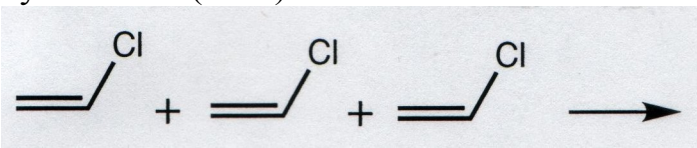
The only difference is that:

polypropylene



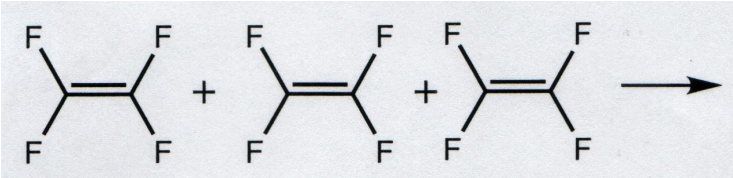
used to make:

polyvinyl chloride (PVC)



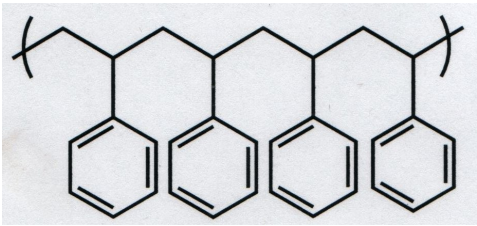
used to make:

Teflon



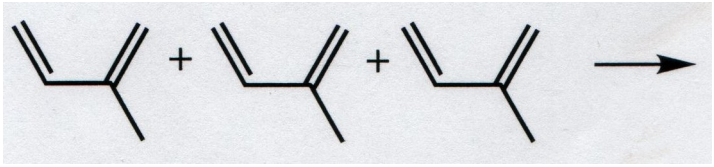
used to make:

polystyrene



used to make:

rubber



comes from:

used to make:

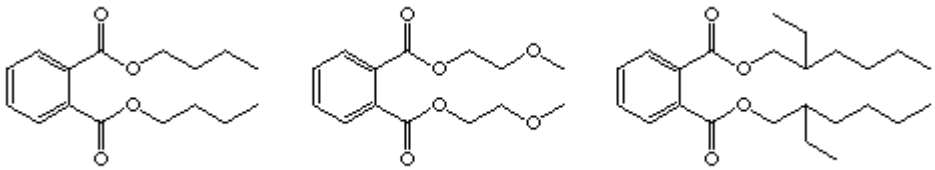
Rubber has a property that is different from many polymers.

It is:

This is the result of:

Plasticizers

In their pure form, most polymers are stiff and brittle. In order to make them flexible:



dibutyl phthalate (DBP) dimethoxyethyl phthalate (DMEP) dioctyl phthalate (DOP)

As plastics age:

What are some of the problems with plastic?

Although plastics are quite useful, there are a few problems associated with them.

1) What is plastic made from?

2) Is plastic flammable?

3) What happens to plastic when you throw it away?

The best solution is to:

Recycling codes:

Examples:

PETE – 1	HDPE – 2
PVC – 3	LDPE – 4
PP – 5	PS – 6
other – 7	