



POLYMERS: COMMON PLASTICS

HPS@SHS

Name _____ per. _____

Directions:

1. Launch your browser and go to our web page at: <http://www.honorsphysicalscience.com>
 2. Click on NetTutor. Click on Chapter 9: Organic Chemistry and Petrochemicals
 3. Click on Polymers. Start with this page then go through the others as listed on the menu.
- Answer these questions on your own paper as you view these pages:

- Polymers -

1. What are polymers? What does the prefix and suffix mean?
2. What are monomers? What does the prefix and suffix mean?
3. What structure do all polymers have in common?
4. What is polymerization?
5. List 4 natural and synthetic polymers. What are synthetic polymers often called?

- Polyethylene -

6. What is the monomer of polyethylene? Draw it.
7. Is this monomer saturated or unsaturated? Explain why.
8. Explain how ethene becomes polyethylene. Draw the structural formula for the monomer and the polymer.
9. How long could one make a polymer? Explain why.
10. Draw the polymer.
11. List some common items made of polyethylene.

- Polytetrafluoroethylene -

12. What is the monomer of Polytetrafluoroethylene? Draw its structural formula.
13. What is the common name of polytetrafluoroethylene? How did it get that name?
14. How are the monomers for polyethylene and polytetrafluoroethylene similar? Different?
15. Draw the polymer.
16. List four uses for Teflon.

- Polyvinyl chloride -

17. What is a vinyl molecule?
18. What is the monomer of polyvinyl chloride? Draw its structural formula.
19. How is this monomer made?
20. Draw the polymer.
21. What is the major use of polyvinyl chloride.

- Polystyrene -

22. What is the monomer of polystyrene? Draw it and label the two parts of the molecule.
23. Explain how the monomer joins together to make the polymer.
24. Draw the polymer.
25. How is Styrofoam made? What other uses does polystyrene have to man?

Research

BONUS (3 pts.): Visit the links on our Polymer site to find answers to these questions.

26. Teflon is the most slippery substance known to man. Just how do they get it to stick to a pan?
27. What ancient civilization used polymers? What did they use it for?
28. What percent of Styrofoam is composed of air?
29. What two of these plastics listed above were discovered in the same year? What was the year and what was the company that employed both chemists?
30. What was the first synthetic polymer? Who fabricated it? When did this occur?
31. Find the dates these polymers were discovered and list them in order (from earliest) with the date.



THE HUNT FOR POLYMERS



We live in a world made of plastics - many of which can be recycled to be reused. Most plastic items have a number printed on it that identifies the type of polymer it is made of. This number appears in a triangle surrounded with a recycling symbol of 3 curved arrows. Your job is to find seven different plastics in your home and identify the plastic.

Find one of each (number 1-7) and list it below. For each plastic identify the:

Item (ie. Publix milk container, CD case...),

Plastic Type: what type of plastic it is composed of (look on polymer website under Codes, Uses and Recycling for types of plastics).

Code location: where the number is located (bottom, top, side).

Show your parent(s) each item and have them sign in the area provided.

Important: No credit without a parent signature for each item.

Code	Item	Plastic Type	Code Location	Parent Signature
1				
2				
3				
4				
5				
6				
7				