

Polymer Basics

Name _____

Use the sites on the Matter & Atoms page of the Kid Zone at <http://sciencespot.net/> to complete this worksheet.

Site #1: Hands-On Plastics

1. Plastics are _____, which is something made of many _____ similar to a chain. Each link in the chain is the “_____” or basic unit usually made out of _____, _____, _____, and/or _____. To make the chain, many links or units are hooked or _____ together.
2. Many common classes of polymers are composed of _____, which contain the elements carbon and hydrogen. List seven elements that are also found in polymers: _____, _____, _____, _____, _____, _____, and _____.
3. What is one of the most famous silicon-based polymers? _____
4. What are the general attributes (properties) of polymers?
 - A. Polymers can be very resistant to _____.
 - B. Polymers can be both _____ and _____ insulators.
 - C. Polymers are very light in _____ with varying degrees of _____.
 - D. Polymers can be _____ in various ways to produce thin fibers or very intricate parts.
5. What percentage of our trash is made up of plastics? _____%
6. What does WTE mean? _____ - _____ - _____ What are two benefits of WTE?
 - 1 – We can use plastics that cannot be _____.
 - 2 – Incineration of polymers produces _____.

Site #2 – Polymer Flash Activities

1. Click the link to make a virtual polymer and choose polyethylene.
 - A. What type of monomer is used to make this polymer? _____
 - B. What elements and how many of each is in one of these monomers?
C = _____ # - _____ H = _____ # - _____
 - C. What starts the process? _____
2. Click the link to try the matching games. Record your times or scores in the blanks below.
 - A. Breakfast Game– 1st Try = _____ 2nd Try = _____ 3rd Try = _____
 - B. Polymer Game – 1st Try = _____ 2nd Try = _____ 3rd Try = _____

Done? Turn in your worksheet and visit any of the sites for Chemistry Games & Puzzles listed on the Matter and Atoms page.

Polymer Basics Answer Key

Site #1: HandsOn Plastics

1. Plastics are **polymers**, which is something made of many **units** similar to a chain. Each link in the chain is the “**mer**” or basic unit usually made out of **carbon, hydrogen, oxygen**, and/or **silicon**. To make the chain, many links or units are hooked or **polymerized** together.
2. Many common classes of polymers are composed of **hydrocarbons**, which contain the elements carbon and hydrogen. List seven elements that are also found in polymers: **oxygen, chlorine, fluorine, nitrogen, silicon, phosphorus**, and **sulfur**.
3. What is one of the most famous silicon-based polymers? **Silly Putty**
4. What are the general attributes (properties) of polymers?
 - A. Polymers can be very resistant to **chemicals**.
 - B. Polymers can be both **thermal** and **electrical** insulators.
 - C. Polymers are very light in **mass** with varying degrees of **strength**.
 - D. Polymers can be **processed** in various ways to produce thin fibers or very intricate parts.
5. What percentage of our trash are plastics? **9.9%**
6. What does WTE mean? **Waste-to-Energy** What are two benefits of WTE?
 - 1 – We can use plastics that cannot be **recycled**.
 - 2 – Incineration of polymers produces **heat energy**.

Site #2 – Polymer Flash Activities

1. Click the link to make a virtual polymer and choose polyethylene.
 - A. What type of monomer is used to make this polymer? **Ethylene**
 - B. What elements and how many of each is in one of these monomers? C = **Carbon # - 2** H = **Hydrogen # - 4**
 - C. What starts the process? **Initiator**
2. Click the link to try the matching games. Record your times or scores in the blanks below.
 - A. Breakfast Game – 1st Try = _____ 2nd Try = _____ 3rd Try = _____
 - B. Polymer Game – 1st Try = _____ 2nd Try = _____ 3rd Try = _____