

Viscoelasticity Worksheet **Answers**

1. What two categories of materials have viscoelastic material behavior?

polymers
biological materials

2. Hysteresis is when energy is lost during the process of loading and unloading a material (one cycle).

3. Strain rate dependence is when a material responds differently depending on how fast it's stretched.

4. Creep is when a material continues to deform over time with a constant force.

5. Describe one example of when preconditioning a material is advantageous.

If you precondition (repeatedly stretch) a balloon, it reduces the force required to stretch or inflate it. This makes it easier to blow up the balloon.

6. Draw an example stress vs. time curve of a viscoelastic material that is stretched and held at a constant displacement. Be sure to label your axes.

