**Viscoelasticity Worksheet Answers**

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

polymers

biological materials

1. **\_**Hysteresis**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when energy is lost during the process of loading and unloading a material (one cycle).**
2. **\_**Strain rate dependence**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when a material responds differently depending on how fast it’s stretched.**

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1. **\_**Creep**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when a material continues to deform over time with a constant force.**
2. **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.

1. **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.**

