

**THREE PHASES OF MATTER QUESTIONS**

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1. What crumples a plastic bubble in a syringe when you apply force to the plunger?

Pushing the plunger reduces the volume and forces particles closer together.

The particles inside the bubble are pushed into a smaller volume, so the plastic surrounding them gets smaller (crumples) to surround the smaller volume.

2. How is the motion of particles in solid, liquid, and gas different?

Particles in solids are bonded tightly. They vibrate but do not change position.

Particles in liquids are bonded loosely and move over and around one another.

Particles in gases are not bonded and fly through space as individuals.

3. Why does air feel hard when you push on the plunger of a closed syringe?

Gas particles apply force when they hit things. When gas particles are

compressed, they hit things more often. The more gas is compressed, the

greater the frequency of hits. When the number of hits is large enough, it is

impossible to compress the gas more. It feels solid at this point.

4. Explain why some foam cubes get smaller in a syringe and some stay the same size.

When air is compressed around open-cell foam, more particles push into the

channels inside the foam. The foam cube does not change shape, but the air

inside the channels is denser. Air cannot get into the cells of closed-cell foam.

Compressed air particles push on the outside of the foam. The foam pushes on

the air inside the closed cells, compressing them and making the volume of the

cells smaller. When cells get smaller, the whole cube gets smaller.