

Introductions

A.S.U. Science

What is the name of one of the A.S.U. presenters?

What is his or her subject major?

What are his or her aspirations?

Physical Properties

Type of Matter	Usual State	Alternate State	Boiling Point	Freezing Point	Sublimation Point
water					
carbon dioxide					
nitrogen					

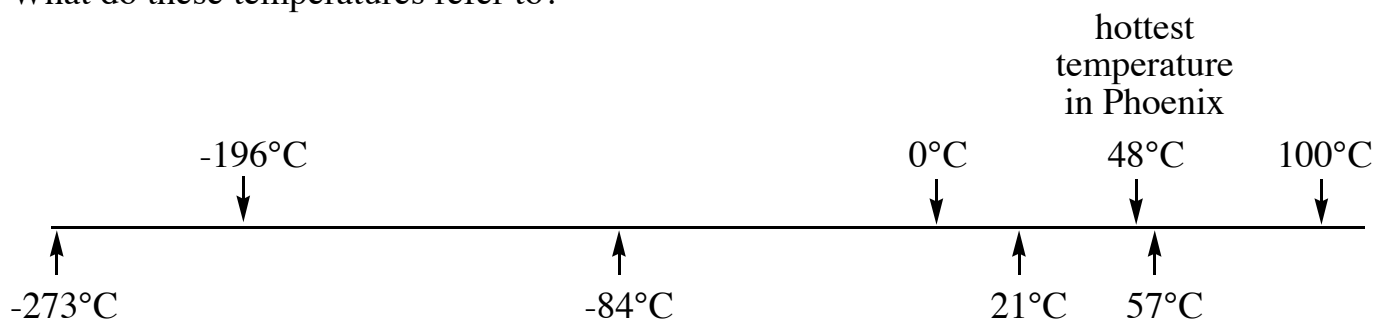
Physical Changes

What is happening to the liquid nitrogen?

What is happening to the egg in the liquid nitrogen?

In a physical change, the original substance still exists. It has only changed in form. A change in temperature can cause a change in state.

What do these temperatures refer to?



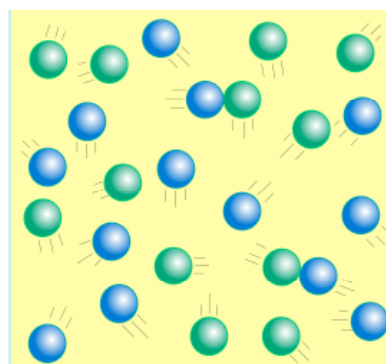
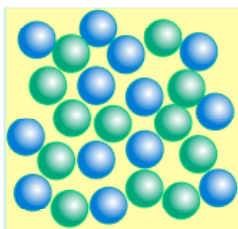
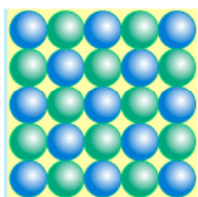
Physical Changes (continued)

Liquid nitrogen decreased the temperature of the flower. Describe the physical change.

Liquid nitrogen decreased the temperature of the racquetball. Describe the physical change.

Liquid nitrogen decreased the temperature of the egg. Describe the physical change.

Label these models of solid, liquid, gas.



Your Turn

Before

Inflate your balloon. Describe the physical properties of your balloon.

Temperature of gas in your balloon _____

Color of balloon _____

Texture of balloon _____

Circumference of balloon (in cm) _____

Estimated volume (in cm³) of gas _____

Liquid nitrogen will decrease the temperature of the gas in your balloon.

After

Temperature of gas _____

Color of balloon _____

Texture of balloon _____

Estimated volume (in cm³) of gas in balloon _____

What happens to a gas when the temperature is decreased?

Nitrogen in the Atmosphere

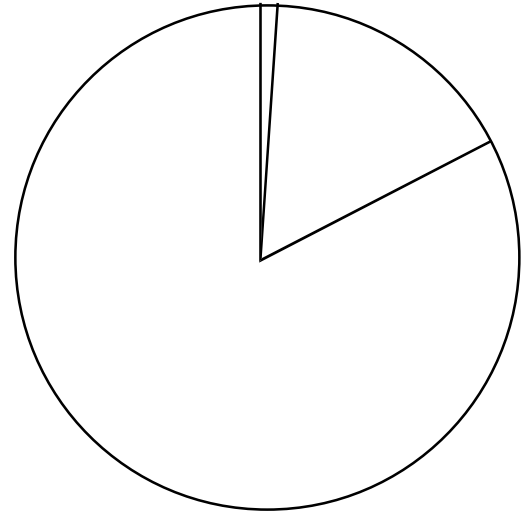
What are the percentages of these gases in the atmosphere?

Oxygen (O₂)? _____%

Nitrogen (N₂)? _____%

Carbon Dioxide and Others (CO₂)? _____%

Percentage of various gases in the atmosphere



Add the symbols O₂, N₂ and CO₂ to the pie-chart:

Is nitrogen a chemical?

Where are nitrogen and oxygen on the Periodic Table?

Is nitrogen poisonous?

Is it safe to eat ice-cream made from liquid nitrogen?

Density of Liquid Nitrogen

Density = Mass divided by volume.

Density of Nitrogen in Gaseous State

Summary

What are nitrogen's physical properties?

What physical changes did you observe today?

How does matter change states?
