

Science Virtual Learning

MPI Physics 210
Thermodynamics 10: Properties of Gases 2
May 20, 2020



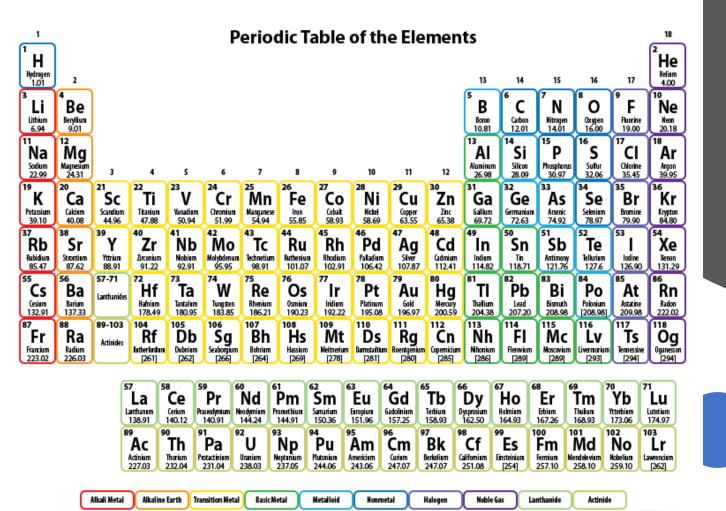
Lesson: MPI Thermodynamics 10 - Properties of Gases 2 May 20, 2020

Objective: To understand how to measure the quantity of a gas using moles, density, volume, and molecular weight.

This video discusses how scientists measure the quantity of a gas, using moles.

https://youtu.be/lk6mO5otTGY

Video: Gas Properties 2



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Ex 1: A glass contains 250 mL of water.

- a) What is the molecular weight of water?
- b) How many moles of water are in the glass?
- c) How many water molecules are in the glass?

Ex 2: A room has dimensions 5.00 m by 5.00 m by 3.00 m. The density of air is 1.29 kg/m³, and the molecular weight is 28.96 g/mole.

- a) What is the mass of the air in the room?
- b) How many moles of air are in the room?
- c) If 20.95% of air is O₂ gas, how many oxygen molecules are in the room?

Video: https://youtu.be/GczLj ecQNM

Video: Gas Properties 2 - Examples

Homework 1

- Try to solve the problem yourself, then watch the solution video:
- https://youtu.be/rv3EvMxD9GU
- 1. The density of air is 1.29 kg/m³, and 0.93% of it is Argon. Argon is a noble gas, meaning its molecules are individual atoms.
- a) What is the mass of Argon in 1.00 L of air?
- b) How many Argon molecules are in 1.00 L of air?

Homework 2

- Try to solve the problem yourself, then watch the solution video:
- https://youtu.be/7xApkV-XW3Y

- 2. A pressurized container holds 1250 moles of O_2 gas in a volume of 45.3 L.
- a) What is the mass of the O_2 gas?
- b) What is the density of the gas?

That's it!