

Curiosity: Formula as a Mass Dictionary

Curiosity Reading | CheAI Research Inc.

Packet ID: g09_u05_w20

Connection: materials and labeling

Reading time: 4 minutes

A chemical formula works like a mass dictionary: each element symbol points to a frozen classroom atomic-mass value, and each subscript tells how many entries to add. This packet uses `audits/atomic_masses_v2024.1.json`, derived from CIAAW/IUPAC *Standard Atomic Weights 2024* (accessed 2026-07-26). Values are rounded for reproducible classroom calculations; CIAAW interval values are treated as intervals when relevant.

Molar mass describes composition per mole. It does not by itself tell density, toxicity, concentration, or whether a material is safe to handle.

Think like a chemist

1. Why must $\text{Ca}(\text{NO}_3)_2$ count two nitrate groups?
2. Why is water included in a hydrate mass?
3. What information does molar mass not provide?

Word	Meaning	Packet
molar mass	mass per mole	1–20
formula unit	ratio described by ionic formula	1, 15–16
guard digits	kept until final rounding	17