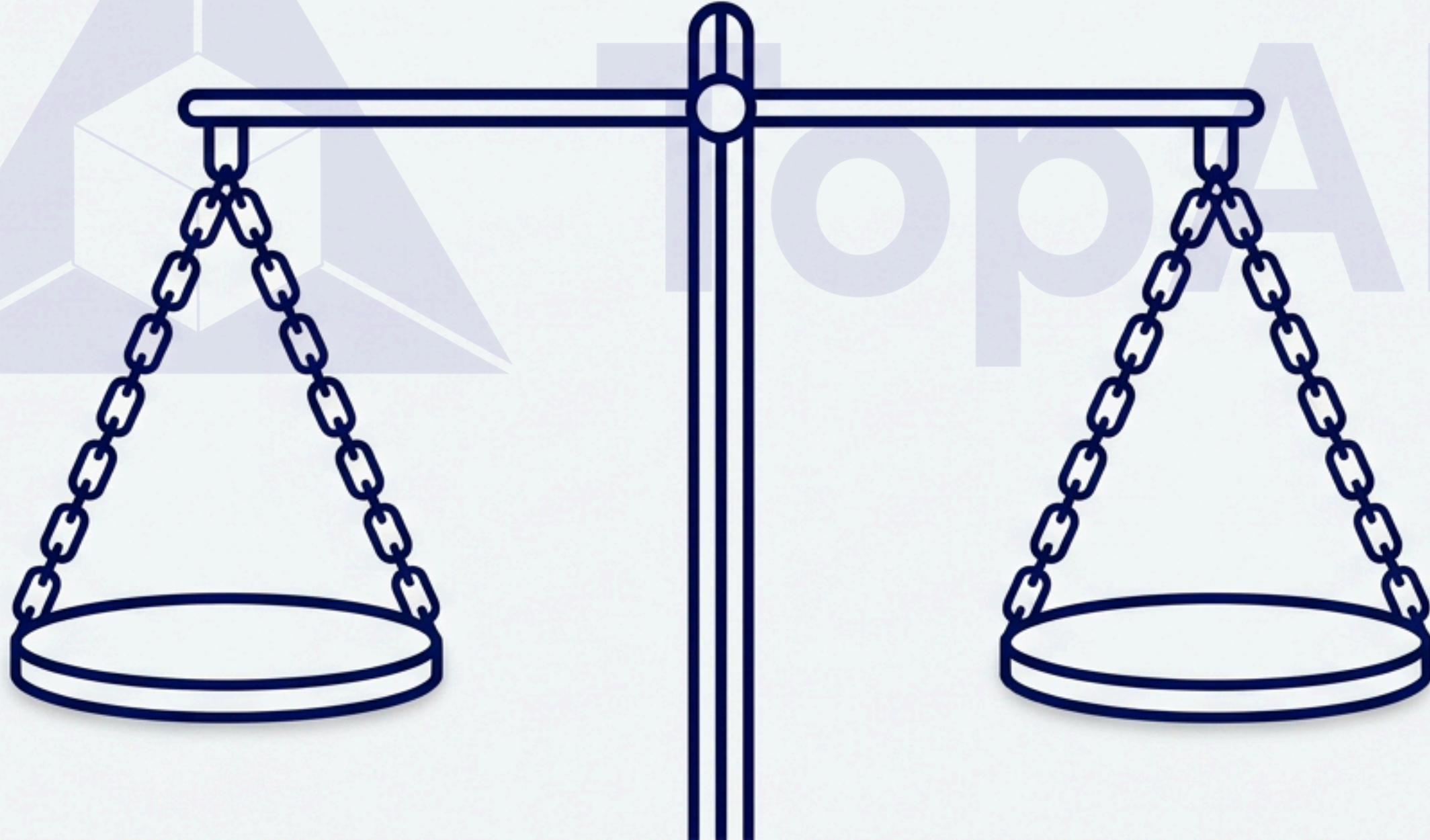


THE LAW OF CONSERVATION OF MASS



MATTER CAN NEITHER BE CREATED NOR DESTROYED





Antoine Lavoisier

1789

The father of modern
chemistry

Key Contributions



The Method

Performed careful, exact experimental studies on combustion reactions.

The Shift

Transformed chemistry from qualitative observation (alchemy) to exact quantitative measurement.

The Conclusion

Proved that mass is conserved throughout the entire chemical process.

The Universal Scope

Physical Change

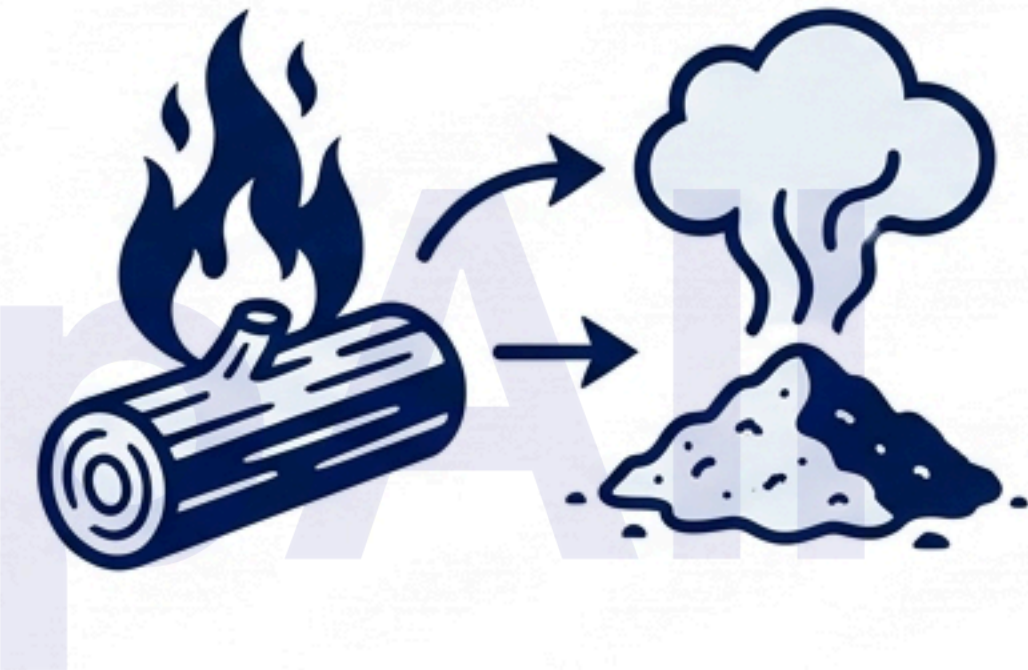


When matter changes state (e.g., solid to liquid), the molecular structure remains intact.

100g Ice $\rightarrow$ 100g Water

No Net
Mass
Change

Chemical Change



Even when matter entirely changes its chemical identity through combustion, the total mass remains identical.

100g Wood + O₂ $\rightarrow$ 100g Ash + Gas



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$$E=mc^2$$



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The Empirical Proof



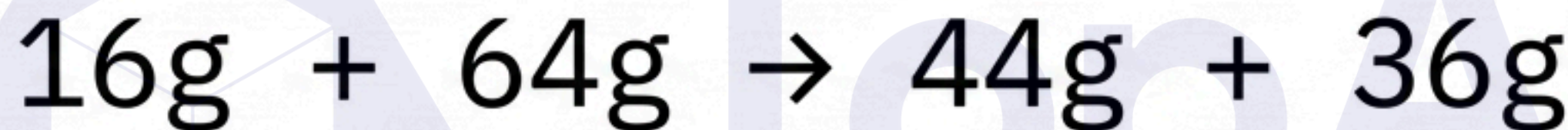
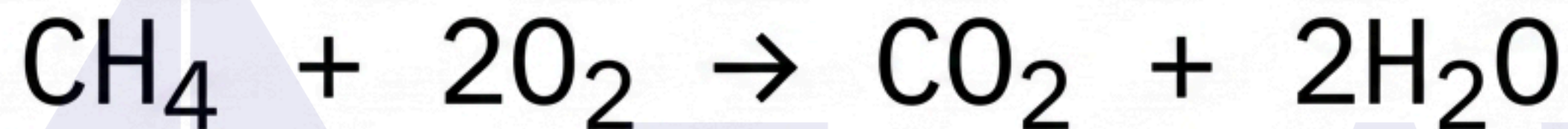
If the vessel is open, gas escapes, creating the illusion of lost mass.

Atoms Rearrange But Total Mass Stays Constant



Chemical reactions are simply the reorganization of atoms. No building blocks are created, and none are destroyed—they simply change partners. This mechanism, formalized by Dalton, explains why mass is perfectly conserved on a microscopic level.

The Rule in Practice



$$80\text{g} = 80\text{g}$$

Key takeaway: reactant mass = product mass



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