



Breaking Compounds Apart

Mastering Decomposition Redox Reactions

The Exact Opposite of Combination

A **decomposition reaction** leads to the breakdown of a single compound into two or more components.

Combination



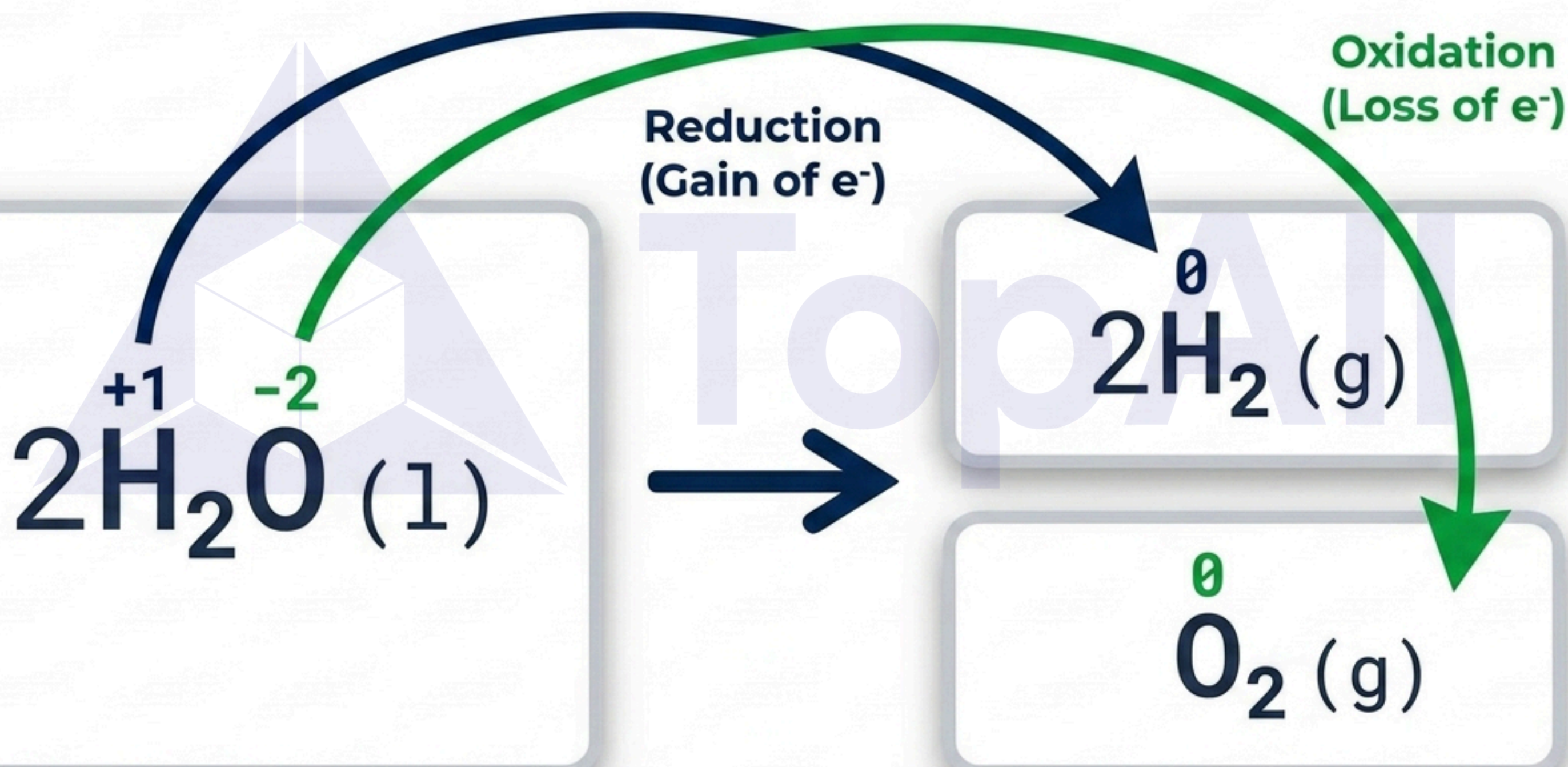
Decomposition



Critical Condition: For a decomposition to be a redox reaction, at least one product must be in the elemental state (Oxidation Number = 0).

The Classic Split: Water

Broken Molecule





You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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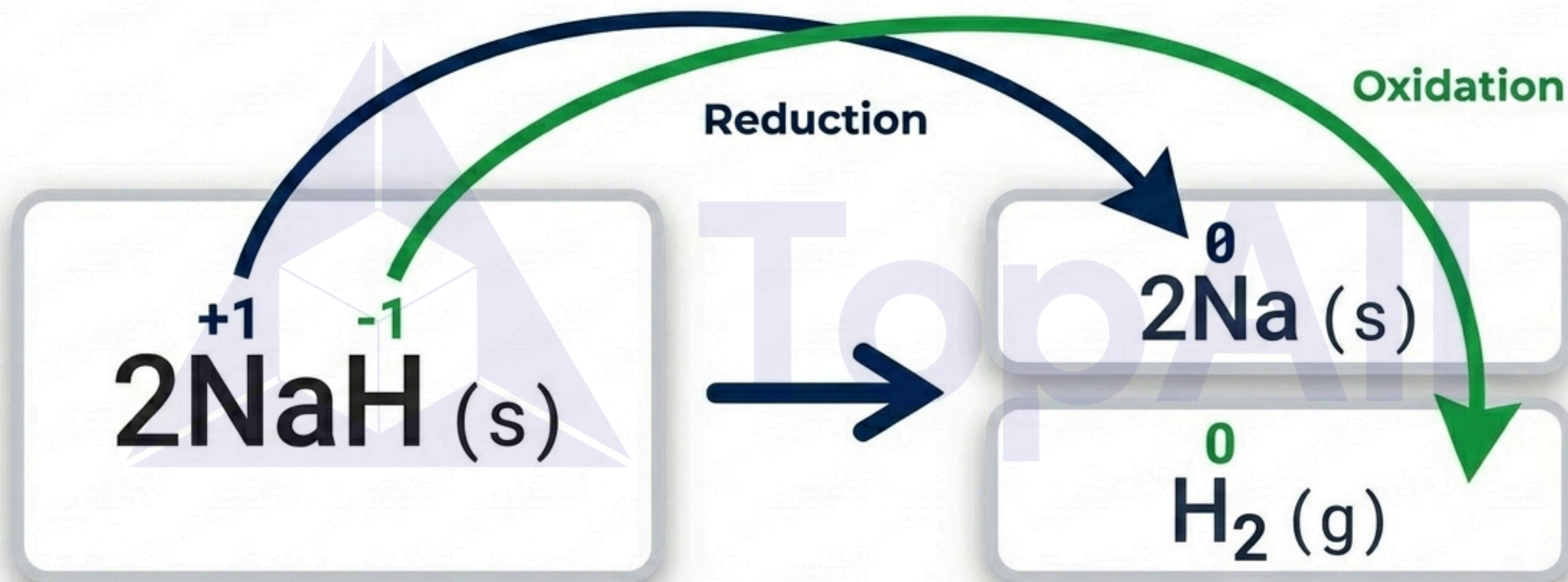
Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



The Hydride Shift: Sodium Hydride

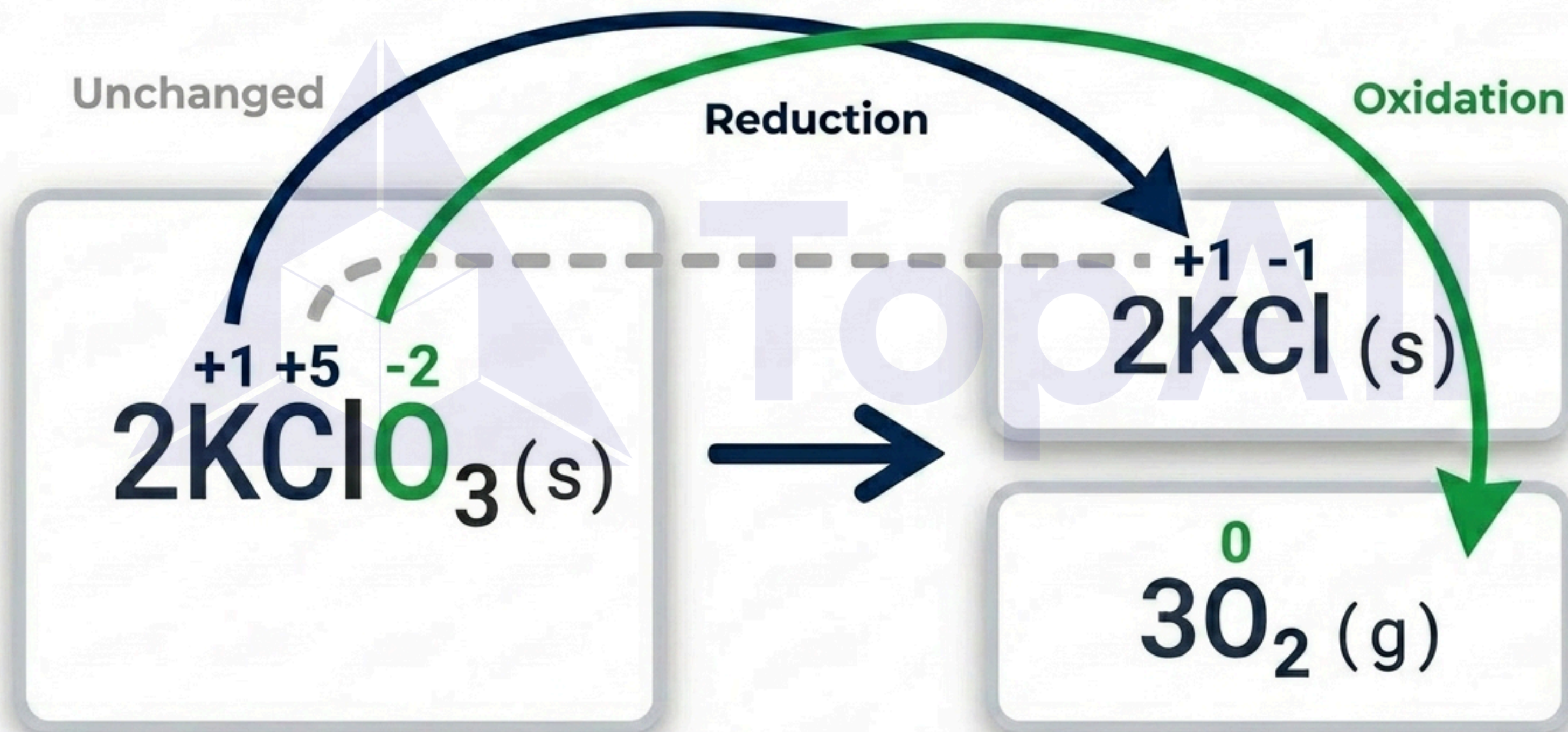
Broken Molecule



NEET Focus: Hydrogen acts as the electronegative element here (Hydride, -1 state) and oxidizes to its elemental form.

Complex Breakdown: Potassium Chlorate

Partial element shifts are still valid redox decompositions, provided electron transfer occurs and at least one elemental product is formed.



The Exam Trap: Chemical vs. Redox

All decomposition reactions are not redox reactions. Thermal breakdown without electron transfer is strictly chemical decomposition.

Trap!

Redox Decomposition



Non-Redox Decomposition



Ca: +2 → +2

C: +4 → +4

O: -2 → -2

The Golden Exam Rule

1

Always check the oxidation number change.

If numbers remain constant across the yield arrow, it is NOT a redox decomposition.

2

The Ultimate Shortcut

Look for the appearance of an element in its standard state (0) on the product side. If a standard state appears, electrons have moved.





You've Learned the Theory.

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