

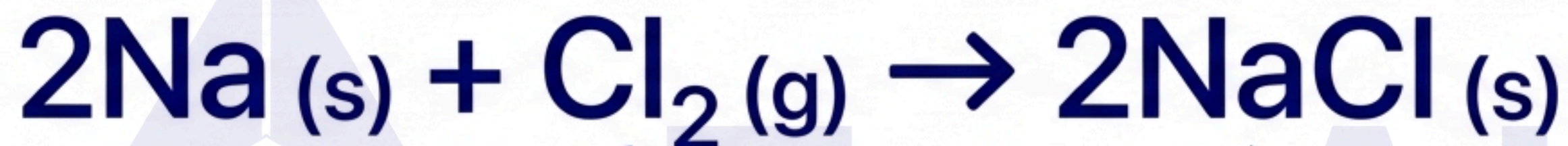
The Electron Transfer View of Redox

Beyond Oxygen and Hydrogen: The Subatomic Ledger of Loss and Gain.



The Macro to Micro Bridge

Macro View



Micro View



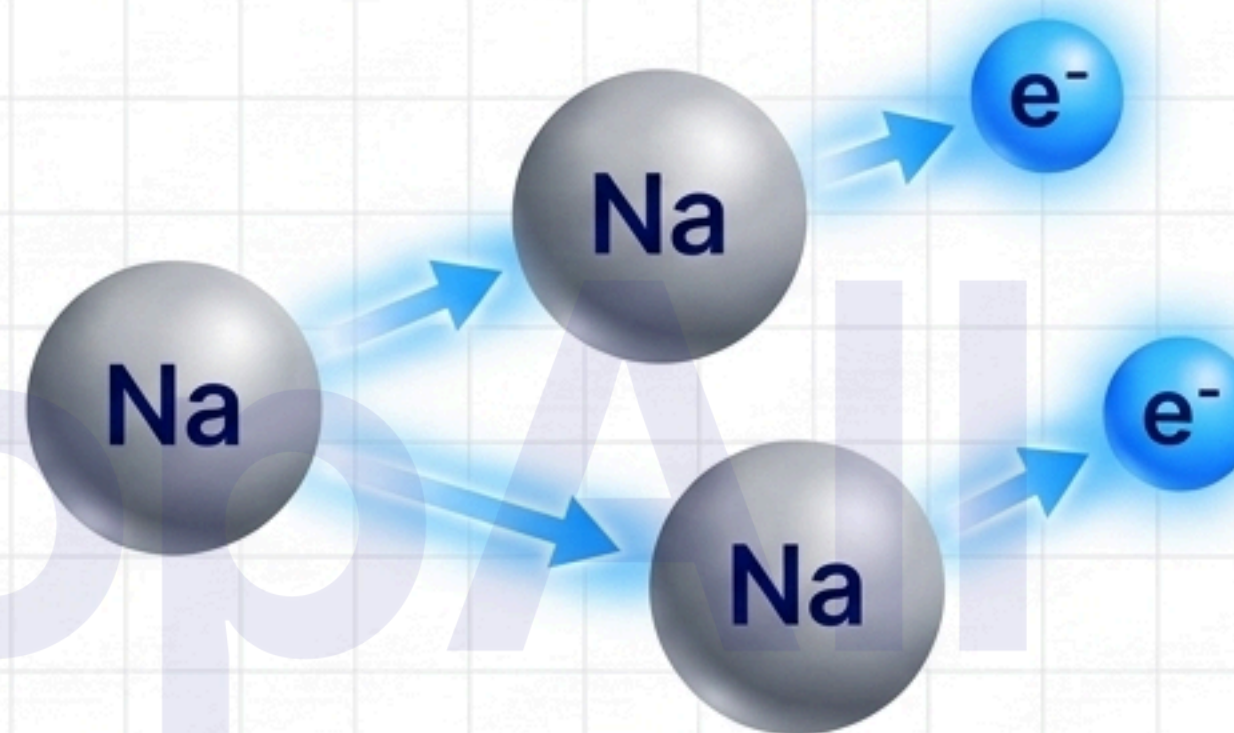
Charge Shift

Because NaCl is an ionic compound, this reaction implies a massive shift in charges. Neutral elements transformed into charged ions.

[Insight: Charges cannot appear out of nowhere. Electrons must have moved.]

Half Reaction Autopsy: The Donor

The Subatomic Ledger



Sodium yields its valence electrons to become a positively charged cation.
In our ledger, this is a strict outflow of currency.

[Mechanism: Loss of Electrons]



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

$$E=mc^2$$



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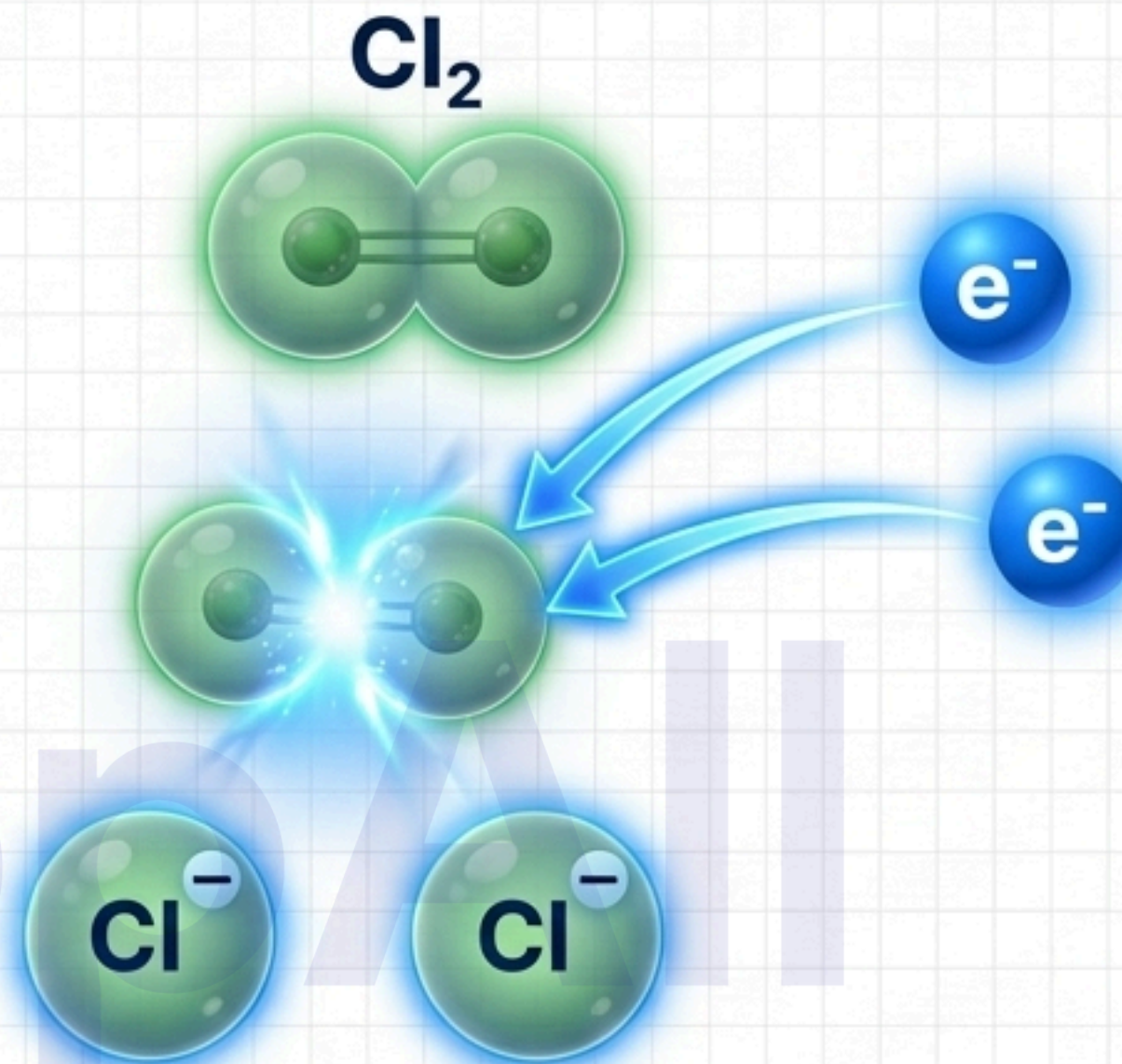
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Half Reaction Autopsy: The Acceptor



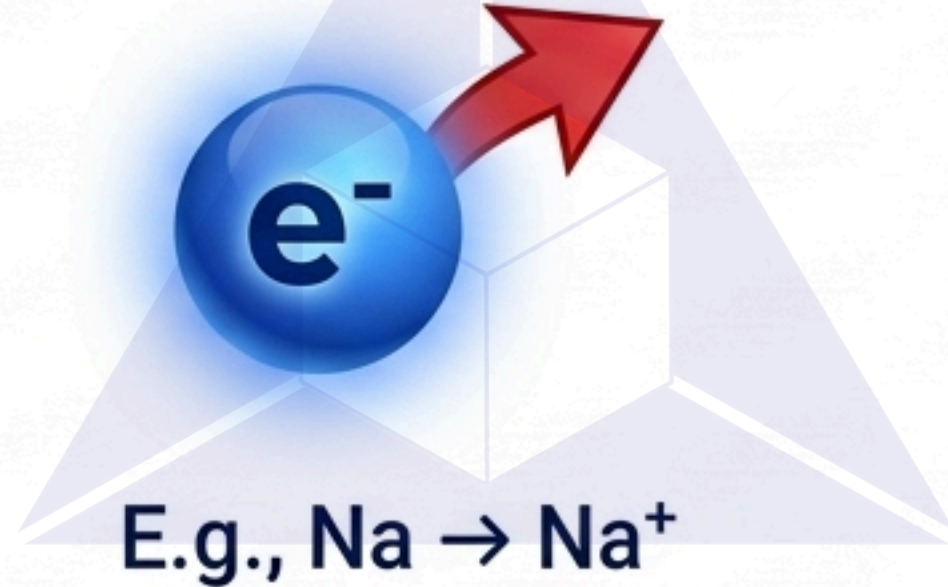
Chlorine captures the incoming electrons to form negatively charged anions.
In our ledger, this is a strict inflow of currency.

[Mechanism: Gain of Electrons]

Universal Definitions of Redox

OXIDATION

Loss of electron(s) by any species.



REDUCTION

Gain of electron(s) by any species.



Formula Bank: Mnemonic Device

OIL RIG

Oxidation Is Loss, Reduction Is Gain (of electrons).



The Agents of Change

Reducing Agent (Reductant)			Oxidising Agent (Oxidant)		
1	Definition	Donor of electron(s).	1	Definition	Acceptor of electron(s).
2	Ledger Role	The entity supplying the currency.	2	Ledger Role	The entity collecting the currency.
3	Case Study Match	Sodium (Na)	3	Case Study Match	Chlorine (Cl ₂)



Redox reactions are perfectly balanced ledgers. An oxidising agent cannot accept electrons unless a reducing agent is there to donate them. They always occur simultaneously.

The Inverse Naming Convention

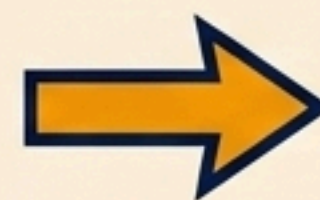


JEE Trap Alert

Species loses
electrons



It is Oxidised
(Fate)



Therefore, it acts as the
Reducing Agent (Role)

Species gains
electrons



It is Reduced
(Fate)



Therefore, it acts as the
Oxidising Agent (Role)

The Final Proof

In $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$: Sodium is oxidised, making it the reducing agent.
Chlorine is reduced, making it the oxidising agent.



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