

## IGCSE Chemistry Complete Revision Summary

### ELECTROLYSIS

- a) Atomic Structure
- b) Periodic Table
- c) Structure and Bonding
- d) Quantitative Chemistry
- e) Chemical Changes
- f) Energy Changes

- Reactivity of Metals
- Reactivity Series
- Extraction of Metals
- Acids and Bases
- Neutralization
- Making Soluble Salts
- Making Insoluble Salts
- Titration
- Electrolysis
- Electrolysis of molten compounds
- Electrolysis of aqueous solutions
- Electrolysis of Aluminium

[www.expertguidance.co.uk](http://www.expertguidance.co.uk)  
[mahima.laroyia@expertguidance.co.uk](mailto:mahima.laroyia@expertguidance.co.uk)  
+447448352272

# ELECTROLYSIS

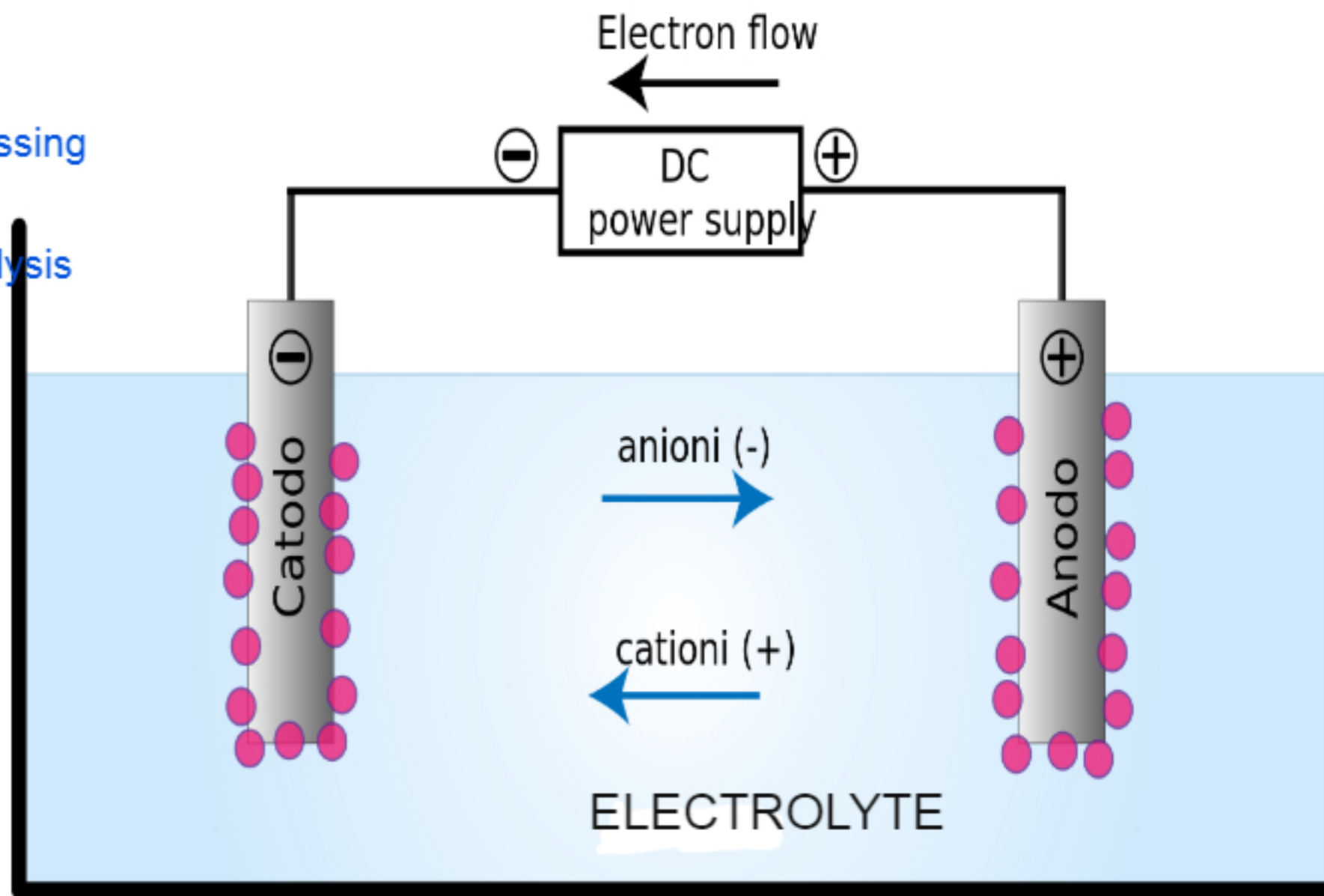
Electrolysis — The breaking of ionic compound by passing electricity.

Electrolyte — The substance that undergoes Electrolysis

Electrode — The two conducting rods dipped in an electrolyte

Cathode — Where Cations (+ve charge ions) go. So it is negatively charge electrode

Anions — Where anions (-ve charge ions) go. So it is positively charged.



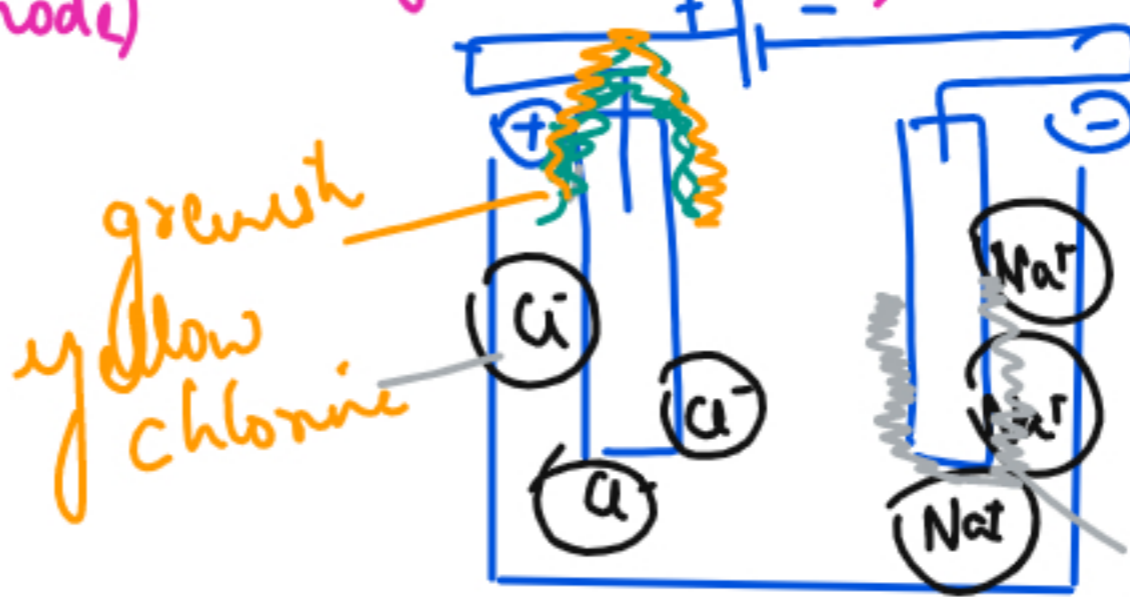
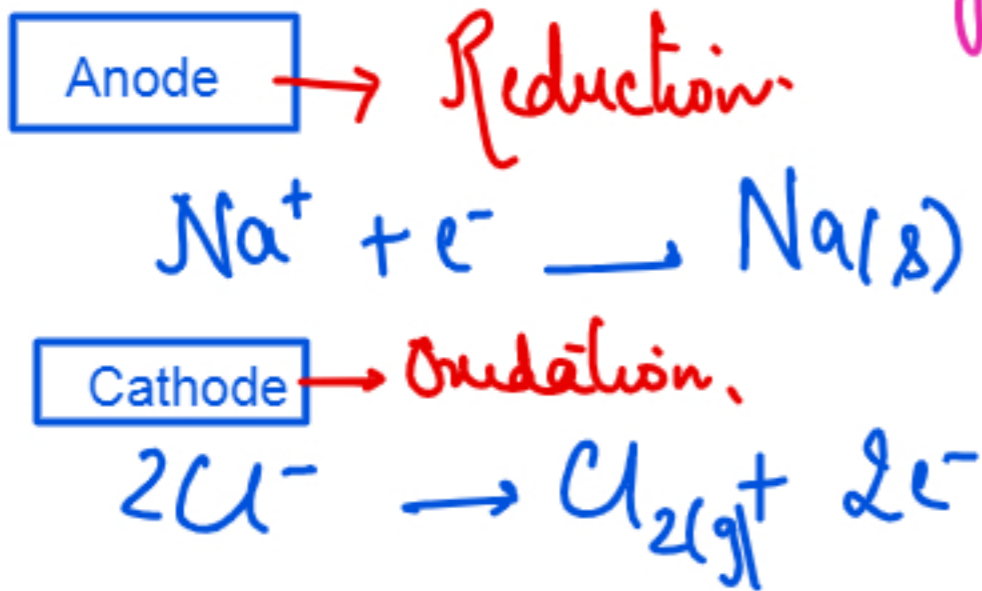
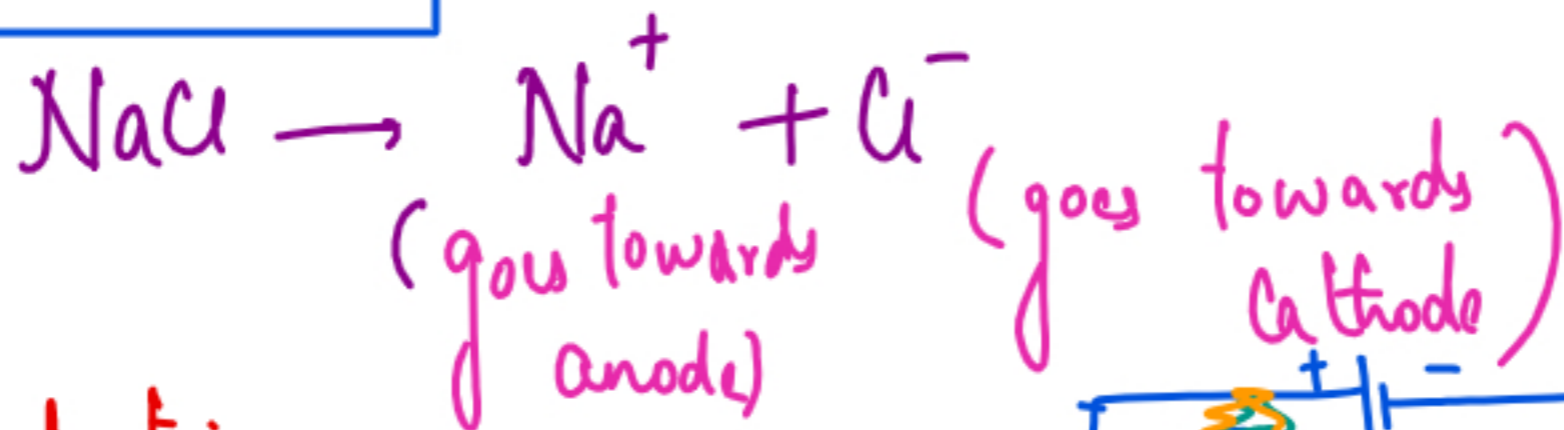
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ELECTROLYSIS OF MOLTEN IONIC COMPOUNDS

Ionic compounds conduct Electricity when in molten or in solution as the ions are free to move when they are in solvent or dissolved in water.

Molten Sodium Chloride

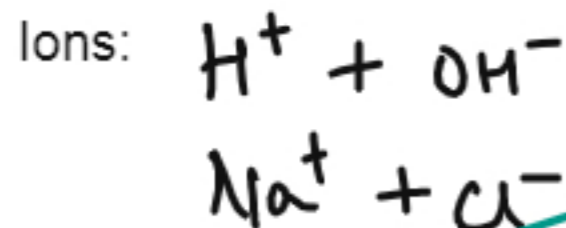


- O - Oxidation
- I - Is
- L - Loss
- R - Reduction
- I - Is
- G - Gain

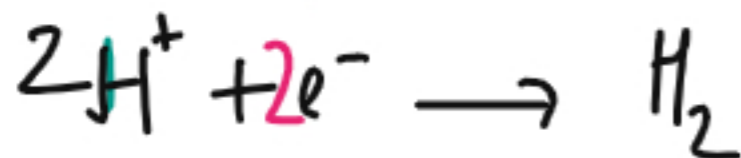
# ELECTROLYSIS IN SOLUTIONS

In Solution the water also gets ionized and dissociate into  $H^+$  and  $OH^-$  which also competes with the ionic compounds ions to discharge.

## Sodium Chloride Solution



At Cathode



At Anode



Remaining Solution



Rule

At the cathode, the element with least reactivity will get discharged and gains electrons. For that we have to look at the reactivity series

For anode, the rules is :-  
**Halide >  $OH^-$  > other negative Ions.**

## Potassium Sulphate Solution



At Cathode



At Anode



Remaining Solution

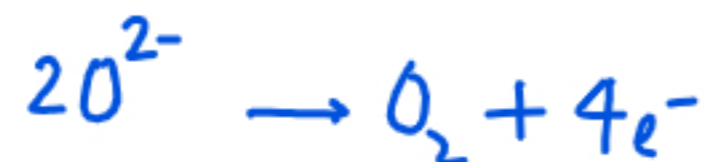




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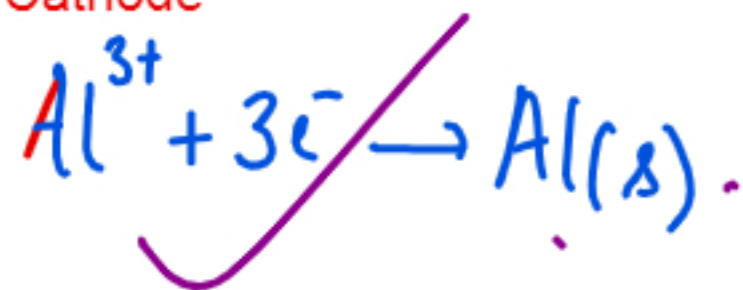
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At Anode



oxygen evolved reacts with graphite electrode forming carbon dioxide. Therefore they are used up and needs regular replacing

At Cathode



www.expertguidance.co.uk  
mahima.laroyia@expertguidance.co.uk  
+447448352272

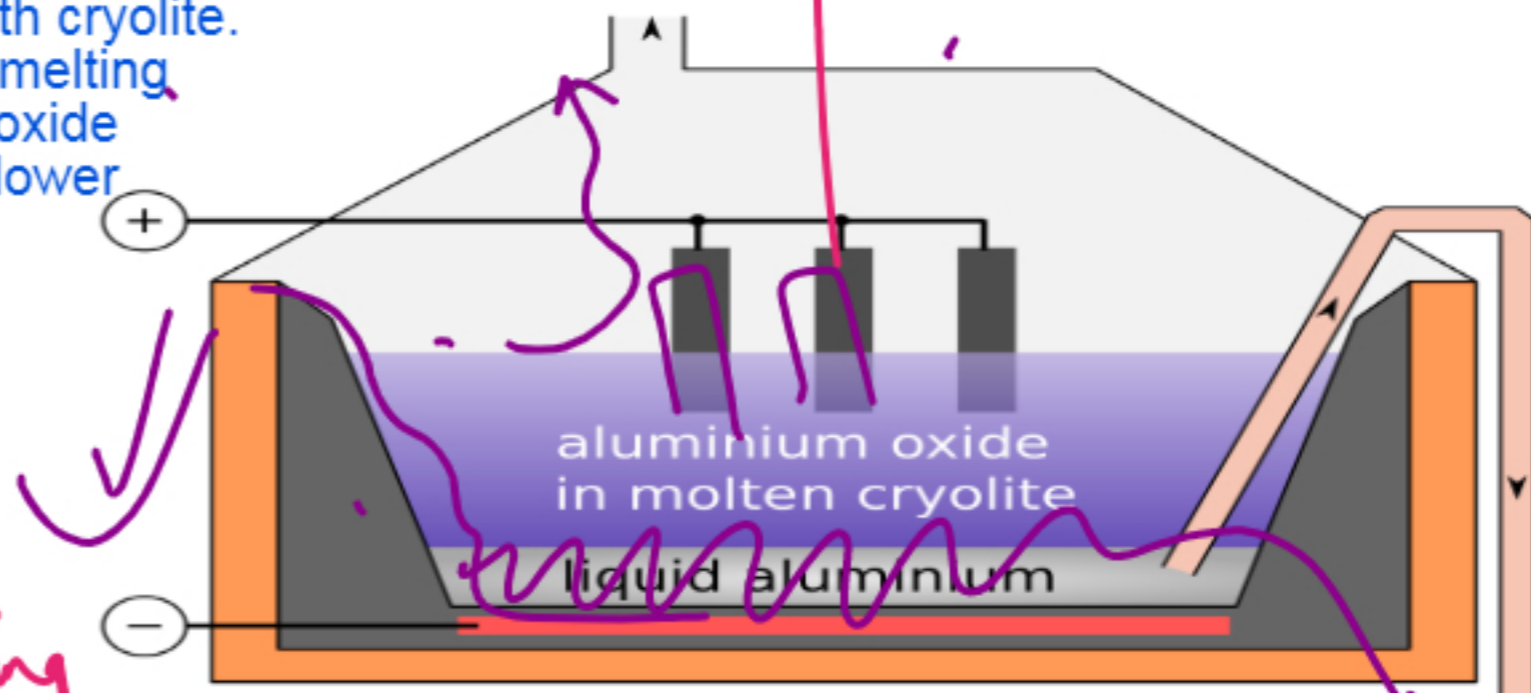
**ELECTROLYSIS OF ALUMINIUM OXIDE**

Bauxite an ore of aluminium is used which contains aluminium in the form of aluminium oxide.

Bauxite is mixed with cryolite. Cryolite lowers the melting point of aluminium oxide making it melt at a lower temperature.



(carbon lining as negative electrode)



Source: Wikimedia Commons

KEY TERMS

Acids  
Bases  
Metals  
Reactivity Series  
Reduction  
Oxidation  
Alkali  
Salt  
Neutralization Reaction  
Indicators

TEST  
YOURSELF

pH scale  
Soluble Salts  
Insoluble Salts  
Electrolysis  
Electrode  
Anode  
Cathode  
Electrolyte  
Ionic compounds  
Cryolite  
Bauxite

Ore  
Metal Extraction

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