

CHEMICAL EFFECTS OF ELECTRIC CURRENT

(For Board)

Chemical Effects Of Electric Current:

Good conductors of electricity:

Materials which **allow** electric current to pass through them.

Ex: Copper & aluminium.

Poor conductors of electricity:

Materials which **don't** allow electric current to pass through them.

Ex: Rubber, plastic & wood.

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Do Liquids Conduct Electricity?

When the **liquid** between the two ends of the tester **allows** the electric current to pass, the circuit of the tester becomes **complete**.

The **current flows** in the circuit **&** the **bulb glows**.

When the liquid **don't** allow the electric current to pass, the circuit of the tester is **not complete &** the **bulb does not glow**.

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Do Liquids Conduct Electricity?

Not all liquids can conduct electricity.

However, **some liquids** are **good conductors** of electricity while few are **poor conductors** of electricity.

The **water** obtained from sources such as taps, hand pumps, wells & ponds are **not pure** & contain several **dissolved salts**.

Such water is **good conductor** of electricity.

While **distilled water** free of salt & is a **bad conductor** of electricity.

Most liquids that conduct electricity are solutions of **acids, bases & salts**.

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Chemical Effects of Electric Current

The **passage** of an **electric current** through a conducting solution causes **chemical reactions**.

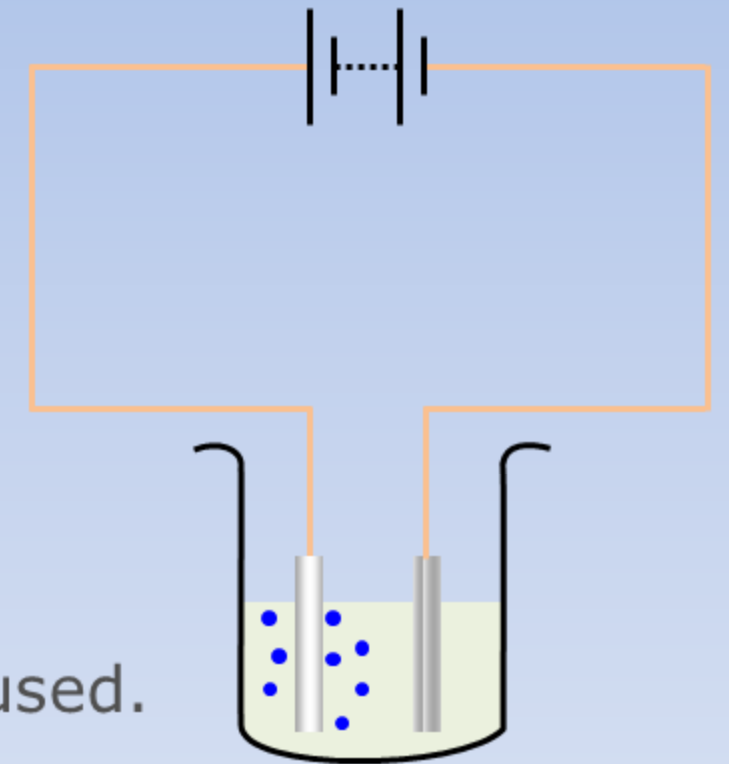
Chemical effects:

Formation of **gas bubbles** at electrodes.

Deposition of metals at electrodes.

Changes in **solution color**.

The reaction would depend on what solution **&** electrodes are used.



Electroplating:

The process of depositing a layer of any metal on another metal by means of electricity.



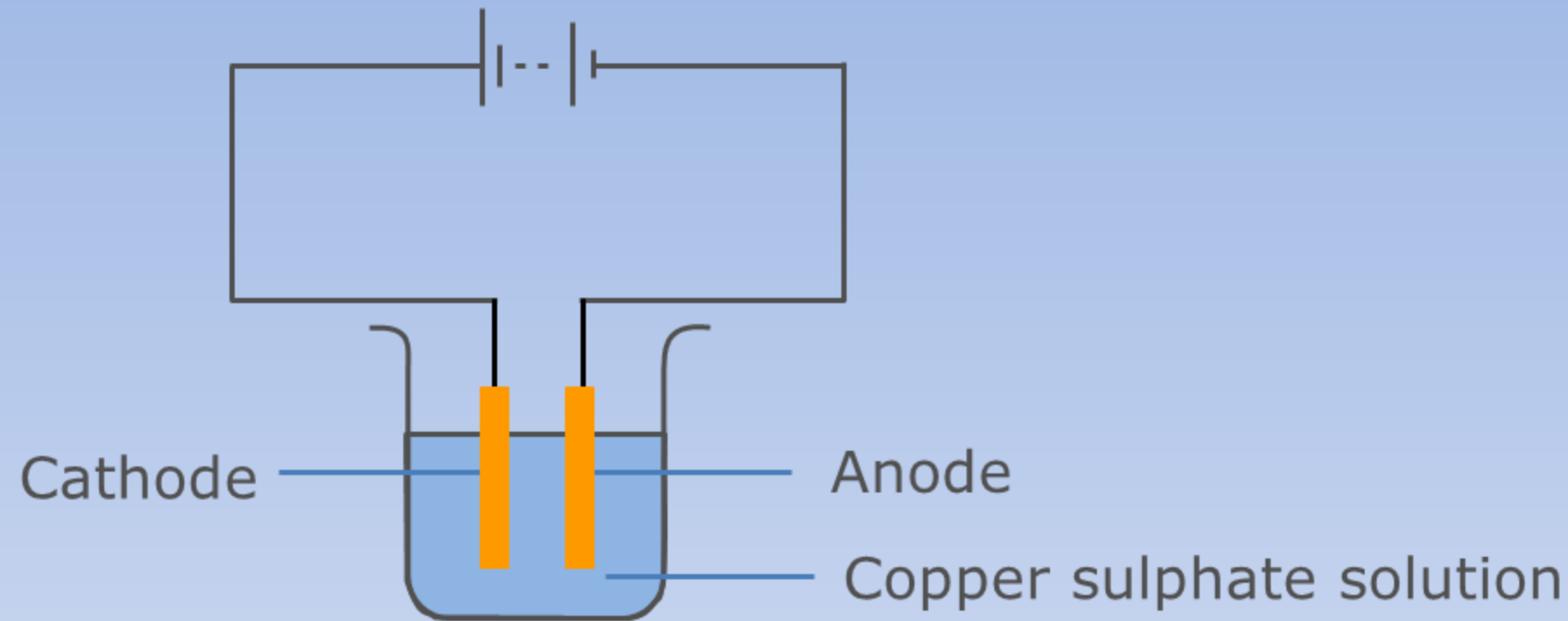
Spoon is coated with gold

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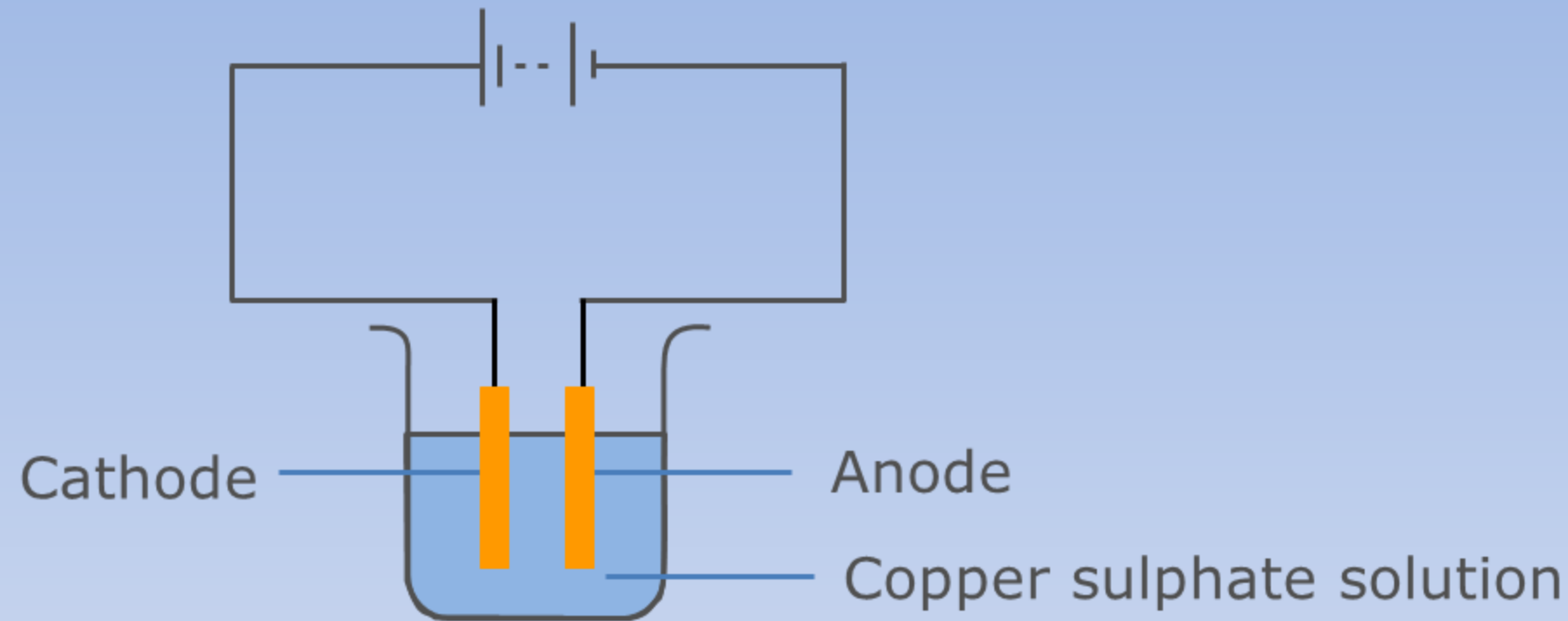
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Electroplating:

When electric current is passed through the copper sulphate solution it dissociates into copper & sulphate.

The free copper gets deposited on the cathode which is connected to the negative terminal of the battery

Electroplating:

From the **other electrode (anode)**,

an equal amount of copper gets dissolved in the solution.

Thus, the loss of copper from the solution is restored & the process continues.

Hence, **copper** gets **transferred** from one electrode to the other.

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Electroplating:

Electroplating is the most common **applications** of chemical effects of electric current.

It is a very useful process.

It is widely used in industry for **coating metal** objects with a thin layer of a
different metal.

The layer of metal deposited has some desired property,
which the metal of the object lacks.

Chromium plating is done on many objects such as car parts, bath taps,
kitchen gas burners, bicycle handlebars, wheel rims & many others.

Electroplating:

Chromium has a shiny appearance.

It **does not** corrode.

It resists scratches.

However, **chromium** is **expensive** & it may not be economical to make the whole object out of chromium.

So the object is made from a cheaper metal & only coating of chromium over it is deposited.

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Electroplating:

Jewellery makers electroplate **silver & gold** on less expensive metals.

Tin cans, used for **storing food**, are made by electroplating **tin** onto **iron**.

Tin is **less reactive** than **iron**.

Thus, food does not come into contact with **iron** & is protected from getting spoilt.

Iron is used in **bridges & automobiles** to provide strength.

However, **iron** tends to **corrode** and **rust**.

So, **coating** of **zinc** is deposited on **iron** to protect it from corrosion & formation of rust.

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