

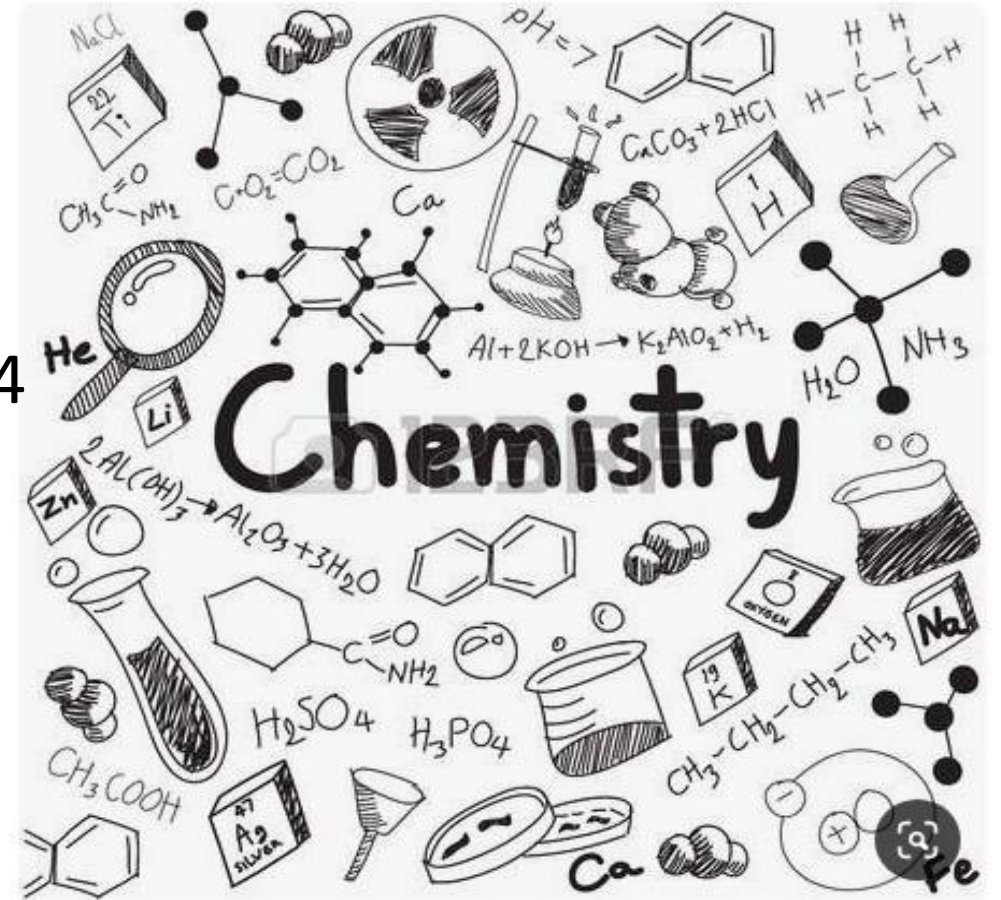
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الوطنية الأرثوذكسية
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The National
Orthodox School
Shmaisani

- Lesson: Reactions of metals with acids
- Scholastic Year: 2023-2024
- Grade: 7CS



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معتمدة من

Metal+ Acid \rightarrow Salt+ Hydrogen *MASH reaction*

When metals react with acids, they produce salt and hydrogen gas.

The type of the salt depends on the type of the acid used in the reaction.

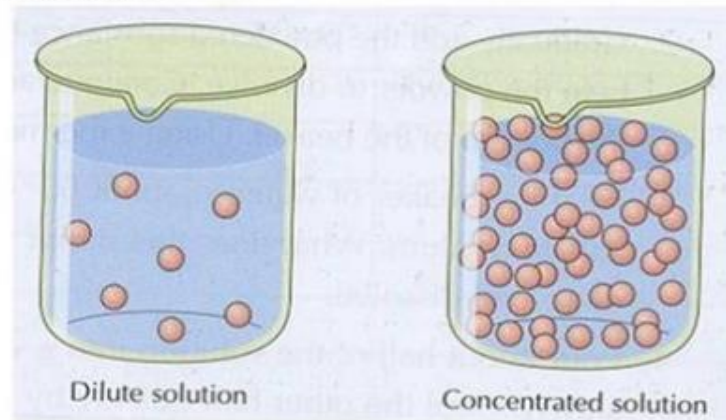
- Nitric acid HNO_3 gives nitrate salts.
- Sulfuric acid H_2SO_4 gives sulfate salts
- Hydrochloric acid HCl gives chloride salts



What is the difference between diluted and concentrated acid?

A **concentrated solution** contains a large amount of solute per litre of solution

A **dilute solution** contains a small amount of solute per litre of solution

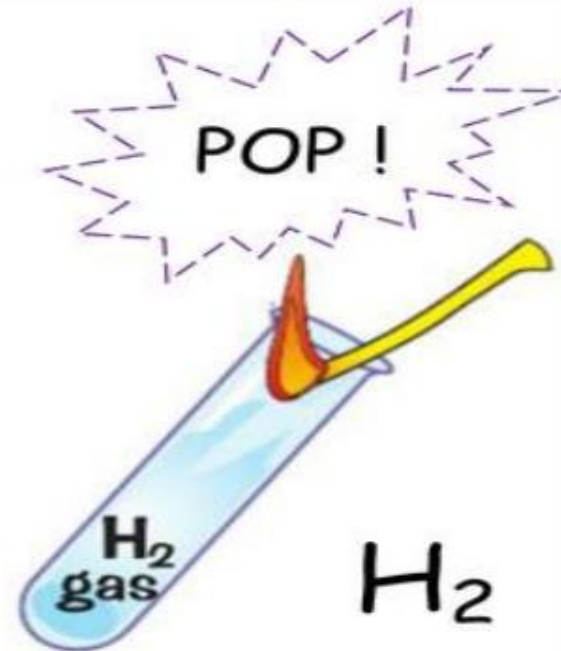


In a concentrated acid, more acid particles will be involved in the reaction, the reaction will be faster.

How to test for Hydrogen gas?

Test for Hydrogen

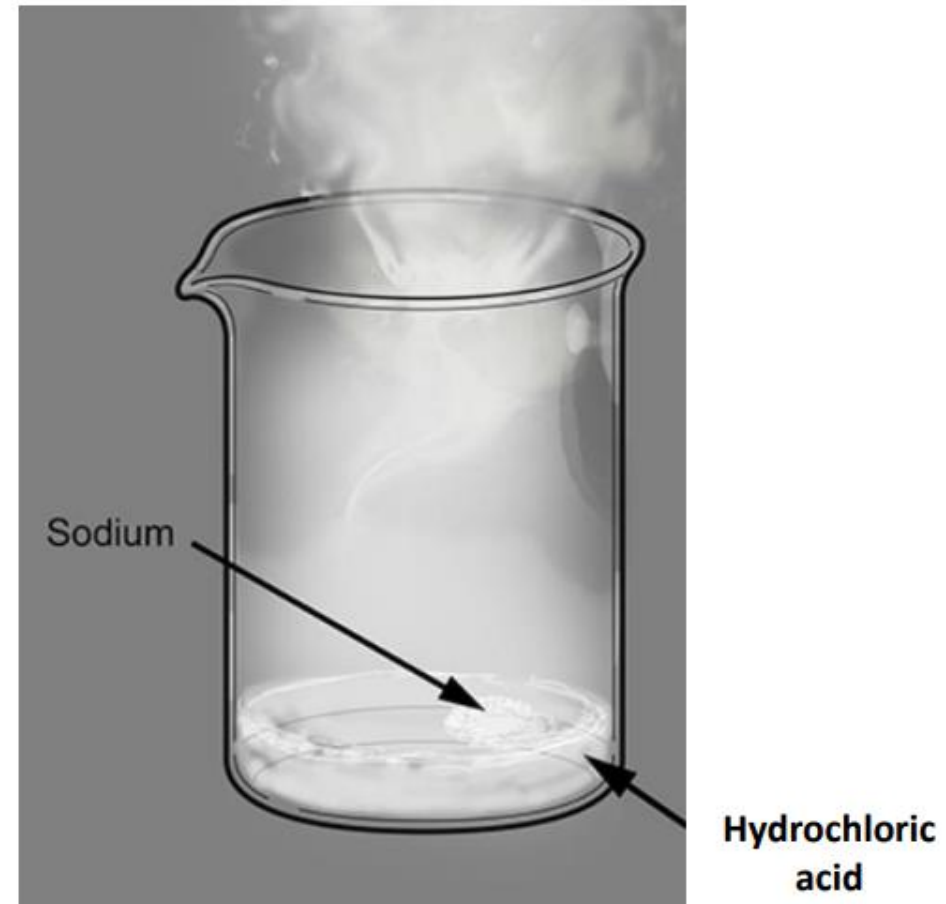
Hydrogen makes
a **squeaky pop**
with a lighted
splint



Sodium Na

With diluted acid

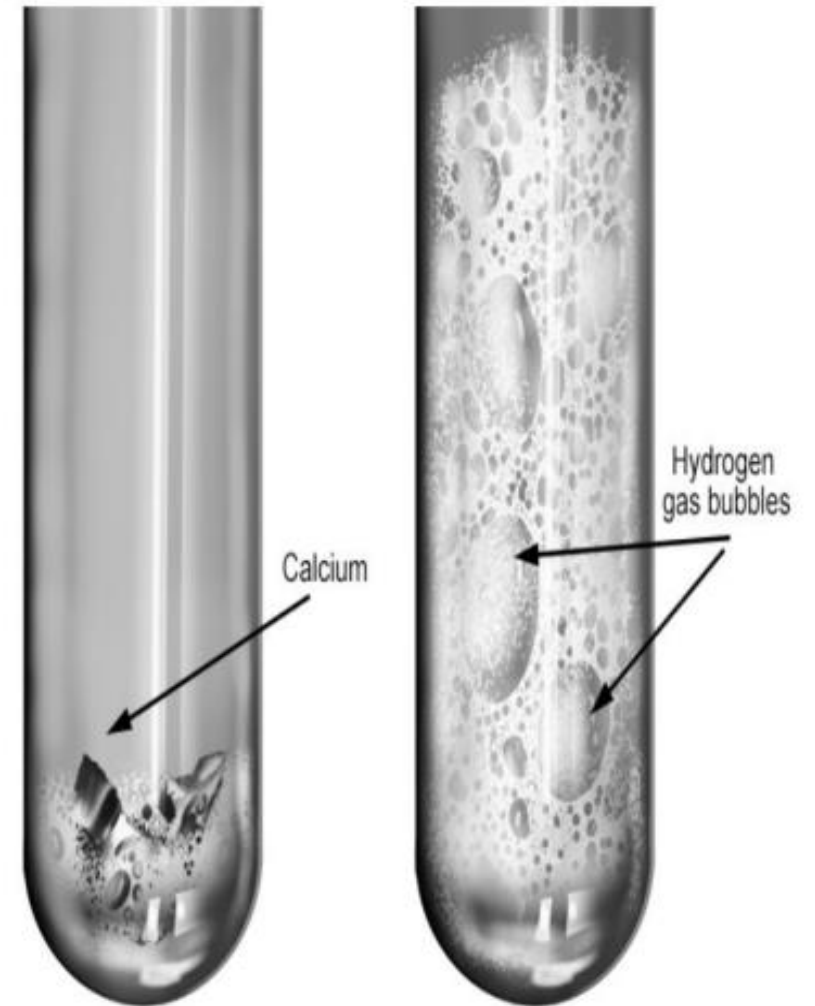
- Vigorous reaction.
- Exothermic reaction
- Hydrogen gas is produced



Calcium Ca

With diluted acid

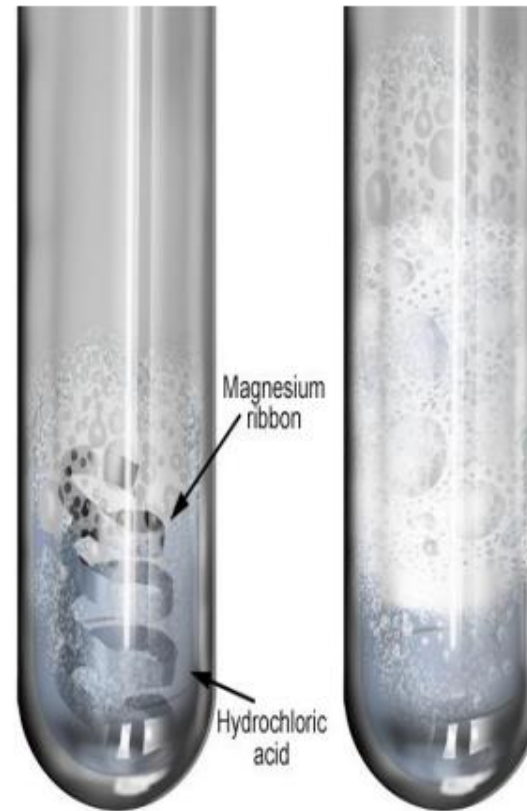
- The reaction between calcium and hydrochloric acid is slower and less violent than when G1 metals react with acid.
- Exothermic reaction (less heat is produced than G1 elements).
- Hydrogen gas is given out



Magnesium Mg

With diluted acid

- Slow reaction in the beginning.
- Bubbles of hydrogen gas are formed on the surface of magnesium.



With concentrated acid

- Fast reaction.
- Mg ribbon disappeared.
- More bubbles are formed.
- Exothermic reaction (less heat than Ca is produced)

Zinc Zn

With diluted acid

- Slow reaction
- Few bubbles are formed on the surface of zinc (less than the amount of bubbles formed on Mg ribbon)



With concentrated acid

- Stronger reaction than in diluted acid (but slower than Mg ribbon reaction)
- More Bubbles are formed on the surface of zinc.

Iron Fe

With diluted acid

- No reaction



With concentrated acid

- The reaction between iron and acid is slower than the reaction with zinc, with much smaller hydrogen bubbles produced.

Copper Cu

With diluted acid

- No reaction



Copper in hydrochloric acid

With concentrated acid

- No reaction

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Thank you