

# CHEMISTRY DAILY PLAN

**Class:**

**Date:**

**Subject: Methane**

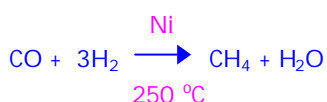
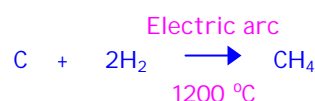
**Time:**

Methane is the simplest alkane. It is commonly found in nature wherever bacteria decompose organic matter in the absence of oxygen, as in marshes, swamps, or the muddy sediment of lakes, so its common name is marsh gas.

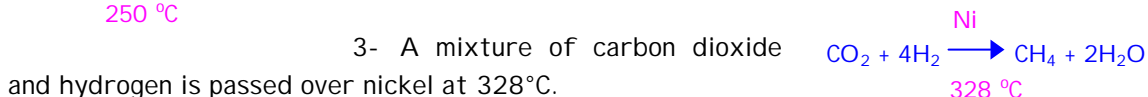
## PREPARATION

Methane can be obtained by any of the general methods described before. In addition to these methods, some special methods are used to obtain methane.

- 1- The elements carbon and hydrogen are reacted in the electric arc to obtain methane.



- 2- A mixture of carbon monoxide and hydrogen is passed over nickel at about 250°C.



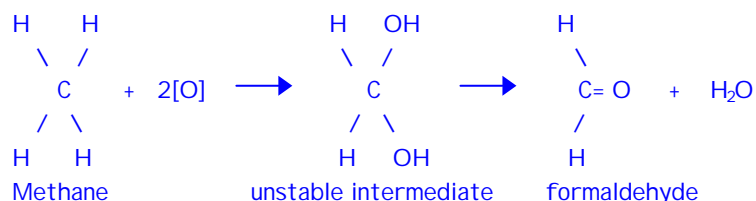
- 4- A mixture of aluminum carbide ( $\text{Al}_4\text{C}_3$ ) and water is heated gradually.



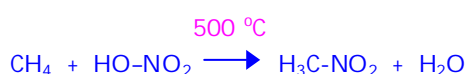
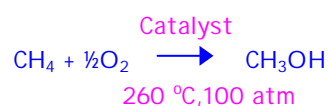
## REACTIONS

Methane behaves like a typical saturated hydrocarbon and gives all the general reactions of the class. In addition to inertness to most reagents such as acids, bases, halogenation and oxidation reactions, it gives the following reactions.

- 1- Methane is oxidized to formaldehyde on incomplete combustion at 350 - 500°C.



- 2- When mixed with oxygen and passed over a catalyst at 260°C and 100 atm pressure, methane can be oxidized to methyl alcohol.



- 3- When methane is heated with nitric acid ( $\text{HNO}_3$ ) at high temperatures, nitromethane is obtained.