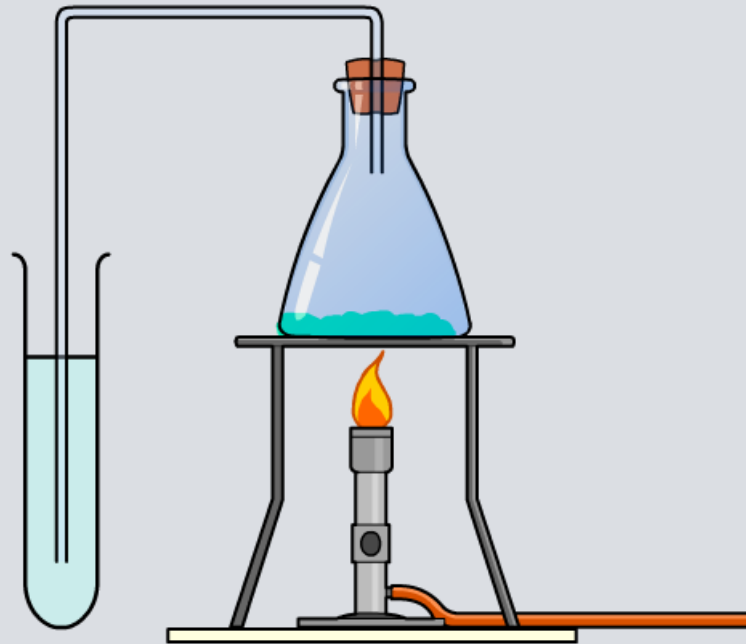


## Thermal Decomposition



# What is thermal decomposition?

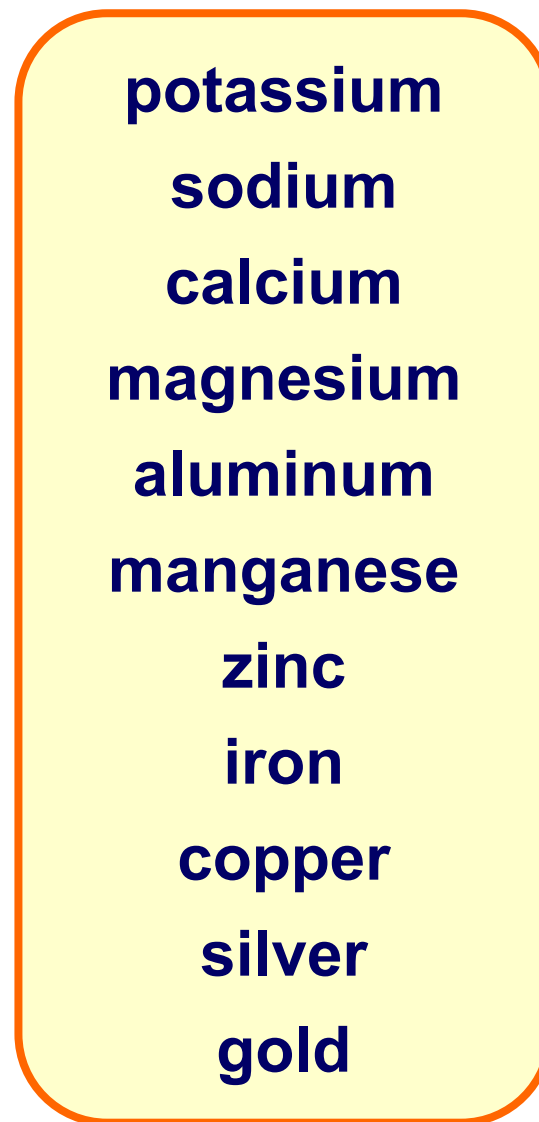


# Thermal decomposition – easy or hard?

The more reactive a metal, the harder it is to decompose its carbonate by heating.

Predict how easy it is to decompose these carbonates:

- copper carbonate
- calcium carbonate
- sodium carbonate
- manganese carbonate
- zinc carbonate
- iron carbonate.



potassium  
sodium  
calcium  
magnesium  
aluminum  
manganese  
zinc  
iron  
copper  
silver  
gold



## What is the order of difficulty of decomposition?

decomposes on  
strong heating



decomposes on  
gentle heating

- 1 calcium carbonate
- 2 sodium carbonate
- 3 iron carbonate
- 4 copper carbonate
- 5 zinc carbonate
- 6 manganese carbonate

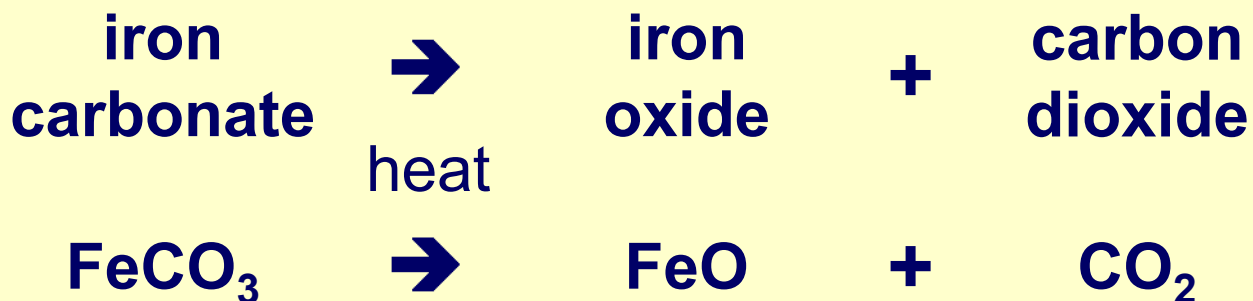


solve



# Thermal decomposition of carbonates

When the metal carbonate is heated, it decomposes to produce a metal oxide and carbon dioxide.



What are the word and symbol equations for the thermal decomposition of these carbonates?

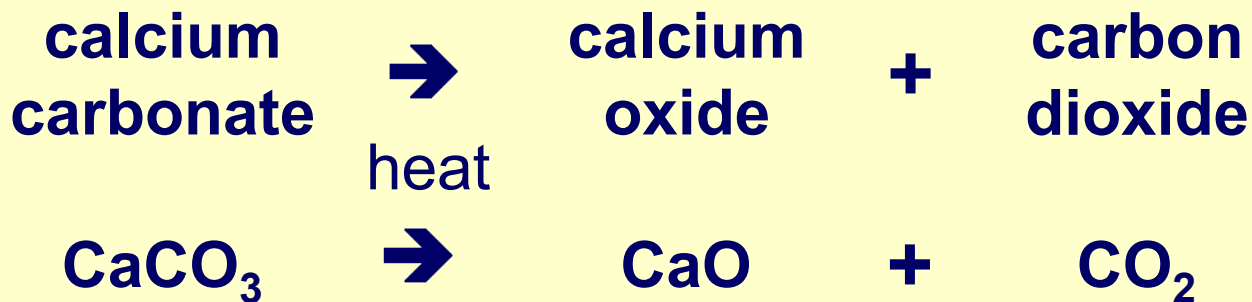
- copper carbonate
- manganese carbonate
- zinc carbonate.



# Heating calcium carbonate

When calcium carbonate is heated, it decomposes to produce calcium oxide and carbon dioxide.

This reaction is carried out in industry to make calcium oxide (quicklime) from calcium carbonate (limestone):



Calcium oxide is used to make concrete and calcium hydroxide (slaked lime).



# Heating sodium hydrogencarbonate

Baking powder and self-rising flour contain sodium hydrogencarbonate (also known as sodium bicarbonate).

When sodium hydrogencarbonate is heated, it decomposes to make sodium oxide, carbon dioxide and water.

What effect does this reaction have on dough as it is being baked?

The carbon dioxide released during the reaction creates tiny bubbles, which help the dough to rise.



Jupiterimages Corporation



# What is the decomposition equation?

What is the word equation for the thermal decomposition of sodium hydrogencarbonate?

?



?

+

?

+

?

sodium  
carbonate

carbon  
monoxide

water

carbon  
dioxide

copper  
carbonate

sodium  
hydrogen-  
carbonate

sodium

sodium  
oxide

?

C

solve

