Lesson 10- Thermal Decomposition

Chemistry- Key Stage 3

Energetics

During endothermic reactions...

A

The temperature of the surroundings increases

B

The temperature of the surroundings decreases

C

The particles decrease in temperature

D

The particle temperature increases

During endothermic reactions...

A

Bonds are broken

B

Nothing happens to the bonds

C

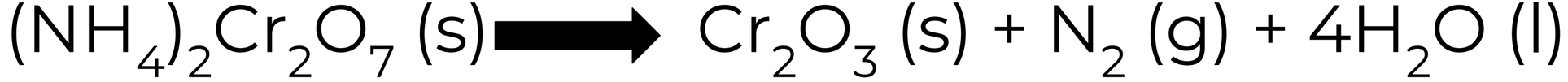
New bonds are made

D

Bonds are broken and made

Thermal Decomposition of Ammonium Dichromate

Reactant → Products



Naming products of thermal decomposition

Copper carbonate → Copper oxide + Carbon dioxide

$CuCO_3$ → CuO + CO_2

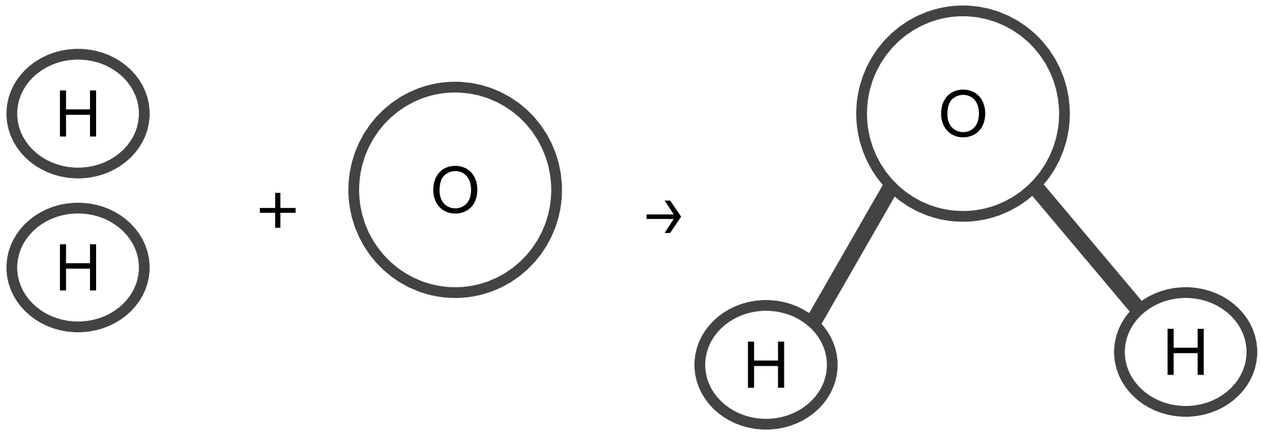
Symbols
Mg= Magnesium
Zn= Zinc
O= Oxygen
C= Carbon

1. _____ → Magnesium oxide + Carbon dioxide
   _____

2. Zinc carbonate → _____ Zinc oxide + _____ _____

Conservation of mass

Mass is never created or destroyed



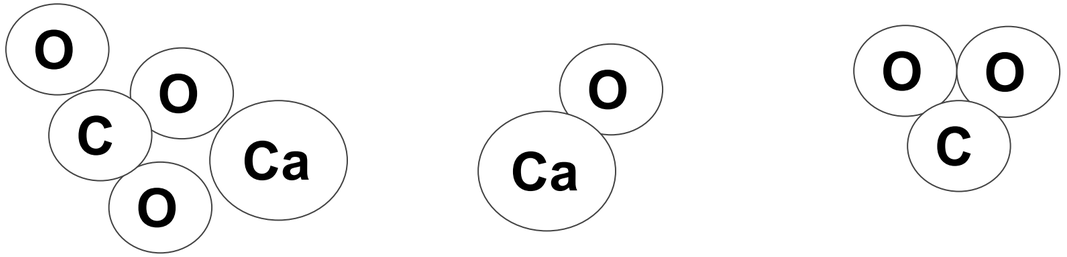
?g + 22g → 43g

Mass of reactants = mass of products

Complete the task

Describe and explain in terms of conservation of mass the thermal decomposition of calcium carbonate

Calcium carbonate → calcium oxide + carbon dioxide



10g → 7g + ?g

Answers

During endothermic reactions...

A

The temperature of the surroundings increases

B

The temperature of the surroundings decreases

C

The particles decrease in temperature

D

The particle temperature increases

During endothermic reactions...

A

Bonds are broken

B

Nothing happens to the bonds

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Bonds are broken and made

Thermal Decomposition of Ammonium Dichromate

Reactant	Products
$(NH_4)_2Cr_2O_7$ (s) ⟶	Cr_2O_3 (s) + N_2 (g) + $4H_2O$ (l)

N=2	N=2
H=8	H=8
Cr=2	Cr=2
O=7	O=7

Naming products of thermal decomposition

1. **Magnesium** → Magnesium + carbon dioxide

   carbonate oxide

   $MgCO_3$ → MgO + CO_2

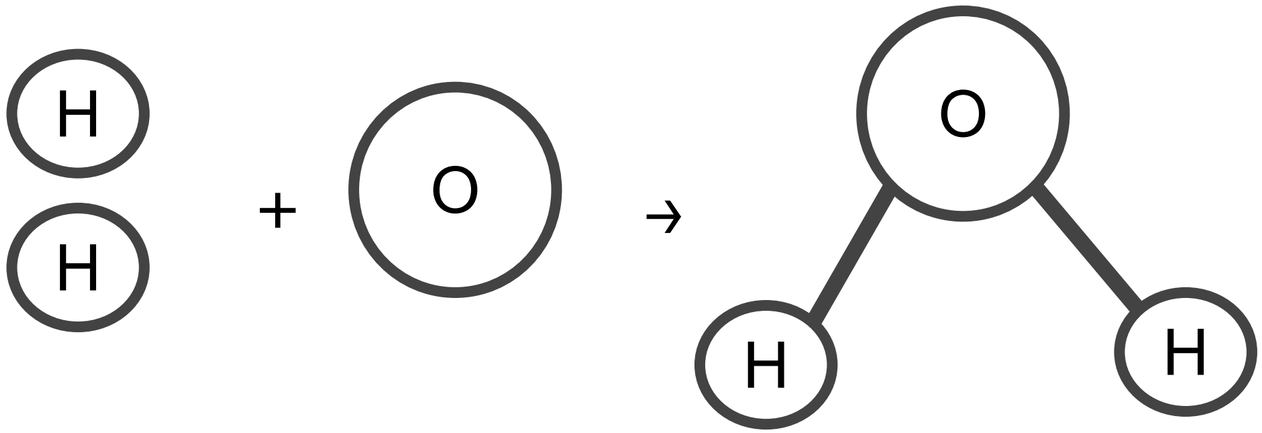
2. Zinc → Zinc + **carbon**

   carbonate **oxide** **dioxide**

   $ZnCO_3$ → ZnO + CO_2

Conservation of mass

Mass is never created or destroyed



21g + 22g → 43g

Mass of reactants = mass of products

Explain in terms of conservation of mass the thermal decomposition of calcium carbonate

- When calcium carbonate decomposes, it breaks down and produces calcium oxide and carbon dioxide.
- The mass of product = the mass of reactants.
- mass of $CaCO_3$ = 10g, mass of $CaO+CO_2$= 10g.
- 10g-7g (CaO)= 3g (CO_2)