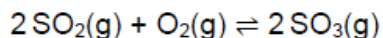


AQA – Equilibrium constant Kp for homogeneous systems – A2 Chemistry P1

1. No.5

0	5
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This question is about the equilibrium



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State and explain the effect, if any, of a decrease in overall pressure on the equilibrium yield of SO_3 **[3 marks]**

Effect _____

Explanation _____

0	5	.	2
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A 0.460 mol sample of SO_2 is mixed with a 0.250 mol sample of O_2 in a sealed container at a constant temperature.
When equilibrium is reached at a pressure of 215 kPa, the mixture contains 0.180 mol of SO_3

Calculate the partial pressure, in kPa, of SO_2 in this equilibrium mixture.**[4 marks]**Partial pressure of SO_2 _____ kPa

0 5 . 3

A different mixture of SO_2 and O_2 reaches equilibrium at a different temperature.

Table 4 shows the partial pressures of the gases at equilibrium.

Table 4

Gas	Partial pressure / kPa
SO_2	1.67×10^2
O_2	1.02×10^2
SO_3	1.85×10^2

Give an expression for the equilibrium constant (K_p) for this reaction.

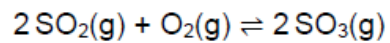
Calculate the value of the equilibrium constant for this reaction and give its units.

[3 marks] K_p K_p _____

Units _____

0 5 . 4

What is the effect on the value of K_p if the pressure of this equilibrium mixture is increased at a constant temperature?



[1 mark]

Tick (✓) **one** box.

The value of K_p

increases.

☐

stays the same.

☐

decreases.

☐

2. No.19

Which statement about the distribution curve of molecular energies in an ideal gas at a given temperature is correct?

[1 mark]

A There are no molecules with zero energy.

☐

B The curve is symmetrical about the maximum.

☐

C Changing the temperature has no effect on the position of the maximum.

☐

D Most molecules have the mean energy.

☐

3. No.20

Which statement about the addition of a catalyst to an equilibrium mixture is correct?

[1 mark]

A The activation energy for the reverse reaction increases.

☐

B The equilibrium constant for the forward reaction increases.

☐

C The rate of the reverse reaction increases.

☐

D The enthalpy change for the forward reaction decreases.

☐