CONSTRUCTED QUESTIONS (90pts)

5/

2KHCO3(s)🡪 K2CO3(s) + CO2(g) + H2O(g)

m(KHCO₃) = 33 g

M(KHCO₃) = 39 g/mol K + 1 g/mol H + 12 g/mol C + (3 × 16 g/mol O) = 100 g/mol

🡪n(moles)=m/M=33/100=0,33 mol

The mole ratios between KHCO₃ and CO₂ , and KHCO₃ and H₂O in the balanced equation are both 2:1. Therefore, 0.33 mol KHCO₃ will produce half that amount of CO₂ and H₂O.

0.33 mol KHCO₃ will produce 0.165 mol CO₂ and 0.165 mol H₂O.

P = 880 torr × 1 kPa/7.5 torr = 117 kPa

V = ? L

n = 0.33 mol

R = 8.314 L•kPa/K•mol

T = 520 °C + 273.15 = 793 K

V = nRT/P

🡪 V = (0.33 mol × 8.314 L•kPa/K•mol × 793 K)/880 torr = 19

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According

S is the solubility in moles L−1  
K is Henry's law constant  
P is the pressure in atm

Substitute values in the above expression :

S=KP​

=3.1×10−24​

=129.03 moles L−1