What volume at stp does 3.5 moles of methane, ch4, occupy?

Answer:

According to the Avogadro's law:

At STP the molar volume (volume of one mole) of an ideal gas is V_m=22.4 dm^{3}ml^{-1}.

$$V = N_m * V_m$$

$$V = 3.5 * 22.4 = 78.4 \, dm^3 (L)$$

Answer: 78.4 L