calculate the volume in liters occupied by 7.40 g of NH3 at STP

Solution

At STP 1 mol of any gas occupy 22.4 l

$$n = \frac{m}{M}$$

Where, n – amount of NH_3

      m – mass of NH_3

      M – molar mass of NH_3

$$n = \frac{7.4\ g}{17\frac{g}{mol}} = 0.435\ mol$$

$$V = V_m \cdot n$$

Where V – volume of NH_3

     V_m – molar volume (22.4 l/mol)

     n - amount of NH_3

$$V = 22.4\ l/mol \cdot 0.435\ mol = 9.744\ l$$

Answer: 9.744 l