



3. An important reaction in the production of nitrogen fertilizers is the oxidation of ammonia



How many liters of  $\text{O}_2$ , measured at  $25^\circ\text{C}$  and  $0.895\text{ atm}$ , must be used to produce 100 liters of  $\text{NO}$  at  $500^\circ\text{C}$  and  $750\text{ torr}$ ?

4. A gas is collected by the displacement of water until the total pressure inside a 100 mL flask is 70 torr at  $25^\circ\text{C}$ . How many milliliters would the dry gas occupy at STP?

5. The density of a gas was found to be  $1.81\text{ g/L}$  at  $30^\circ\text{C}$  and  $760\text{ torr}$ . What is its molecular mass?

6. Use the van der Waals equation to calculate the pressure, in atm, exerted by 1.000 moles of He at 0.00°C in volume of 22.400 L. Use  $R = 0.082057 \text{ L atm/mol K}$ . Compare this to the pressure an ideal gas would exert under these same conditions.

7. Why did van der Waals subtract a correction from the measured volume? Why did he add a correction to the measured pressure?