How many L STP of oxygen are needed to produce 45.0 grams of nitric oxide according to the following balanced equation?

$$4NH_3 + 5O_2 = 4NO + 6H_2O$$
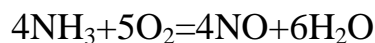
$$5 \cdot n\,(O_2) \ = \ 4 \cdot n\,(NO)$$

$$V(O_2) = \ n\,(O_2) \cdot V_m$$

$$V_m = 22.4L/mol\ (STP)$$

$$n\,(O_2) = \frac{5 \cdot n\,(NO)}{4}$$

$$n\,(NO) = \frac{m(NO)}{M(NO)}$$

$$M(NO) = 30g/mol$$

$$V(O_2) = \frac{4 \cdot m\,(NO)}{5 \cdot M(NO)} \cdot V_m$$

$$V(O_2) = \frac{5 \cdot 45 \cdot 22.4}{4 \cdot 30} = 42L$$