For the reaction NaBr$_{(aq)}$ + AgNO$_{3(aq)}$ → AgBr$_{(s)}$ + NaNO$_{3(aq)}$, how many liters of 4.5 M Silver Nitrate (AgNO$_3$) would be required in order to mix with adequate Sodium Bromide (NaBr) to produce 250.0 g of Silver Bromide (AgBr)?

    A. **0.25 mL NaNO$_3$**
    B. **0.25 L NaNO$_3$**
    C. **0.30 mL AgNO$_3$**
    D. **0.30 L AgNO$_3$**
    E. **None of the Above**

Answer:
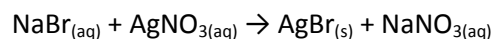
NaBr$_{(aq)}$ + AgNO$_{3(aq)}$ → AgBr$_{(s)}$ + NaNO$_{3(aq)}$
n = m/M
M (NaBr) = 102.9 g/mol
n (NaBr) = 250.0/102.9 = 2.4 mol
n (AgNO$_3$) = n (NaBr) = 2.4 mol
n = C$_M$ · V   V = n/ C$_M$
V (AgNO$_3$) = 2.4 / 4.5 = 0.5 l

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