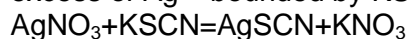


Question #59988, Chemistry, Other

Arsenic in 7,150 g of a herbicide is converted in arsenate ions (AsO_4^{3-}) and the arsenate ions form a precipitate of Ag_3AsO_4 with 25,00 ml of AgNO_3 solution 0,0500 M. The excess of Ag^{+} is titrated with 3,85 ml of a KSCN solution 0,0500 M. Calculate the % concentration of arsenic in the sample.

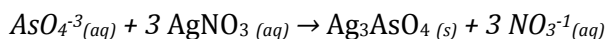
Answer:

The amount of Arsenic can be determined through a difference of AgNO_3 used for its titration and excess of Ag^{+} bounded by KSCN.



$$v(\text{AgNO}_3) = v(\text{KSCN})$$

$$v(\text{KSCN}) = V(\text{KSCN}) \cdot C_M(\text{KSCN}) = 3.85/1000 \cdot 0.0500 = 0.0002 \text{ mol}$$



$$v(\text{AsO}_4^{3-}) = 3 \cdot v(\text{AgNO}_3)$$

$$v(\text{AsO}_4^{3-}) = (25.00/1000 \cdot 0.0500) - 0.0002 = 0.00125 - 0.0002 = 0.00105 \text{ mol}$$

$$v = m/M$$

$$m = vM$$

$$M(\text{AsO}_4^{3-}) = 138.9192 \text{ g/mol}$$

$$m(\text{AsO}_4^{3-}) = 0.00105 \cdot 138.9192 = 0.14586 \text{ g}$$

$$\%(\text{AsO}_4^{3-}) = (0.14586/7.150) \cdot 100 = 2.040\%$$