Question #77235, Chemistry / Other

A 1.047 g sample of canned tuna was analyzed by the Kjeldahl method; 24.61 mL of 0.1180 M HCl were required to titrate the liberated ammonia. Calculate the percentage of nitrogen in the sample. [

Solution*:*
Chemical equation:
$NH_3 + HCl = NH_4Cl$

$$n(NH_3) = n(HCl) = c(HCl) \times V(HCl) = 0.1180 \frac{mol}{L} \times 0.02461\ L = 0.002904\ mol$$

$$n(N) = n(NH_3) = 0.002904\ mol$$

$$A(N) = 14.0067 \frac{g}{mol}$$

$$m(N) = 14.0067 \frac{g}{mol} \times 0.002904\ mol = 0.04068\ g$$

$$\%(N) = \frac{0.04068\ g}{1.047\ \text{g}} \times 100\% = 3.88\%$$

Answer*:*
3.88%