Answer on Question#39864-Chemistry-Inorganic Chemistry

Question

A lawn fertilizer is rated as 7.35% nitrogen, meaning 7.35 g of N in 100 g of fertilizer. The nitrogen is present in the form of urea, $(NH_2)_2CO$. How many grams of urea are present in 100 g of the fertilizer to supply the rated amount of nitrogen?

Solution

Molar mass of urea M_{urea} = 60 g/mol.
Mass of nitrogen in 1 mol of urea M_N^{urea} = 2·14 = 28 g/mol.
Thus, we may write the proportion
60 g/mol (urea) – 28 g/mol (N)
X g (urea) – 7.35 g (N)
Hence X = 60·7.35/28 = 15.75 g

Answer: 15.75 g