Answer on Question #60182, Chemistry / General Chemistry

1. How many grams of HCL solution which is 73% by mass are needed to saturate 16.8 liters of propene at STP?

Solution:

$C_3H_6 + HCl = C_3H_7Cl$

$M(HCl) = 36.5$ g/mol

$Vm = 22.4$ L (STP)

$n = \dfrac{m}{M} = \dfrac{V}{Vm}$

$m(HCl) = \dfrac{V(C3H6) \times M(HCl)}{Vm}$

$m(HCl) = \dfrac{16.8 \times 36.5}{22.4} = 27.375g$

Find mass of 73% HCL solution:

$\omega = \dfrac{mass\ of\ solute}{mass\ of\ solution} \times 100\%$

mass of solute – 27.375g.

mass of solution $= \dfrac{mass\ of\ solute}{\omega} \times 100\% = \dfrac{27.35g}{73\%} \times 100\% = 37.465g$

Answer: Need 37.465g of 73% HCl solution.