Question #62419, Chemistry / General chemistry

At STP, a sample of fluorine gas has a mass of 135.6 g. Calculate the volume of this gas.

Solution

$M(F_2) = 38$ g/mol

$n(F_2) = m/M = 3.57$ (mol)

$n = V/ Vm$

$V = n* Vm = 3.57 * 22.4 = 79.97$ (l)

Or

$PV = nRT$

$V = n*R*T / P = 3.57 * 8.314 * 273 / 101.325 = 79.97$ (l)

Answer

$V(F_2) = 79.97$ L