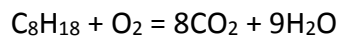Question #59553, Chemistry / General chemistry

find the amount of carbon dioxide released into the air when 32.5 g of octane is completely combusted with oxygen. what is the volume of this carbon dioxide gas at STP?

Solution

$C_8H_{18} + O_2 = 8CO_2 + 9H_2O$

$M(C_8H_{18}) = 114$ (g/mol)

$n(C_8H_{18}) = m/M = 32.5 / 114 = 0.285$ (mol)

$n(CO_2) = 0.285 * 8 = 2.28$ (mol)

$V(CO_2) = n*V_m = 2.28 * 22.4 = 51.072$ (l)

Answer

$V(CO_2) = 51.072$ l