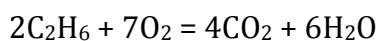Answer on Question #68617 - Chemistry - General Chemistry

Question:

How many liters of CO2 are produced when 6 moles of ethane go through combustion at STP?

Solution:

Write the balanced equation of ethane combustion:

$$2C_2H_6 + 7O_2 = 4CO_2 + 6H_2O$$

We can see that 2 moles of ethane produce 4 moles of CO_2. Therefore 6 moles of ethane will produce (4*6)/2 = 12 moles of CO_2.

1 mole of a gas at STP has a volume of 22.41 liters.
Therefore 12 moles of CO_2 have volume (12moles * 22.41 L/mol) = 268.92 liters.

Answer:
268.92 liters of CO_2.