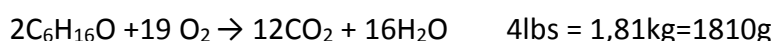


Answer on Question#61193 - Chemistry - General Chemistry

how many milliliters of air are needed to neutralize oxidize 4lbs of butyl butyrate (C₆H₁₆O).find the number of grams of nitrogen gas present in air for the combustion.what is the volume reacted in liters for the nitrogen gas to oxidize butyl butyrate? if the air that will be used or the oxidation of butyl butyrate is a wet air and has 180 grams of moisture (H₂O vapor) find the volume the wet air in liters

Answer:

First we find the amount of oxygen, needed for the butyl butyrate combustion from the equation:



$$208 \quad 608$$

$$17,4\text{mol} \quad x \text{ mol} \quad x = 50,86 \text{ mol} \text{ or } 50,86 \times 22,4 = 1139,24\text{l}$$

Volume of the air we find from the proportion

$$1139,24\text{l of O}_2 - 21\%$$

$$(x) \text{ l of air} \quad - 100\% \quad x = 5425 \text{ l or } \mathbf{5\ 425\ 000\text{ml of air}}$$

amount of nitrogen gas we find from the proportion

$$5425 \text{ l of air} - 100\%$$

$$(x)\text{l of N}_2 - 78\% \quad x = 4231,5 \text{ l} \quad \text{which is } 188,9 \text{ mol}$$

$$m \text{ N}_2 = 188,9 \times 28 = \mathbf{5289,2\text{g}}$$

the number of nitrogen gas to oxidize butyl butyrate is 0, because nitrogen gas from the air does not react with the organic compound.

the amount of air with moisture we can find as

volume of dry air+ volume of water vapour(180 g of water -224 l)

$$\text{volume of wet air} = 5425 + 224 = \mathbf{5649 \text{ l}}$$