

## Answer on Question #59223 - Chemistry - Other

### Task:

How many grams of  $O_2(g)$  are needed to completely burn 92.2 g of  $C_3H_8(g)$ ?

### Solution:

1) We find the molar mass of  $C_3H_8$  :

$$M(C_3H_8) = 3 \times 12 + 8 \times 1 = 36 + 8 = 44 \text{ (g / mol)}.$$

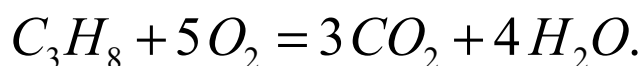
2) We find the amount of  $C_3H_8$  :

$$n(C_3H_8) = \frac{m(C_3H_8)}{M(C_3H_8)}.$$

Then,

$$n(C_3H_8) = \frac{92.2 \text{ g}}{44 \text{ g/mol}} = 2.095 \text{ mol}.$$

3) The reaction of burning of  $C_3H_8$  is



4) According to reaction the amount of oxygen is

$$n(O_2) = 5 \times n(C_3H_8) = 5 \times 2.095 = 10.475 \text{ (mol)}.$$

Then, the mass of oxygen is

$$m(O_2) = n(O_2) \times M(O_2) = 10.475 \times 32 = 335.2 \text{ (g)}.$$

### Answer:

$$m(O_2) = 335.2 \text{ g}$$