

Answer on Question #55465 – Chemistry - General Chemistry

Question:

If the fuel has a density of 0.782 g/ml, how many grams of H₂O and CO₂ is produced in reducing 500 milliliters of the fuel?

Answer:

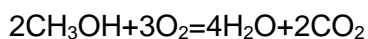
$$\rho = \frac{m}{V}$$

Mass of 500 ml fuel will be:

$$m = \rho V$$

$$m_{fuel} = 0.782 \cdot 500 = 391g$$

Metanol has the density of 0.782 g/ml. So that fuel reduction equation will be:



$$v = \frac{m}{M} \quad m = Mv$$

$$v(H_2O) = 2 \cdot v(CH_3OH)$$

$$v(CO_2) = v(CH_3OH)$$

$$M(CH_3OH) = 32.042g / mol$$

$$M(CO_2) = 44.009g / mol$$

$$M(H_2O) = 18.015g / mol$$

$$v(H_2O) = 2 \cdot v(CH_3OH)$$

$$v(CO_2) = v(CH_3OH)$$

$$m(H_2O) = 2 \cdot \frac{391}{32.042} \cdot 18.015 = 439.664g$$

$$m(CO_2) = \frac{391}{32.042} \cdot 44.009 = 537.030g$$