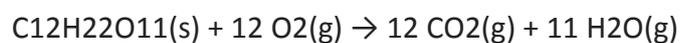


## Answer on Question #47532, Chemistry, Other

**Question:** When left over a flame a marshmallow is consumed in a combustion reaction. Assuming a marshmallow is made of entirely sucrose,  $C_{12}H_{22}O_{11}$ , and after combustion no residual solid remained, the following chemical equation describes this reaction.



Using the equation above, if the marshmallow contains 6.19 g of sucrose and is the limiting reactant, what is the theoretical of  $H_2O$ ?

**Answer:** From an equation of chemical reaction we see that from 1 mole of  $C_{12}H_{22}O_{11}$  we get 11 mole of  $H_2O$ .

$$n(C_{12}H_{22}O_{11}) = 6.19g/342 = 0.02\text{mole}$$

$$n(C_{12}H_{22}O_{11})/n(H_2O) = 1/11 = 0.02\text{mole}/x, \text{ so } x = 11*0.02=0.22\text{mole of } H_2O$$

$$V(H_2O) = 0.22*22.4 = 4.93L$$