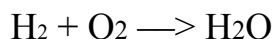
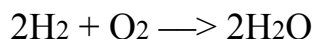


What is the percentage yield of water if 138g water is produced from 16g of hydrogen and excess oxygen.

1: Write the equation



2: Balance the equation



3: Calculate actual yield

The actual yield is given - 138g

4: Calculate theoretical yield

The theoretical yield must be calculated using stoichiometry (see section below)

Theoretical yield – 142.56g

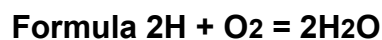
5: Calculate percent yield

$$\text{Percent Yield} = (\text{Actual Yield} \div \text{Theoretical Yield}) \times 100\%$$

$$\begin{aligned} &= (138 \div 144) \times 100\% \\ &= 95.83\% \end{aligned}$$

Answer: Percentage yield water with excess oxygen = 95.83%

CALCULATE THE THEORETICAL YIELD OF WATER



	2H	O ₂	2H ₂ O
molar mass (g/mol)	$2(1) = 2$	$2(16) = 32$	
mass given (g)	16	Not given	
no. moles calculated by mass / molar mass	$16/2 = 8$ moles		
ratio of moles (hydrogen:oxygen:water)	2	1	2

The ratio tells you that 2 moles of hydrogen yields 2 moles of water

The ratio is 1:1

Therefore, 8 moles of hydrogen will yield 8 moles of water

Mass of water = moles x molar mass

$$\begin{aligned} \text{Molar mass of water } \text{H}_2\text{O} &= 2(1) + 16 = 18 \text{ amu} \\ &= 18 \text{ g/mol} \end{aligned}$$

$$\text{Mass of water} = \text{moles} \times \text{molar mass} = 8 \text{ mol} \times 18 \text{ g/mol} = 144 \text{ g}$$