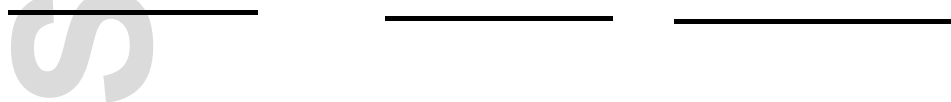


Molar Volumes Practice: I

GAS	molar volume at S.T.P.	Volume at S.T.P. (Litres)	Moles	Mass (grams)	Molar Mass (grams)	# of molecules
NO ₂		22.4				
NH ₃						6 · 10 ²³
SO ₂		11.2				
N ₂		44.8				
CH ₄						
O ₂			3.0			
H ₂ S			0.1			
SO ₃			0.25			
CO ₂			1.5			
Ne						30 · 10 ²³
H ₂				4.0		
CO				2.8		
N O				45		
N ₂ O						3 · 10 ²³
C ₂ H ₆				6.0		

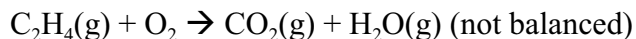
At S.T.P

$$\frac{\text{volume}}{\text{molar volume}} = \frac{\text{mass}}{\text{molar mass}} = \frac{\text{\# of molecules}}{\text{Avagadro's \#}} = \text{moles}$$



Molar Volume: Practice II

1. Ethylene gas burns to produce CO₂(g) and water vapour :



From the balanced equation

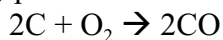
Given

- a) 56g C₂H₄
- b) 25L C₂H₄
- c) 192g O₂
- d) 33.6 L C₂H₄
- e) 4 moles C₂H₄
- f) 0.5 moles O₂
- g) 56 L O₂
- h) 3 x 10²³ molecules O₂
- i) 89.6 L C₂H₄
- j) 87L O₂

Find (all gas volumes at STP)

- Volume of O₂ consumed in litres
- Volume of O₂ consumed in litres
- Volume of CO₂ produced in litres
- Mass of H₂O produced in grams
- Volume of O₂ consumed in litres
- Volume of CO₂ produced in litres
- Moles of H₂O produced
- Volume of CO₂ produced in litres
- Molecules of O₂ consumed
- Volume of H₂O produced in litres

2. Find the volume of CO(g) produced when 36g of carbon burn completely:



Molar Volume: Practice III

1. What volume measured at STP, would each gas occupy:

- a) 8.80 g CO₂ (g)
- b) 10.0 g H₂ (g)
- c) 6.00 g C₂H₆ (g)

2. What is the molar volume of a gas at 101 kPa and 25°C (sometimes referred to as a normal temperature and pressure or N.T.P.)

3. Given the equation: $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l})$

What volume of CO₂, measured at STP, would be obtained by burning 8g methane, CH₄ ?

What volume of oxygen at STP would be used if 72g of water are produced?

4. Given the equation: $\text{CaH}_2 + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$

Balance the equation

What volume of hydrogen gas (at STP) would be obtained from 84g CaH₂?

What volume would be obtained from 84g of CaH₂, if the hydrogen is measured at 50 kPa and 25 °C?

What volume of hydrogen, measure at STP, would be obtained from 1 kg of CaH₂?

5. What volume of CO₂ at 227°C and 90.8 kPa can be produced from the burning of 66g of C₃H₈?

