

52.0g 125L ?g ?g

@ 220°C ⇒ 493 K

0.950 atm

grams of excess left?

1st mole

$$\text{C } 2 \times 12.01 = 24.02 \quad \left(\frac{52.0\text{g C}_2\text{H}_2}{1} \right) \left(\frac{1\text{mole C}_2\text{H}_2}{26.02\text{g C}_2\text{H}_2} \right) = 2.00\text{mole C}_2\text{H}_2$$

$$\text{H } 2 \times 1.008 = 2.016$$

$$= 26.04$$

$$PV = nRT$$

$$n = \frac{PV}{RT}$$

$$P = 0.950\text{atm}$$

$$T = 493\text{K}$$

$$= \frac{(0.950\text{atm})(125\text{L})}{(493\text{K})(0.08206 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}})}$$

$$V = 125\text{L}$$

$$R = 0.08206 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}}$$

$$n = 2.94\text{moles O}_2$$



I 2.00 mole 2.94 mole 0 0 2x = 2.00

C - 2x - 5x 4x 2x x = 1.00

$$\begin{matrix} 1.18 \\ -2(5.88) \end{matrix}$$

$$\begin{matrix} 2.94 \\ -5(5.88) \end{matrix}$$

$$4(5.88)$$

$$2(5.88)$$

$$\begin{matrix} \text{or} \\ 5x = 2.94 \\ x = .588 \end{matrix}$$

E 0.82

excess

0
Limiting

2.35 mole

1.18 mole 2.79 mole

$$\text{C } 1 \times 12.01 \quad \left(\frac{2.35\text{mole CO}_2}{1} \right) \left(\frac{44.01\text{g CO}_2}{1\text{mole CO}_2} \right) = 103\text{g CO}_2 \text{ produced}$$

$$\text{O } 2 \times 16.00 = 32.00$$

$$42.01$$

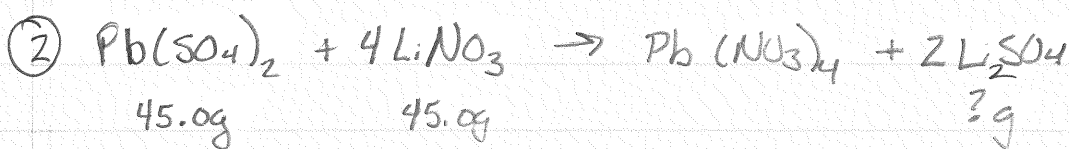
$$16.00$$

$$2.02$$

$$18.02$$

$$\left(\frac{1.18\text{mole H}_2\text{O}}{1} \right) \left(\frac{18.02\text{g H}_2\text{O}}{1\text{mole H}_2\text{O}} \right) = 21.3\text{g H}_2\text{O produced}$$

$$\left(\frac{0.82\text{mole C}_2\text{H}_2}{1} \right) \left(\frac{26.02\text{g C}_2\text{H}_2}{1\text{mole C}_2\text{H}_2} \right) = 21.3\text{g C}_2\text{H}_2 \text{ excess}$$



Pb 1 207.2 ↓

S 2 × 32.06 = 64.12

O 4 × 16.00 = 64.00

399.3

$$\left(\frac{45.0g \text{ Pb(SO}_4)_2}{399.3g \text{ Pb(SO}_4)_2} \right) \left(\frac{1 \text{ mole Pb(SO}_4)_2}{1} \right) = 0.113 \text{ mole Pb(SO}_4)_2 \text{ ? g Excess}$$

Li 1 × 6.94 = 6.94

N 1 × 14.01 = 14.01

O 3 × 16.00 = 48.00

68.95

$$\left(\frac{45.0g \text{ LiNO}_3}{68.95g \text{ LiNO}_3} \right) \left(\frac{1 \text{ mole LiNO}_3}{1} \right) = 0.653 \text{ mole LiNO}_3$$

R	$\text{Pb(SO}_4)_2$	+	4 LiNO_3	→	$\text{Pb(NO}_3)_4$	+	2 Li_2SO_4	
I	0.113 mole		0.653 mole		0		0	
C	-X		-4X		X		2X	
	-0.113		-0.452		0.113		0.226	
			-4(0.113)				2(0.113)	
E	0		0.201 mole		0.113 mole		0.226 mole	
	Limiting		Excess					

4X = 0.653
~~X = 0.163~~
 X = 0.113

Li 2 × 6.94 = 13.88

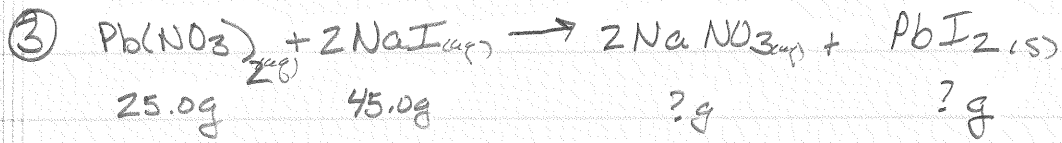
S 1 × 32.06 = 32.06

O 4 × 16.00 = 64.00

109.94

$$\left(\frac{0.226 \text{ mole Li}_2\text{SO}_4}{1} \right) \left(\frac{109.94g \text{ Li}_2\text{SO}_4}{1 \text{ mole Li}_2\text{SO}_4} \right) = 24.8 \text{ g Li}_2\text{SO}_4 \text{ Produced}$$

$$\left(\frac{0.201 \text{ mole LiNO}_3}{1} \right) \left(\frac{68.95g \text{ LiNO}_3}{1 \text{ mole LiNO}_3} \right) = 13.9 \text{ g LiNO}_3 \text{ Excess}$$



Pb 207.2
 N 2x 14.01 28.02
 O 6x 16.00 96.00

$$\left(\frac{25.0\text{g Pb(NO}_3\text{)}_2}{331.22\text{g Pb(NO}_3\text{)}_2} \right) \left(\frac{1\text{mole Pb(NO}_3\text{)}_2}{1} \right) = 0.0755\text{ mole Pb(NO}_3\text{)}_2$$

Na 22.99
 I 126.91

$$\left(\frac{45.0\text{g NaI}}{149.90\text{g NaI}} \right) \left(\frac{1\text{mole NaI}}{1} \right) = 0.300\text{ mole NaI}$$

	R	Pb(NO ₃) ₂	·	2NaI	→	2NaNO ₃		PbI ₂
I		0.0755 mole		0.300 mole		0		0
C		-x		-2x		2x		x
		<u>-0.0755</u>		<u>-0.151</u> 2(.0755)		<u>0.151</u> 2(.0755)		<u>0.0755</u> x = .300
E		0		0.149 mole		0.151 mole		0.0755 mole
		Limiting		Excess				

Na 22.99
 O 14.01
 N 3x 16.00 48.00

$$\left(\frac{0.151\text{ mole NaNO}_3}{1} \right) \left(\frac{85.00\text{g NaNO}_3}{1\text{ mole NaNO}_3} \right) = 12.8\text{g NaNO}_3 \text{ produced}$$

$$\left(\frac{0.0755\text{ mole PbI}_2}{1} \right) \left(\frac{461.02\text{g PbI}_2}{1\text{ mole PbI}_2} \right) = 34.8\text{g PbI}_2 \text{ Produced}$$

Pb 207.2
 I 2x 126.91 253.82