

Warm Up

Determine the mass of 0.414 mol of chlorine.

$$0.414 \text{ mol Cl}_2 \times \frac{70.90 \text{ g Cl}_2}{1 \text{ mol Cl}_2} = \boxed{29.4 \text{ g Cl}_2}$$

$$\text{Cl}_2 \rightarrow (2 \times 35.45) = 70.90 \text{ g/mol}$$

How many moles are found in 5.98×10^{25} molecules of C_4H_{10} ?

$$5.98 \times 10^{25} \text{ molecules C}_4\text{H}_{10} \times \frac{1 \text{ mol C}_4\text{H}_{10}}{6.02 \times 10^{23} \text{ molecules C}_4\text{H}_{10}} =$$

$$\boxed{99.3 \text{ mol C}_4\text{H}_{10}}$$

$$19.0\text{L} \times \frac{1 \text{ mol}}{22.4 \text{ L}}$$

Molar calculations worksheet

1. 8.97×10^{-3} mol
2. 1.49×10^{25} atoms
3. 1.30×10^{26} atoms
4. 46.01 g/mol
5. 14 300 mol
6. 342.34 g/mol
7. 159.70 g/mol
8. 4.24×10^{24} molecules
9. 1.79×10^{25} atoms
10. 643 g
11. 0.266 mol
12. 10 900 g
13. 6.26 mol

Check Homework Worksheet

$$8.60 \times 10^{27} \text{ molecules CO}_2 \times \frac{1 \text{ mol CO}_2}{6.02 \times 10^{23} \text{ molecules CO}_2} =$$

$$= 14\,300 \text{ mol CO}_2$$

Percent Composition

The relative amounts of element in a compound are expressed as the percent composition (**by mass**) for each element within the compound.

Ex. K_2CrO_4



K - 40.3%

Cr - 26.8%

O - 32.9%

Percent Composition from Mass Data

When a 13.60 g sample containing only magnesium and oxygen is decomposed, 5.40 g of oxygen is obtained. What is the percent composition of this compound?



$$\% \text{Mg} = \frac{\text{mass Mg}}{\text{mass compound}} \times 100\%$$

$$\% \text{O} = \frac{\text{mass O}}{\text{mass compound}} \times 100\%$$

$$\% \text{Mg} = \frac{8.20\text{g}}{13.60\text{g}} \times 100\%$$

$$\boxed{\% \text{Mg} = 60.3\%}$$

Percent Composition from the Chemical Formula

Ex. Na_2CO_3

Homework

p. 306 #32, 33

p. 307 #34, 35