



Calcium Fluoride

Careers in Chemistry: Dentistry

$$x \text{ atoms } F = 92.135 \text{ g } \text{CaF}_2 \left(\frac{1 \text{ mol } \text{CaF}_2}{78 \text{ g } \text{CaF}_2} \right) \left(\frac{6.02 \times 10^{23} \text{ molecules } \text{CaF}_2}{1 \text{ mol } \text{CaF}_2} \right) \left(\frac{2 \text{ atoms } F}{1 \text{ molecules } \text{CaF}_2} \right) = 142 \times 10^{24} \text{ } F$$

$$x \text{ gallons } \text{H}_2\text{O} = 142 \times 10^{24} \text{ } F \text{ atoms} \left(\frac{1 \text{ } F \text{ atom}}{1 \text{ } F \text{ atom}} \right) \left(\frac{1 \text{ mol } \text{H}_2\text{O}}{6.02 \times 10^{23} \text{ molecules } \text{H}_2\text{O}} \right) \left(\frac{18 \text{ g } \text{H}_2\text{O}}{1 \text{ mol } \text{H}_2\text{O}} \right) \left(\frac{1 \text{ mol } \text{H}_2\text{O}}{1 \text{ g } \text{H}_2\text{O}} \right) \left(\frac{1 \text{ L } \text{H}_2\text{O}}{1000 \text{ mL } \text{H}_2\text{O}} \right) \left(\frac{1 \text{ gallon } \text{H}_2\text{O}}{3.78 \text{ L } \text{H}_2\text{O}} \right)$$

Need 11,238 gallons of water needed to dissolve 91.235 g CaF_2 to yield a 1 ppm F^{1-} solution.