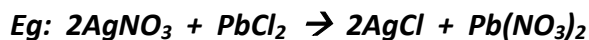


5 Steps to a Net Ionic Equation

Step 1. Write the balanced molecular equation.

Predict the products, just as you have done with reactions thus far. The reactions that you will need to pay particular attention to are all double replacement reactions and most single replacement reactions.



Step 2. Look at each substance and determine if it will ionize in water.

Each substance will ionize if:

You have to make this decision for each reactant and each product in the balanced molecular equation from step 1. Use the following rules to help.

Rule 1. it is a strong acid. (there are 6 of these HCl, HBr, HI, H₂SO₄, HNO₃, and HClO₄)

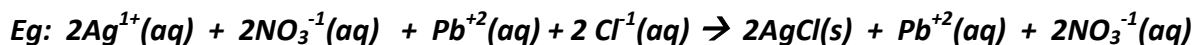
Rule 2. it is a strong base. (there are 6 main players here: LiOH, NaOH, KOH, Ca(OH)₂, Sr(OH)₂, and Ba(OH)₂ most of the rest of the metal hydroxides are insoluble and don't ionize.)

Rule 3. it is a soluble ionic compound. (anything soluble according to the solubility rules handout)

Eg: AgNO_3 , PbCl_2 , and $\text{Pb}(\text{NO}_3)_2$ are soluble so they would ionize, whereas AgCl is insoluble so it would be labeled as a solid and not be ionized.

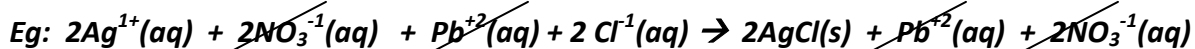
Step 3. Write the complete or total ionic equation.

*List all your reactants and products in their aqueous form, which is as aqueous ions, as just aqueous, as solids, as liquids, or as gases as appropriate. This is what you were determining in step 2. (For example NaOH should be written as $\text{Na}^{+1} + \text{OH}^{-1}$, H₂SO₄ should be written as $2\text{H}^{+1} + \text{SO}_4^{-2}$, Mg would be just Mg(s), H₂ would be H₂(g), AgCl would be AgCl(s) note: **any coefficient on an ionic compound will be distributed through both ionic pieces.***



Step 4. Cancel out any spectator ions.

Look for anything in the total ionic equation that hasn't changed. These substances will be exactly the same on both sides of the equation. These substances are not really involved in the chemical change that the reaction equation describes. They are NOT included in the net ionic equation.



Step 5. Write the net ionic equation.

Anything not cancelled out in step 4 is included in the net ionic equation.

Make sure the equation is balanced with the simplest ratio of whole numbers.

