

Ionic Compounds

Objectives: write chemical formulas for ionic compounds and name ionic compounds

- Define Ionic Compound- **Compounds that are formed from the continuous array of oppositely charged ions**
- Define Monatomic Ion- **a single element with the charge of its valence**
- What ion will Na form **+1**
- What ion will S form **-2**
- What ion will Fe form **+2**
- NOTE: Non-Metals and Metalloids in 4A ... **do not participate in ionic bonding**

Skill #1: Writing Formulas for Binary Ionic Compounds

Criss-Cross: Writing Formulas For Binary and Ternary Ionic Compounds

- The Cation **is written first**
- The Anion **is written second**
- The charges are **crossed over and written as a subscript for the other ion**
- The signs on charges are **dropped**
- Use **lowest ratio**

Example: Calcium Fluoride **CaF₂**

Example: Lithium Phosphide **Li₃P**

Example: Copper (II) Sulfide **CuS**

Example: Zinc Chloride **ZnCl₂**

Skill #2: Naming Binary Ionic Compounds

- Name each ion
- The monatomic anion **will end in "ide"**
- Watch out for **Common Metal Ions with More than One Charge**

Example: ZnS **zinc sulfide**

Example: BaCl₂ **barium chloride**

Example: K₂O **potassium oxide**

Example: CuBr₂ **copper (II) bromide**

Why do formulas contain subscripts and/or parentheses?

How do you decide the appropriate method to name a compound?

Example: Fe_2S_3 **iron (III) sulfide**

Example: SnO_2 **tin (IV) oxide**

Skill #3: Writing Formulas for Ternary Ionic Compounds (Criss-Cross)

Define Polyatomic Ion- **atoms bonded together with a charge**

Example: Lithium Phosphate **Li_3PO_4**

Example: Iron (II) Sulfate **FeSO_4**

Example: Aluminum Dichromate **$\text{Al}_2(\text{Cr}_2\text{O}_7)_3$**

Example: Ammonium Sulfide **$(\text{NH}_4)_2\text{S}$**

Example: Ammonium Hypochlorite **NH_4ClO**

Skill #4: Naming Ternary Ionic Compounds

- Name **each ion**
- If the anion is **monatomic it will end in "ide"**
- Watch out for **Common Metal Ions with More than One Charge**

Example: ZnSO_4 **zinc sulfate**

Example $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$ **calcium acetate**

Example: CuClO_2 **copper (I) chlorite**

Example: $\text{Fe}_2(\text{CrO}_4)_3$ **iron (III) chromate**

Example: CoSO_3 **cobalt (II) sulfite**

Why do formulas contain subscripts and/or parentheses?

How do you decide the appropriate method to name a compound?

How do I get from where I am to where I'm going?

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*Why do formulas contain subscripts and/or parentheses?
How do you decide the appropriate method to name a compound?*