

Ionic Nomenclature with Polyatomics

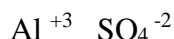
Polyatomic ions:

Naming ionic compounds that contain polyatomic ions is exactly the same as you have already learned:

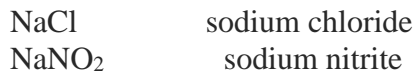
- The cation is named first then the anion. Most polyatomics are negatively charged and end in -ate or -ite. The only positively charged polyatomic we will use is ammonium (NH_4^{+1})
**Compounds containing ammonium are ionic although they contain NO METAL!
- The compound will be neutral overall
- Roman numerals are used with multivalent ions
- Reduce subscripts when possible

What's different about naming ionic compounds that contain polyatomic ions:

- If more than one of a polyatomic ion is needed to balance the charge, the polyatomic ion must be put in parenthesis in the formula. Never change the subscript from the polyatomic, you can only reduce subscripts added from criss-crossing the charges!

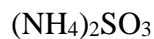


- When writing the name, usually you change the ending of the anion to -ide, but if the anion is a polyatomic, you don't change the ending!



EXAMPLES

Give the name of each of the following.



Write the formula for each of the following.

Sodium arsenate

Chromium (II) hydroxide

Silver acetate

Barium perchlorate

Lithium bicarbonate

Ammonium chloride

Barium oxalate

HOMEWORK: Ionic Nomenclature with Polyatomic ions and Mixed

I. Complete the following ionic nomenclature with polyatomic ions problems by either giving the name or formula:

- | | |
|------------------------------------|---------------------------------|
| 1. NaNO_3 _____ | 5. Iron (I) nitrate _____ |
| 2. NH_4NO_2 _____ | 6. Calcium phosphate _____ |
| 3. Ni_2SO_3 _____ | 7. Potassium permanganate _____ |
| 4. Li_2CrO_4 _____ | 8. Cobalt (II) chlorite _____ |

II. MIXED PRACTICE. This section contains 5.1 and 5.2 lectures. There will be binary ionic nomenclature and also ionic nomenclature with polyatomic ions. In the first blank of each problem, identify the following either univalent (U) or multivalent (M) ion. Finally in the second blank give either the formula or name based on the problem type.

- | | |
|---|--------------------------------------|
| ___ 9. Na_2SO_4 _____ | ___ 27. Calcium phosphate _____ |
| ___ 10. Ag_3N _____ | ___ 28. Aluminum bromide _____ |
| ___ 11. NH_4MnO_4 _____ | ___ 29. Manganese (II) oxalate _____ |
| ___ 12. $\text{Hg}(\text{HSO}_4)_2$ _____ | ___ 31. Iron (III) carbonate _____ |
| ___ 13. MnCl_2 _____ | ___ 34. Tin (IV) fluoride _____ |
| ___ 14. MgO _____ | ___ 35. Silver peroxide _____ |
| ___ 15. $\text{Ca}(\text{NO}_2)_2$ _____ | ___ 37. Strontium iodide _____ |
| ___ 16. K_3BO_3 _____ | ___ 38. Mercury (I) sulfite _____ |
| ___ 24. NH_4Cl _____ | ___ 39. Cadmium hypochlorite _____ |