

Ionic and Covalent Compounds

Objectives

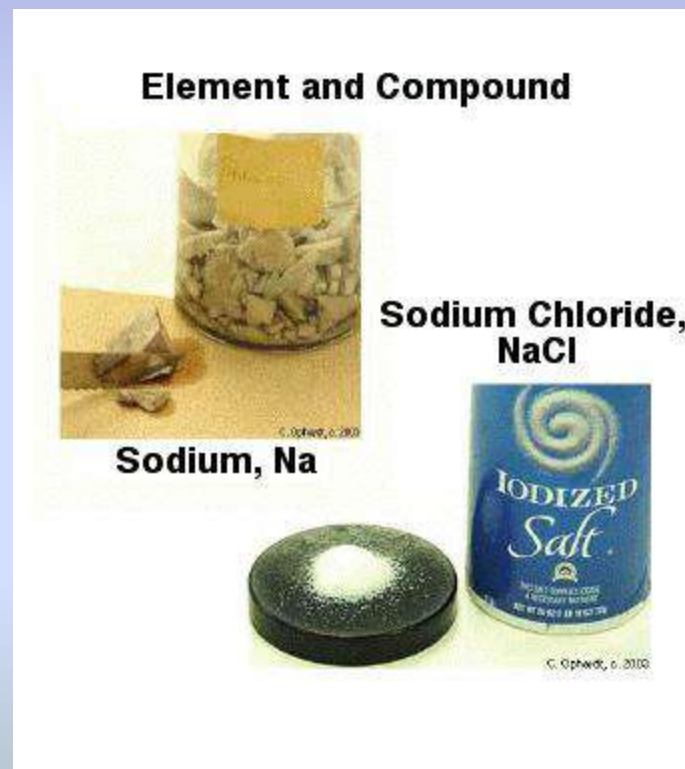
- **Describe** the properties of ionic and covalent compounds.
- **Classify** compounds as ionic or covalent based on their properties.

I. Ionic Compounds and Their Properties

A. Brittleness Ionic compounds tend to be brittle solids at room temperature. So, they usually break apart when hit. This property is due to the arrangement of ions in a repeating three-dimensional pattern called a crystal lattice.

B. High Melting Points Because of the strong ionic bonds that hold ions together, ionic compounds have high melting points.

C. Solubility and Electrical Conductivity Many ionic compounds are highly soluble. The solution that forms when an ionic compound dissolves in water can conduct an electric current.



II. Covalent Compounds and Their Properties

A. Low Solubility Many covalent compounds are not soluble in water, which means that they do not dissolve well in water.

B. Low Melting Points Less heat is needed to separate the molecules of covalent compounds, so these compounds have much lower melting and boiling points than ionic compounds do.

C. Electrical Conductivity Although most covalent compounds don't dissolve in water, some do. Most of the covalent compounds that dissolve in water form solutions that do not conduct electricity well.



Science Journal #5

- Predict whether these compounds are ionic or covalent by considering the elements that compose them.

1. KCl
2. FeCl_2
3. CH_4
4. CrF_2
5. NF_3
6. SeF_6
7. PbO
8. NH_3
9. Co_3N_2
10. TiI_4
11. N_2O_3
12. Mg_3P_2
13. IF_5
14. AtBr_3
15. Al_2S_3



Science Journal #5 Answers

- Predict whether these compounds are ionic or covalent by considering the elements that compose them.

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|-----------------------------|--------------|
| 1. KCl | 1. Ionic |
| 2. FeCl_2 | 2. Ionic |
| 3. CH_4 | 3. Covalent |
| 4. CrF_2 | 4. Ionic |
| 5. NF_3 | 5. Covalent |
| 6. SeF_6 | 6. Covalent |
| 7. PbO | 7. Ionic |
| 8. NH_3 | 8. Covalent |
| 9. Co_3N_2 | 9. Ionic |
| 10. TiI_4 | 10. Ionic |
| 11. N_2O_3 | 11. Covalent |
| 12. Mg_3P_2 | 12. Ionic |
| 13. IF_5 | 13. Covalent |
| 14. AtBr_3 | 14. Covalent |
| 15. Al_2S_3 | 15. Ionic |

