

LAB: Periodicity of Chemical Properties in Chlorides and Oxides

Properties of some chlorides

Begin by comparing the properties of the chlorides of Period 2 and 3.

1. Note their appearance.
2. Note what happens when they are mixed with 1-2mL of water. Does the chloride dissolve or does it react as well? What is the pH of the resulting solution?
3. Add a little of the chloride to hexane. Does it react or does it dissolve? Is the result different from that obtained in (2)?
4. Compare the electrical conductivity of lithium chloride and tetra chloromethane, and that of sodium chloride and silicon tetrachloride.
5. Examine the effect of heat on the chlorides. Which ones are volatile? (Examine the effect of heat only on a drop of two of the liquid chloride, and on a similar volume of the solid chloride)

Collect your results in the form of a table.

What conclusions can you draw about the structures and reactions with water of the various chlorides?

Note that water dissolves ionic compounds while hexane is better at dissolving molecular compounds.

Note also that volatile compounds are generally molecular, whereas in volatile ones are usually have giant structures, either ionic or giant lattice – like molecules.

Write equations for any reactions observed.

Properties of some Oxides

Perform the same tests on oxides as those on chlorides above.

Compile a table for the oxides similar to the ones for the properties of the chlorides.

What is the general trend in the volatility of the chlorides and the oxides from elements on the left hand side of the Periodic Table to those on the right hand side?