

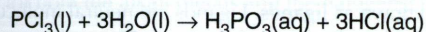
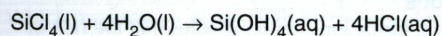
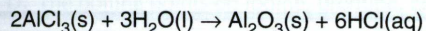


Chlorides of the third period (sodium → argon)

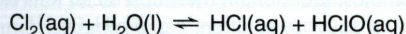
CHLORIDES OF PERIOD 3 ELEMENTS

The physical properties of the chlorides are related to the structure in the same way as the oxides. Sodium chloride and magnesium chloride are ionic – they conduct electricity when molten and have high melting points. Aluminium chloride is covalent and is a poor conductor. Unlike silicon dioxide, silicon tetrachloride has a simple molecular structure as do the remaining chlorides in the period. These molecules are held together by weak van der Waals' forces, which results in low melting and boiling points.

Sodium chloride dissolves in water to give a neutral solution, magnesium chloride gives a slightly acidic solution with water. All the other chlorides including aluminium chloride react vigorously with water to produce acidic solutions of hydrochloric acid together with fumes of hydrogen chloride.



Chlorine itself reacts with water to some extent to form an acidic solution.



Chlorides of period 3 elements

Formula	NaCl	MgCl ₂	Al ₂ Cl ₆	SiCl ₄	PCl ₃ (PCl ₅)	(S ₂ Cl ₂)	Cl ₂
State at 25 °C	Solid	Solid	Solid	Liquid	Liquid (Solid)	Liquid	Gas
Melting point / °C	801	714	178 (sublimes)	-70	-112	-80	-101
Boiling point / °C	1413	1412	–	58	76	136	-35
Electrical conductivity in molten state	Good	Good	Poor	None	None	None	None
Structure	Ionic		Simple covalent molecular				
Reaction with water	Dissolve easily		Fumes of HCl produced				Some reaction with water
Nature of solution	Neutral	Weakly acidic	Acidic				