

CHEMICAL PERIODICITY PROPERTIES SUMMARY

Oxide	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₄ O ₁₀ / P ₄ O ₆	SO ₂	SO ₃
State at 25°C	Solid					Gas	Colorless liquid
Melting point / °C	1280	2800	2045	1610	P ₄ O ₁₀ – 580 (sublimes) P ₄ O ₆ - 24	-75	17
Bonding & structure	Ionic lattice		Ionic lattice with covalent character	Giant covalent molecule	Simple, discrete covalent molecule		
Oxide nature	Basic		Amphoteric (high charge density polarizes O)	Acidic			
Effect of adding H ₂ O	Soluble, forms strongly basic NaOH	Slightly soluble, forms weakly basic Mg(OH) ₂	Insoluble (high energy needed to break lattice structures)		Hydrolyses, forms acidic H ₃ PO ₄ / H ₃ PO ₃	Hydrolyses, forms weakly acidic H ₂ SO ₃	Hydrolyses, forms strongly acidic H ₂ SO ₄
Aqueous solution pH	13	9			2-3	2-3	1

Chloride	NaCl	MgCl ₂	AlCl ₃ / Al ₂ Cl ₆	SiCl ₄	PCl ₅	PCl ₃
State at 25°C	Solid			Liquid	Solid	Liquid
Melting point	801	714	178	-70	162	-94
Boiling point	1465	1418	423	57	-	76
Bonding & structure	Ionic		Dimeric, covalent	Simple, molecular		
Effect of adding H ₂ O	Soluble, neutral	Slightly hydrolyzes, slightly acidic	Hydrolyses to form acidic solutions (fumes of HCl may be observed)			
Aqueous solution pH	7	6.5	3	2	2	2