

Oxygen Species Cheatsheet (oxides, peroxides, superoxide)

Species	Formula	Bonds	Lone pairs (per O)	Ox. number (O)	Charge	Comments
Oxide	O^{2-} (in metal oxides, H_2O , CO_2)	usually single M–O	varies	–2	0	Normal oxidation state
Peroxide	O_2^{2-} (e.g. H_2O_2)	O–O single bond	3	–1	0	Weak O–O bond, reactive
Superoxide	O_2^-	O–O bond order 1.5	2–3	–½	–1	Radical species, ROS in biology
O₂	Dioxygen	O=O double bond	2	0	0	Diradical ground state