

CONCEPT: OXIDES, PEROXIDES, AND SUPEROXIDES

- Oxides, peroxides, and superoxides are _____ compounds of oxygen with metals.
- Group _____ and _____ metals combine directly with oxygen to form these three types of compounds.

Oxide, Peroxide, and Superoxide Formulas

MEMORY TOOL

Oxides, Peroxides, and Superoxides are One Two Two One

Oxygen Anions				
	Oxides	Peroxides	Superoxides	
1		2	2	1
	_____	_____	_____	

EXAMPLE: Write a formula for sodium peroxide.

PRACTICE: Classify each of the following compounds as an oxide, peroxide, or superoxide.

- i) Li_2O _____
- ii) RbO_2 _____
- iii) BaO_2 _____
- iv) SrO _____

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Type of Binary Compound

- As we go up the group, the ability to form peroxides and superoxides decreases.

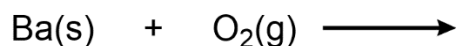
□ Group 2A metals do not form superoxides.

MEMORY TOOL 1 Peroxides are ____ ____ nas.

MEMORY TOOL 2 Smart __angaroo __eads __omic__.

Binary Oxygen Compounds		
Type	Example	
Oxides	_____	Li Lithium
		Be Beryllium
		Na Sodium
		Mg Magnesium
Peroxides	_____	K Potassium
		Ca Calcium
		Rb Rubidium
		Sr Strontium
Superoxides	_____	Cs Cesium
		Ba Barium

EXAMPLE: Complete and balance the following equation:



PRACTICE: Write a balanced equation for the reaction of potassium with oxygen.

Oxides, Peroxides, and Superoxides Summary

Oxides, Peroxides, and Superoxides Summary				
Type	Group 1A		Group 2A	
Oxides O^{2-}	$\text{M(s)} + \text{O}_2\text{(g)} \longrightarrow$ _____		$\text{M(s)} + \text{O}_2\text{(g)} \longrightarrow$ _____	
Peroxides O_2^{2-}	$\text{M(s)} + \text{O}_2\text{(g)} \longrightarrow \text{M}_2\text{O}_2\text{(s)}$		$\text{M(s)} + \text{O}_2\text{(g)} \longrightarrow \text{MO}_2\text{(s)}$	
Superoxides O_2^-	$\text{M(s)} + \text{O}_2\text{(g)} \longrightarrow \text{MO}_2\text{(s)}$		No superoxides under ordinary conditions.	

Li Lithium	Be Beryllium
Na Sodium	Mg Magnesium
K Potassium	Ca Calcium
Rb Rubidium	Sr Strontium
Cs Cesium	Ba Barium