



**Exercise:** For all exercises give the name if the formula is provided and the formula if the name is provided.

calcium nitride	_____	silver sulphide	_____	barium iodide	_____
cadmium oxide	_____	zinc silicide	_____	magnesium chloride	_____
aluminum carbide	_____	sodium fluoride	_____	barium carbide	_____
aluminum bromide	_____	potassium bromide	_____	cesium phosphide	_____
LiCl	_____	K <sub>2</sub> S	_____		
BaO	_____	Al <sub>2</sub> O <sub>3</sub>	_____		

### B) Binary Compounds with Multivalent Elements

Many transition metals and some other elements have multiple valence values and therefore can form multiple compounds with the same non-metal. Due to this it is necessary to indicate the valence of the metal in the name of the compound using either the Stock (IUPAC or Roman Numeral) or Classical ("ous" and "ic") method. The second element (non-metal) always has a valence equal to the value as determined from its group in the periodic table. The table of multivalent elements that you have been given must be **MEMORIZED!**

#### Method 1: Stock/IUPAC/Roman Numeral Method

This is the currently preferred method as the valence of the first is indicated using the corresponding Roman Numeral in brackets following the name of the first element.

**Examples:**

iron(III) chloride	FeCl <sub>3</sub>	tin(IV) iodide	SnI <sub>4</sub>
phosphorus (III) oxide	As <sub>2</sub> O <sub>3</sub>	mercury(II) oxide	HgO

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iron (III) chloride	_____	copper (II) sulphide	_____
tin (IV) oxide	_____	arsenic (III) oxide	_____
phosphorus (V) chloride	_____	Pb <sub>3</sub> N <sub>2</sub>	_____
copper (I) bromide	_____	Cr <sub>3</sub> P <sub>2</sub>	_____
antimony (V) sulphide	_____	NiI <sub>2</sub>	_____
arsenic (III) oxide	_____	Co <sub>2</sub> Se <sub>3</sub>	_____
mercury (I) sulphide	_____	SnO <sub>2</sub>	_____
antimony (V) oxide	_____	CoF <sub>3</sub>	_____
mercury (II) phosphide	_____	AuN	_____
arsenic (V) iodide	_____	CuO	_____
gold (I) telluride	_____	PtO <sub>2</sub>	_____
iron (III) oxide	_____	SnF <sub>4</sub>	_____
bismuth (V) phosphide	_____	MnO	_____
mercury (II) chloride	_____	P <sub>2</sub> O <sub>3</sub>	_____
gold (III) chloride	_____	BiF <sub>3</sub>	_____

**Method 2: Classical/'ous' and 'ic' Method**

This method can be used when the multivalent element has 2 possible valences. The name of the element ending with "ous" denotes the lower valence value and the name of the element ending with an "ic" denotes the higher valence values. In some cases, the Latin name for the element is used.

copper:	cuprous	(valence = 1)	and	cupric	(valence = 2)
mercury	mercurous	(valence = 1) ( $\text{Hg}_2^{2+}$ )	and	mercuric	(valence = 2)
gold:	aurous	(valence = 1)	and	auric	(valence = 3)
iron:	ferrous	(valence = 2)	and	ferric	(valence = 3)
cobalt	cobaltous	(valence = 2)	and	cobaltic	(valence = 3)
nickel	nickelous	(valence = 2)	and	nickelic	(valence = 3)
chromium	chromous	(valence = 2)	and	chromic	(valence = 3)
manganese	manganous	(valence = 2)	and	manganic	(valence = 3)
tin:	stannous	(valence = 2)	and	stannic	(valence = 4)
lead:	plumbous	(valence = 2)	and	plumbic	(valence = 4)
platinum	platinous	(valence = 2)	and	platinic	(valence = 4)
antimony	antimonous	(valence = 3)	and	antimonic	(valence = 5)
arsenic	arsenious	(valence = 3)	and	arsenic	(valence = 5)
bismuth	bismuthous	(valence = 3)	and	bismuthic	(valence = 5)

**Examples:**

$\text{Hg}_2\text{Br}_2$	mercury (I) bromide	or	mercurous bromide
$\text{Hg}_2\text{S}$	mercury (I) sulphide	or	mercurous sulphide
$\text{HgS}$	mercury (II) sulphide	or	mercuric sulphide

\*Some elements having more than two valence values or oxidation states use specific values for the "ous" and the "ic".

phosphorous	phosphorous	(valence = 3)	and	phosphoric	(valence = 5)
nitrogen	nitrous	(valence = 3)	and	nitric	(valence = 5)

**Single Valence Transition Metals:**

Name	Symbol	Valence
zinc	Zn	+2
silver	Ag	+1
cadmium	Cd	+2

**Examples:**

stannous chloride	$\text{SnCl}_2$	phosphorous oxide	$\text{P}_2\text{O}_3$
arsenic phosphide	$\text{As}_3\text{P}_5$	nitric oxide	NO

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ferric oxide	_____	$\text{CrI}_3$	_____
phosphoric sulfide	_____	$\text{NiI}_2$	_____
cuprous fluoride	_____	$\text{Hg}_2\text{Br}_2$	_____
stannic fluoride	_____	$\text{CoCl}_3$	_____
antimonous sulfide	_____	$\text{As}_3\text{N}_5$	_____
arsenious bromide	_____	$\text{Fe}_2\text{C}$	_____
nickelic iodide	_____	$\text{PbS}$	_____
chromous oxide	_____	$\text{Bi}_2\text{Se}_5$	_____
platinic nitride	_____	$\text{CuO}$	_____
auric iodide	_____	$\text{Sb}_2\text{S}_5$	_____
nitrous phosphide	_____	$\text{As}_4\text{C}_5$	_____
stannic oxide	_____	$\text{Au}_2\text{S}$	_____
arsenious nitride	_____	$\text{PAs}$	_____
mercuric fluoride	_____	$\text{NiP}$	_____
cuprous nitride	_____	$\text{CoF}_3$	_____
auric chloride	_____	$\text{CrS}$	_____
cupric sulfide	_____	$\text{Au}_2\text{Se}_3$	_____

### Formula of Elements

Most elements are written as single entities.

Example: iron  $\text{Fe}_{(s)}$       copper  $\text{Cu}_{(s)}$       helium  $\text{He}_{(g)}$

The exceptions to this rule are:      **\*\* These exceptions must be memorized! \*\***

a) the diatomic gases: **H O F Br I N Cl**

hydrogen $\text{H}_{2(g)}$	nitrogen $\text{N}_{2(g)}$	fluorine $\text{F}_{2(g)}$	iodine $\text{I}_{2(s)}$
oxygen $\text{O}_{2(g)}$	chlorine $\text{Cl}_{2(g)}$	bromine $\text{Br}_{2(l)}$	

b) two other non-metals: sulphur  $\text{S}_{8(s)}$       phosphorus  $\text{P}_{4(s)}$

## Common Radicals or Polyatomic Ions

Radicals or polyatomic ions are groups of atoms that are treated as a single entity when writing formulas and names. The following list of common radicals (polyatomic ions) must be memorized along with their valences. Positive polyatomic ions replace metals in an ionic compound and a negatively charged polyatomic ion goes in place of the non-metal. If more than 1 of the radical is required in the chemical formula, brackets are placed around the radical's formula with the subscript outside the bracket.

Radical name	Formula	Valence	Radical name	Formula	Valence
hydroxide	$\text{OH}^-$	1	ammonium	$\text{NH}_4^+$	1
cyanide	$\text{CN}^-$	1	permanganate	$\text{MnO}_4^-$	1
chromate	$\text{CrO}_4^{2-}$	2	dichromate	$\text{Cr}_2\text{O}_7^{2-}$	2
cyanate	$\text{CNO}^-$	1	thiocyanate	$\text{SCN}^-$	1
carbonate	$\text{CO}_3^{2-}$	2	nitrate	$\text{NO}_3^-$	1
phosphate	$\text{PO}_4^{3-}$	3	sulfate	$\text{SO}_4^{2-}$	2
fluorate	$\text{FO}_3^-$	1	chlorate	$\text{ClO}_3^-$	1
acetate	$\text{C}_2\text{H}_3\text{O}_2^-$	1	manganate	$\text{MnO}_4^{2-}$	2

1																			18	
2																				
3																				
4																				
5																				
6																				
7																				

6																				
7																				

### Examples:

sodium hydroxide  
lithium cyanide  
sodium dichromate

$\text{NaOH}$   
 $\text{LiCN}$   
 $\text{Na}_2\text{Cr}_2\text{O}_7$

potassium chromate  
ammonium hydroxide  
magnesium permanganate

$\text{K}_2\text{CrO}_4$   
 $\text{NH}_4\text{OH}$   
 $\text{Mg}(\text{MnO}_4)_2$

**Exercise:** For all exercises give the name if the formula is provided and the formula if the name is provided.

potassium hydroxide	_____	$\text{Ga}_2(\text{Cr}_2\text{O}_7)_3$	_____
iron(III) cyanate	_____	KCNO	_____
barium hydroxide	_____	$(\text{NH}_4)_2\text{SO}_4$	_____
ammonium chloride	_____	$\text{BaCO}_3$	_____
copper(II) chromate	_____	$\text{CuCr}_2\text{O}_7$	_____
ammonium dichromate	_____	$\text{Sn}(\text{CN})_4$	_____
ammonium chlorate	_____	$\text{Fe}(\text{FO}_3)_3$	_____
ferrous hydroxide	_____	$\text{Al}(\text{OH})_3$	_____
nickel(III) cyanide	_____	$\text{KMnO}_4$	_____
auric bromide	_____	CsCN	_____
cobalt(II) cyanate	_____	$\text{Fe}(\text{OH})_2$	_____
zinc hydroxide	_____	$\text{Ca}(\text{SCN})_2$	_____

**Practice!!** This section has everything that has been covered so far.

calcium fluoride	_____	calcium selenide	_____
aluminum iodide	_____	tin (II) sulfide	_____
argon	_____	stannous thiocyanate	_____
silver oxide	_____	cobalt (III) chloride	_____
auric sulphide	_____	plumbic sulfide	_____
lithium phosphide	_____	mercury (I) cyanate	_____
copper (I) oxide	_____	calcium nitride	_____
ammonium chromate	_____	neon gas	_____
cuprous iodide	_____	iron (III) hydroxide	_____
sulfur	_____	bromine	_____
ferric chloride	_____	antimony (III) bromide	_____
hydrogen cyanide	_____	potassium permanganate	_____
stannic fluoride	_____	barium oxide	_____
copper (II) permanganate	_____	manganese (II) cyanide	_____
lead (II) iodide	_____	cupric dichromate	_____

mercurous bromide \_\_\_\_\_

Xe<sub>(g)</sub> \_\_\_\_\_

zinc phosphate \_\_\_\_\_

Sb<sub>2</sub>O<sub>3</sub> \_\_\_\_\_

aluminum oxide \_\_\_\_\_

Ga<sub>2</sub>Se<sub>3</sub> \_\_\_\_\_

KOH \_\_\_\_\_

BeI<sub>2</sub> \_\_\_\_\_MgF<sub>2</sub> \_\_\_\_\_Pt(SO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_P<sub>4(s)</sub> \_\_\_\_\_Pb<sub>3</sub>N<sub>4</sub> \_\_\_\_\_Sr(OH)<sub>2</sub> \_\_\_\_\_Sn(MnO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_

CsCNO \_\_\_\_\_

FeP \_\_\_\_\_

(NH<sub>4</sub>)<sub>3</sub>P \_\_\_\_\_Na<sub>2</sub>O \_\_\_\_\_Au<sub>2</sub>S<sub>3</sub> \_\_\_\_\_

RbCNO \_\_\_\_\_

Ca<sub>3</sub>As<sub>2</sub> \_\_\_\_\_Ni(FO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_Ga<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub> \_\_\_\_\_

CoN \_\_\_\_\_

LiSCN \_\_\_\_\_

Cl<sub>2(g)</sub> \_\_\_\_\_PbF<sub>2</sub> \_\_\_\_\_K<sub>2</sub>S \_\_\_\_\_MgCr<sub>2</sub>O<sub>7</sub> \_\_\_\_\_CrI<sub>3</sub> \_\_\_\_\_AgNO<sub>3</sub> \_\_\_\_\_Bi<sub>3</sub>N<sub>5</sub> \_\_\_\_\_Zn(OH)<sub>2</sub> \_\_\_\_\_Ba<sub>2</sub>C \_\_\_\_\_PtO<sub>2</sub> \_\_\_\_\_Fr<sub>2</sub>O \_\_\_\_\_

## Acids

There are three groups of acids:      1. binary acids      2. oxy acids      3. derived oxy acids

### 1. Binary Acids

This is a very small but common group of acids. The following rules apply to all of the members.

1. All have the prefix "hydro" and end with "ic".
2. All must contain hydrogen as the first element.
3. Use the normal cross-over-rule to determine the formula.
4. All are made by dissolving the gas in water and must be so indicated by using (aq) behind the formula.
5. Have no oxygen in their formula

### Examples:

hydrochloric acid      HCl<sub>(aq)</sub>      hydrosulfuric acid      H<sub>2</sub>S<sub>(aq)</sub>      hydrocyanic acid      HCN<sub>(aq)</sub>

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hydrobromic acid      \_\_\_\_\_      hydrotelluric acid      \_\_\_\_\_      hydrofluoric acid      \_\_\_\_\_

hydroiodic acid      \_\_\_\_\_      hydroselenic acid      \_\_\_\_\_      hydrosulfuric acid      \_\_\_\_\_

**2. Oxy Acids**

This is a larger group of acids. They are alike in that they all contain H, O and at least one other non-metal element. All members of this group of acids follow the rules below.

1. The name of the acid ends in "ic".
2. The name of the associated radical ends in "ate".
3. The valence value of the associated radical is equal to the number of acidic hydrogens in the acid.
4. Since these acids are made by reacting a non-metal oxide with water, (aq) is not required but may be used.

The following 6 oxy acids and their associated radicals along with their valences must be **memorized**.

Name of the Acid	Formula of the Acid	Name of the associated radical	Formula of the associated radical	valence value for the associated radical
acetic acid	$\text{HC}_2\text{H}_3\text{O}_2$	acetate	$\text{C}_2\text{H}_3\text{O}_2^-$	1
nitric acid	$\text{HNO}_3$	nitrate	$\text{NO}_3^-$	1
fluoric acid	$\text{HFO}_3$	fluorate	$\text{FO}_3^-$	1
carbonic acid	$\text{H}_2\text{CO}_3$	carbonate	$\text{CO}_3^{2-}$	2
sulfuric acid	$\text{H}_2\text{SO}_4$	sulfate	$\text{SO}_4^{2-}$	2
phosphoric acid	$\text{H}_3\text{PO}_4$	phosphate	$\text{PO}_4^{3-}$	3

**NOTE:**

Using the periodic table it is possible to write the names and formulas for a number of other oxy acids using the fact that members of the same chemical family have similar chemical properties. Elements of the same chemical family (group) follow the pattern of the memorized oxy acid immediately above the element of interest.

**Example:** memorized acid: fluoric acid =  $\text{HFO}_3$   
 therefore: chloric acid =  $\text{HClO}_3$       iodic acid =  $\text{HIO}_3$       bromic acid =  $\text{HBrO}_3$

If hydrogen is joined with the radicals learned earlier a few more acids can be formed.

chromate =  $\text{CrO}_4^{2-}$       chromic acid =  $\text{H}_2\text{CrO}_4$       cyanate =  $\text{CNO}^-$       cyanic acid =  $\text{HCNO}$



**Exercise:** Complete the following chart for the acids listed.

Name of the acid	Formula of the acid	Name of the associated radical	Formula of the associated radical	Valence value of the associated radical
fluoric acid				
chloric acid				
bromic acid				
iodic acid				
sulfuric acid				
selenic acid				
telluric acid				
chromic acid				
molybdenic acid				
tungstic acid				
dichromic acid				
manganic acid				
cyanic acid				
carbonic acid				
silicic acid				
phosphoric acid				

### 3. Derived Oxy Acids

These acids are all derived from the parent oxy acids which you are to memorize. The table below shows the rule to determine the derived oxy acids from the parent acid. When adding or removing oxygen atoms from the parent acid, the number of hydrogens on the acid and the valence of the associated radical **remain the same as the parent**.

	Type of Acid	Associated Radical	Example	
Parent Oxy Acid + 1 O	per_____ic	per_____ate	<b>perchloric acid</b> $\text{HClO}_4$	<b>perchlorate ion</b> $\text{ClO}_4^-$
<i>Parent Oxy Acid</i>	<i>ic</i>	<i>ate</i>	<i>chloric acid</i> $\text{HClO}_3$	<i>chlorate ion</i> $\text{ClO}_3^-$
Parent Oxy Acid - 1 O	ous	ite	chlorous acid $\text{HClO}_2$	chlorite ion $\text{ClO}_2^-$
Parent Oxy Acid - 2 O	hypo_____ous	hypo_____ite	<b>hypochlorous acid</b> $\text{HClO}$	<b>hypochlorite ion</b> $\text{ClO}^-$

**Exercise:** Complete the following chart for the acids listed.

Name of the acid	Formula of the acid	Name of the associated radical	Formula of the associated radical	Valence value of the associated radical
phosphoric acid				
phosphorous acid				
hypophosphorous acid				
sulfuric acid				
sulfurous acid				
nitric acid				
nitrous acid				
perchloric acid				
chloric acid				
chlorous acid				
hypochlorous acid				
selenic acid				
selenous acid				
telluric acid				
tellurous acid				
permanganic acid				
manganic acid				

## Salts

The word, salt, is the general term given to a class of compounds which can be formed when an acid and a base neutralize each other. According to this definition then, most of the compounds dealt with in the section on binary compounds could be considered to be salts formed from a base and a binary acid. In the same manner, salts are formed from a base and an oxy acid or derived oxy acid.

### Examples:

sodium sulphate  
aluminum carbonate  
cupric nitrite

$\text{Na}_2\text{SO}_4$   
 $\text{Al}_2(\text{CO}_3)_3$   
 $\text{Cu}(\text{NO}_2)_2$

calcium phosphate  $\text{Ca}_3(\text{PO}_4)_2$   
zinc perchlorate  $\text{Zn}(\text{ClO}_4)_2$   
stannous hypoiodite  $\text{Sn}(\text{IO})_2$

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**Salts from oxy acids**

sodium nitrate	_____	$\text{Pb}(\text{WO}_4)_2$	_____
iron(III) acetate	_____	$\text{NaClO}_3$	_____
aluminum silicate	_____	$\text{GaAsO}_4$	_____
magnesium phosphate	_____	$\text{CaSeO}_4$	_____
aurous sulfate	_____	$\text{Mg}_3(\text{AsO}_4)_2$	_____
ammonium chlorate	_____	$\text{K}_2\text{CO}_3$	_____
zinc nitrate	_____	$\text{Na}_3\text{PO}_4$	_____
potassium acetate	_____	$\text{CuSiO}_3$	_____
lithium chromate	_____	$\text{Pb}(\text{CrO}_4)_2$	_____
calcium tungstate	_____	$\text{Fe}(\text{ClO}_3)_2$	_____
ferric sulfate	_____	$\text{Cr}(\text{BrO}_3)_2$	_____
gold (I) phosphate	_____	$\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$	_____
magnesium chlorate	_____	$\text{SnTeO}_4$	_____
ammonium nitrate	_____	$\text{NH}_4\text{IO}_3$	_____
lithium molybdenate	_____	$\text{Zn}_3(\text{PO}_4)_2$	_____

**Salts from Derived Oxy Acids**

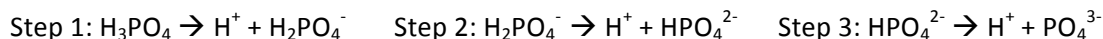
aluminum sulfite	_____	$\text{CaSeO}_3$	_____
cobalt(III) chlorite	_____	$\text{Na}_2\text{CO}_2$	_____
tin(IV) hypochlorite	_____	$\text{Ba}(\text{IO}_2)_2$	_____
sodium phosphite	_____	$\text{Ni}_2(\text{TeO}_2)_3$	_____
aluminum nitrite	_____	$\text{NaBrO}$	_____
cobalt(II) hypophosphite	_____	$\text{LiNO}_2$	_____
stannic perchlorate	_____	$\text{Au}(\text{NO}_2)_3$	_____
sodium sulphite	_____	$\text{NH}_4\text{ClO}_4$	_____
aluminum chlorite	_____	$\text{Ga}(\text{BrO}_4)_3$	_____
nickel(III) hypochlorite	_____	$\text{Pt}(\text{ClO})_4$	_____
tin(IV) phosphite	_____	$\text{ZnMnO}_4$	_____
copper(I) permanganate	_____	$\text{Ag}_2\text{SO}_2$	_____
ammonium hypophosphite	_____	$\text{FeWO}_2$	_____
mercuric perchlorate	_____	$\text{K}_2\text{MnO}_4$	_____
magnesium sulfite	_____	$(\text{NH}_4)_3\text{PO}_2$	_____

**Practice!!** This section has everything that has been covered so far.

calcium fluoride	_____	BaSiO <sub>3</sub>	_____
aluminum hydroxide	_____	Ni <sub>3</sub> N <sub>2</sub>	_____
sulfuric acid	_____	H <sub>2</sub> Se <sub>(aq)</sub>	_____
chromium (II) iodite	_____	Na <sub>3</sub> PO <sub>4</sub>	_____
stannous fluoride	_____	Sn <sub>3</sub> P <sub>4</sub>	_____
ammonium hypobromite	_____	NH <sub>4</sub> OH	_____
aurous cyanide	_____	AgNO <sub>3</sub>	_____
mercury (II) sulfite	_____	Mg(MnO <sub>4</sub> ) <sub>2</sub>	_____
manganic oxide	_____	CaClO <sub>2</sub>	_____
hydrofluoric acid	_____	Sr(IO <sub>3</sub> ) <sub>2</sub>	_____
carbonic acid	_____	BeSeO <sub>3</sub>	_____
calcium sulfate	_____	S <sub>8(s)</sub>	_____
zinc hydroxide	_____	PbS <sub>2</sub>	_____
strontium dichromate	_____	Fe(MnO <sub>4</sub> ) <sub>2</sub>	_____
lithium hypoiodite	_____	SrCrO <sub>4</sub>	_____
magnesium silicate	_____	P <sub>4(s)</sub>	_____
zinc phosphide	_____	Zn(PO <sub>4</sub> ) <sub>3</sub>	_____
barium hydride	_____	H <sub>2(g)</sub>	_____
potassium permanganate	_____	CaCO <sub>3</sub>	_____
sodium chromate	_____	SbBr <sub>3</sub>	_____
plumbic cyanate	_____	AgIO	_____
lead (IV) thiocyanate	_____	SnO <sub>2</sub>	_____
potassium cyanide	_____	H <sub>3</sub> PO <sub>2(aq)</sub>	_____
sodium nitrite	_____	PbWO <sub>4</sub>	_____
fluorine	_____	H <sub>2</sub> S <sub>(aq)</sub>	_____
cobalt (II) sulfite	_____	MgNO <sub>2</sub>	_____
plumbic chromite	_____	H <sub>2</sub> SeO <sub>3</sub>	_____
zinc hypophosphite	_____	AlAsO <sub>2</sub>	_____
nitrous acid	_____	N <sub>2(g)</sub>	_____

**Acid Radicals and Acid Salts****1. Acid Radicals**

In certain circumstances the oxy acids with multiple acidic hydrogens are able to lose the hydrogens one at a time. This results in radicals with acidic hydrogens still attached which are referred to as acid radicals.



Radical	Name	Valence
$\text{PO}_4^{3-}$	Phosphate	3
$\text{HPO}_4^{2-}$	monohydrogenphosphate	2
$\text{H}_2\text{PO}_4^-$	dihydrogenphosphate	1

**Notes:**

- valence = # of hydrogen removed from the acid OR valence of non-acid radical - # of H's still attached
- mono may be left off a monohydrogen acid radical
- for oxy acids with 2 acidic hydrogens (diprotic acids), the prefix "bi" may be used in place of monohydrogen (eg.  $\text{HCO}_3^-$  can be named as bicarbonate or monohydrogen carbonate)

**Exercise:**

For the following give the formula and valence value of the radicals listed:

phosphite	_____	_____	sulphate	_____	_____
monohydrogenphosphite	_____	_____	monohydrogensulphate	_____	_____
dihydrogenphosphite	_____	_____	carbonate	_____	_____
arsenate	_____	_____	monohydrogencarbonate	_____	_____
monohydrogenarsenate	_____	_____	chromate	_____	_____
dihydrogenarsenate	_____	_____	monohydrogechromate	_____	_____

**2. Acid Salts**

The acid radicals are treated just like any other radical.

**Examples:**

calcium dihydrogenhypophosphite	$\text{Ca}(\text{H}_2\text{PO}_2)_2$	aluminum bisulphite	$\text{Al}(\text{HSO}_3)_3$
potassium monohydrogen carbonate	$\text{KHCO}_3$	sodium hydrogensulfate	$\text{NaHSO}_4$

**Exercise:**

For all exercises give the name if the formula is provided and the formula if the name is provided.

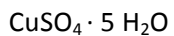
sodium monohydrogenphosphate	_____	ammonium bicarbonate	_____
magnesium dihydrogenphosphate	_____	$\text{Sn}(\text{HCO}_2)_2$	_____
aluminum dihydrogenphosphite	_____	$\text{Li}_2\text{HPO}_3$	_____
chromium(III) hydrogenphosphite	_____	$\text{Ni}(\text{HSiO}_3)_2$	_____
cupric monohydrogenarsenate	_____	$\text{CaHPO}_2$	_____
stannic dihydrogenhypophosphite	_____	$\text{KH}_2\text{AsO}_3$	_____
potassium monohydrogenselenite	_____	$\text{Ba}(\text{HCrO}_4)_2$	_____
ferric monohydrogensulphate	_____	$\text{BeHPO}_3$	_____

**Hydrates**

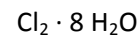
Hydrates are crystals containing a given number of water molecules within their structure. When naming a hydrate Greek prefixes in front of the word hydrate are used to indicate the number of water molecules into the crystal. In the chemical formula the number of water molecules is separated from the formula of the compound by a dot “.”

**Examples:**

copper(II) sulfate pentahydrate



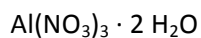
chlorine octahydrate

**Exercise:**

For all exercises you will give the name if formula provided and the formula if the name is provided.

calcium sulfate dihydrate

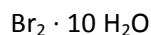
\_\_\_\_\_



\_\_\_\_\_

magnesium sulfite heptahydrate

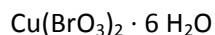
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\_\_\_\_\_

sodium carbonate decahydrate

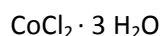
\_\_\_\_\_



\_\_\_\_\_

aluminum oxide monohydrate

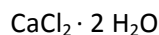
\_\_\_\_\_



\_\_\_\_\_

ferric chloride hexahydrate

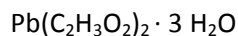
\_\_\_\_\_



\_\_\_\_\_

calcium nitrate trihydrate

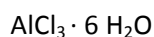
\_\_\_\_\_



\_\_\_\_\_

cadmium bromide tetrahydrate

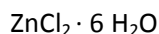
\_\_\_\_\_



\_\_\_\_\_

chromium(III) nitrate nonahydrate

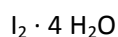
\_\_\_\_\_



\_\_\_\_\_

cobalt(II) perchlorate pentahydrate

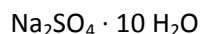
\_\_\_\_\_



\_\_\_\_\_

barium chloride dihydrate

\_\_\_\_\_



\_\_\_\_\_

**Peroxides**

These are binary oxides, which contain an extra oxygen atom.

**Rules:**

1. Write the formula of the regular oxide.
2. Add on one extra oxygen atom.
3. Do not at this stage cancel any of the subscripts.



**Exercise:** For all exercises give the name if the formula is provided and the formula if the name is provided.

zinc peroxide

\_\_\_\_\_

aluminum peroxide

\_\_\_\_\_

calcium peroxide

\_\_\_\_\_



\_\_\_\_\_

cesium peroxide

\_\_\_\_\_



\_\_\_\_\_

copper(II) peroxide

\_\_\_\_\_



\_\_\_\_\_

magnesium peroxide

\_\_\_\_\_



\_\_\_\_\_

potassium peroxide

\_\_\_\_\_



\_\_\_\_\_

strontium peroxide

\_\_\_\_\_



\_\_\_\_\_

hydrogen peroxide

\_\_\_\_\_



\_\_\_\_\_

barium peroxide

\_\_\_\_\_



\_\_\_\_\_

**Thio Compounds**

The prefix "thio" in the name indicates that an oxygen atom has been replaced by a sulphur atom.

Examples:	potassium sulphate	$K_2SO_4$	potassium thiosulphate	$K_2S_2O_3$
	sodium carbonate	$Na_2CO_3$	sodium thiocarbonate	$Na_2SCO_2$
	potassium cyanate	KCNO	potassium thiocyanate	KSCN

**Exercise:** For all exercises give the name if the formula is provided and the formula if the name is provided.

ammonium thiocyanate	_____	BaHSPO	_____
sodium hydrogenthiosulphate	_____	$CoS_2O_3 \cdot 8 H_2O$	_____
potassium thiosulfate	_____	BeStEO <sub>2</sub>	_____
aluminum thiocarbonate	_____	PbS <sub>2</sub> O <sub>2</sub>	_____
magnesium thiohypophosphite	_____	Ag <sub>3</sub> SPO <sub>2</sub>	_____
ammonium thiophosphate	_____	CuHSCO	_____
tin(II) thiobromate	_____	CaS <sub>2</sub> O <sub>2</sub>	_____
chromic thioselenite	_____	CsHSSeO <sub>2</sub>	_____
zinc thioarsenate	_____	AlSPO <sub>3</sub>	_____

**Practice!!** This section has everything that has been covered so far.

sodium chloride	_____	antimony (V) oxide	_____
silver chlorate	_____	CaF <sub>2</sub>	_____
calcium perbromate	_____	H <sub>3</sub> PO <sub>4</sub>	_____
barium phosphide	_____	Ag <sub>2</sub> O	_____
nickel (II) cyanide	_____	NaIO <sub>3</sub>	_____
cesium peroxide	_____	ZnCO <sub>3</sub>	_____
beryllium phosphate	_____	NH <sub>4</sub> OH	_____
zinc sulfite	_____	Ca <sub>3</sub> (PO <sub>2</sub> ) <sub>2</sub>	_____
calcium thiocarbonate	_____	HI <sub>(aq)</sub>	_____
cesium bromide	_____	Pb(OH) <sub>2</sub>	_____
iodine monohydrate	_____	Hg(ClO <sub>2</sub> ) <sub>2</sub>	_____
stannic carbide	_____	SnO	_____
mercuric hydroxide	_____	As <sub>2</sub> O <sub>5</sub>	_____
potassium bisulfate	_____	Fe <sub>2</sub> (HPO <sub>4</sub> ) <sub>3</sub>	_____
hypocarbonous acid	_____	NaBrO	_____
cupric perchlorate	_____	Zn(IO) <sub>2</sub>	_____
gold (III) selenite	_____	SnCl <sub>4</sub>	_____
stannous phosphide	_____	MgSeO <sub>3</sub>	_____

Cd(BrO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_HNO<sub>2</sub> (aq) \_\_\_\_\_

hydroiodic acid \_\_\_\_\_

cupric dihydrogenphosphite \_\_\_\_\_

cupric sulfate pentahydrate \_\_\_\_\_

zinc monohydrogentellurite \_\_\_\_\_

hydrocyanic acid \_\_\_\_\_

lithium hypofluorite \_\_\_\_\_

magnesium silicate \_\_\_\_\_

potassium sulfide \_\_\_\_\_

hydrofluoric acid \_\_\_\_\_

lithium hydrogensulfate \_\_\_\_\_

magnesium hypochlorite \_\_\_\_\_

calcium peroxide \_\_\_\_\_

sodium bicarbonate \_\_\_\_\_

manganese (III) oxide \_\_\_\_\_

potassium oxide \_\_\_\_\_

barium sulfide \_\_\_\_\_

magnesium fluoride heptahydrate \_\_\_\_\_

dichromic acid \_\_\_\_\_

mercurous thiobromite \_\_\_\_\_

zinc hydride dihydrate \_\_\_\_\_

perchloric acid \_\_\_\_\_

strontium chloride \_\_\_\_\_

silver sulfide \_\_\_\_\_

ferric thiosulfite \_\_\_\_\_

chlorous acid \_\_\_\_\_

argon gas \_\_\_\_\_

nickelic bicarbonite \_\_\_\_\_

lead (IV) nitride \_\_\_\_\_

cupric chloride trihydrate \_\_\_\_\_

sulfurous acid \_\_\_\_\_

aluminum nitride \_\_\_\_\_

stannous hypoiodite \_\_\_\_\_

Name: \_\_\_\_\_

lead (II) bicarbonite \_\_\_\_\_

chromium (III) bisulfite \_\_\_\_\_

platinic peroxide \_\_\_\_\_

S<sub>8</sub> (s) \_\_\_\_\_BaCl<sub>2</sub> · 3 H<sub>2</sub>O \_\_\_\_\_H<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_Sn<sub>3</sub>(AsO<sub>2</sub>)<sub>4</sub> \_\_\_\_\_CoI<sub>3</sub> · 10 H<sub>2</sub>O \_\_\_\_\_ZnCO<sub>3</sub> \_\_\_\_\_

KBr \_\_\_\_\_

(NH<sub>4</sub>)<sub>2</sub>SO<sub>3</sub> \_\_\_\_\_

CsH \_\_\_\_\_

NiBr<sub>2</sub> \_\_\_\_\_KMnO<sub>4</sub> \_\_\_\_\_Al<sub>2</sub>(TeO<sub>2</sub>)<sub>3</sub> \_\_\_\_\_

HFO \_\_\_\_\_

Ga(OH)<sub>3</sub> \_\_\_\_\_Ba<sub>3</sub>(PO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_KBrO<sub>4</sub> \_\_\_\_\_Pb(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>4</sub> \_\_\_\_\_P<sub>4</sub> (s) \_\_\_\_\_H<sub>2</sub>S \_\_\_\_\_HNO<sub>3</sub> \_\_\_\_\_Mg<sub>3</sub>N<sub>2</sub> \_\_\_\_\_Na<sub>2</sub>S<sub>2</sub>O<sub>2</sub> \_\_\_\_\_

NiN \_\_\_\_\_

Br<sub>2</sub> (l) \_\_\_\_\_LiNO<sub>2</sub> \_\_\_\_\_HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> \_\_\_\_\_SrH<sub>2</sub> · 6 H<sub>2</sub>O \_\_\_\_\_AgNO<sub>3</sub> \_\_\_\_\_BaSiO<sub>3</sub> \_\_\_\_\_

CoO \_\_\_\_\_

(NH<sub>4</sub>)<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_



**Molecular Compounds**

These compounds contain 2 non-metals and are named using Greek prefixes. This method does not use the valence values. The Greek prefix is placed in front of the element name to indicate how many atoms of the element to place in the formula. If there is only 1 atom of the first element, mono is not used on the name of the first element.

**Prefixes**

1 = mono    2 = di    3 = tri    4 = tetra    5 = penta    6 = hexa    7 = hepta    8 = octa    9 = nona    10 = deca

**Examples:**

diphosphorus pentoxide



arsenic trichloride



carbon monoxide



xenon tetrafluoride



**Exercise:** For all exercises give the name if the formula is provided and the formula if the name is provided.

xenon hexafluoride

\_\_\_\_\_

dinitrogen tetrahydride

\_\_\_\_\_

sulfur dioxide

\_\_\_\_\_

CF<sub>4</sub>

\_\_\_\_\_

sulphur trioxide

\_\_\_\_\_

AsH<sub>3</sub>

\_\_\_\_\_

carbon dioxide

\_\_\_\_\_

PBr<sub>3</sub>

\_\_\_\_\_

carbon disulphide

\_\_\_\_\_

B<sub>2</sub>Si

\_\_\_\_\_

diphosphorus trisulfide

\_\_\_\_\_

NF<sub>3</sub>

\_\_\_\_\_

silicon dioxide

\_\_\_\_\_

Si<sub>2</sub>Br<sub>6</sub>

\_\_\_\_\_

carbon tetrachloride

\_\_\_\_\_

AsI<sub>5</sub>

\_\_\_\_\_

tellurium dioxide

\_\_\_\_\_

C<sub>2</sub>H<sub>6</sub>

\_\_\_\_\_

sulfur dioxide

\_\_\_\_\_

SI<sub>6</sub>

\_\_\_\_\_

nitrogen dioxide

\_\_\_\_\_

XeCl<sub>4</sub>

\_\_\_\_\_

nitrogen tetroxide

\_\_\_\_\_

TeO<sub>2</sub>

\_\_\_\_\_

selenium dibromide

\_\_\_\_\_

PI<sub>5</sub>

\_\_\_\_\_

carbon tetrabromide

\_\_\_\_\_

CS<sub>2</sub>

\_\_\_\_\_

dinitrogen monoxide

\_\_\_\_\_

KrF<sub>2</sub>

\_\_\_\_\_

bromine trifluoride

\_\_\_\_\_

N<sub>2</sub>O<sub>3</sub>

\_\_\_\_\_

dichlorine monoxide

\_\_\_\_\_

ICl

\_\_\_\_\_

dinitrogen tetrafluoride

\_\_\_\_\_

SeCl<sub>2</sub>

\_\_\_\_\_

diarsenic triselenide

\_\_\_\_\_

ICl<sub>7</sub>

\_\_\_\_\_

diphosphorus pentasulphide

\_\_\_\_\_

NF<sub>3</sub>

\_\_\_\_\_

hexaboron monosilicide

\_\_\_\_\_

P<sub>4</sub>S<sub>5</sub>

\_\_\_\_\_

dioxygen difluoride

\_\_\_\_\_

N<sub>2</sub>O<sub>5</sub>

\_\_\_\_\_

sulfur dichloride

\_\_\_\_\_

P<sub>2</sub>O<sub>3</sub>

\_\_\_\_\_

ditellurium monocarbide

\_\_\_\_\_

C<sub>3</sub>H<sub>8</sub>

\_\_\_\_\_

**PRACTICE, PRACTICE, PRACTICE** This section contains everything covered in this unit.

sulphur	_____	antimonous bromide	_____
plumbous peroxide	_____	tin (IV) sulfide	_____
calcium iodite	_____	$\text{PbS}_2\text{O}_2$	_____
sulfur dioxide	_____	$\text{MgO}_2$	_____
gallium hypoarsenite	_____	$\text{Al}_2(\text{SO}_2)_3$	_____
neon	_____	$\text{Au}(\text{MnO}_4)_3$	_____
platinum (IV) thiocarbonite	_____	$\text{BrCl}_5$	_____
calcium cyanide heptahydrate	_____	$\text{Ba}(\text{FO})_2$	_____
cuprous permanganate	_____	$\text{ZnHAsO}_4$	_____
chromous acid	_____	$\text{Co}(\text{NO}_3)_3$	_____
cyanic acid	_____	$\text{HgSCO}$	_____
iodine monochloride	_____	$\text{H}_2\text{S}_{(\text{aq})}$	_____
stannic dihydrogen hypophosphite	_____	$\text{SrCl}_2 \cdot 8 \text{H}_2\text{O}$	_____
auric peroxide	_____	$\text{MnP}$	_____
ammonium selenide	_____	$\text{Cr}(\text{H}_2\text{PO}_3)_3$	_____
titanium	_____	$\text{K}_2\text{O}_2$	_____
ferrous thiosilicate	_____	$\text{Al}(\text{ClO}_4)_3$	_____
cadmium bisulphate	_____	$\text{Ga}_2(\text{SiO}_3)_3$	_____
lithium phosphide	_____	$\text{P}_2\text{S}_3$	_____
bromine	_____	$\text{HNO}_3_{(\text{aq})}$	_____
potassium oxide	_____	$\text{FeCr}_2\text{O}_7$	_____
barium sulfide	_____	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	_____
magnesium fluoride	_____	$\text{H}_2\text{SeO}_3_{(\text{aq})}$	_____
mercurous bromide	_____	$\text{CaCr}_2\text{O}_7$	_____
zinc hydride	_____	$\text{P}_2\text{O}_5$	_____
ferric sulfide	_____	$\text{Cr}(\text{BrO})_2$	_____
arsenic (V) oxide	_____	$\text{MgO}_2$	_____
lead (IV) nitride	_____	$\text{Al}_2\text{O}_4$	_____
cupric chloride	_____	$\text{HI}_{(\text{aq})}$	_____
stannous iodide	_____	$\text{Au}_2(\text{HAsO}_3)_3 \cdot 9 \text{H}_2\text{O}$	_____
aluminum nitride	_____	$\text{SO}_3$	_____

$\text{Li}_2\text{SCO}_2$  \_\_\_\_\_

 $\text{Sr}_3\text{N}_2 \cdot 3 \text{H}_2\text{O}$  \_\_\_\_\_

 $(\text{NH}_4)_2\text{SiO}_2$  \_\_\_\_\_

 $\text{H}_2\text{Te}_{(\text{aq})}$  \_\_\_\_\_

silver oxide \_\_\_\_\_

calcium phosphide \_\_\_\_\_

iron (II) sulfide \_\_\_\_\_

arsenic phosphide \_\_\_\_\_

mercury (II) nitride \_\_\_\_\_

tin (IV) fluoride \_\_\_\_\_

sodium hydride \_\_\_\_\_

sodium monohydrogenphosphate \_\_\_\_\_

barium hydroxide \_\_\_\_\_

sodium bicarbonate \_\_\_\_\_

perchloric acid \_\_\_\_\_

nitrous acid \_\_\_\_\_

strontium peroxide \_\_\_\_\_

plumbous oxide \_\_\_\_\_

potassium chloride \_\_\_\_\_

hydrogen iodide \_\_\_\_\_

antimonous phosphide \_\_\_\_\_

silver sulfide \_\_\_\_\_

mercuric oxide \_\_\_\_\_

phosphorus (III) chloride \_\_\_\_\_

ferrous oxide \_\_\_\_\_

magnesium tellurite \_\_\_\_\_

zinc chromate dihydrate \_\_\_\_\_

phosphorous acid \_\_\_\_\_

chromic cyanide \_\_\_\_\_

sodium thiosulfate hexahydrate \_\_\_\_\_

iron (III) carbonate \_\_\_\_\_

magnesium phosphide \_\_\_\_\_

fluorine \_\_\_\_\_

Name: \_\_\_\_\_

chlorous acid \_\_\_\_\_

dicarbon tetrahydride \_\_\_\_\_

hydrosulfuric acid \_\_\_\_\_

stannous tungstate \_\_\_\_\_

calcium peroxide \_\_\_\_\_

ammonium hydrogenhypophosphite \_\_\_\_\_

 $\text{P}_2\text{O}_5$  \_\_\_\_\_ $\text{Sn}(\text{SO}_4)_2$  \_\_\_\_\_ $\text{FePO}_4$  \_\_\_\_\_ $\text{K}_3\text{N}$  \_\_\_\_\_ $\text{SO}_2$  \_\_\_\_\_ $\text{CuOH}$  \_\_\_\_\_ $\text{Zn}(\text{NO}_2)_2$  \_\_\_\_\_ $\text{Au}_2\text{S}_3$  \_\_\_\_\_ $\text{NaOH}$  \_\_\_\_\_ $\text{H}_2\text{SO}_3$  \_\_\_\_\_ $\text{H}_2\text{S}$  \_\_\_\_\_ $\text{H}_3\text{PO}_4$  \_\_\_\_\_ $\text{NH}_3$  \_\_\_\_\_ $\text{HCN}$  \_\_\_\_\_ $\text{Ca}(\text{OH})_2$  \_\_\_\_\_ $\text{Fe}(\text{OH})_3$  \_\_\_\_\_ $\text{H}_3\text{P}$  \_\_\_\_\_ $\text{Na}_2\text{CO}_3$  \_\_\_\_\_ $\text{P}_2\text{O}_5$  \_\_\_\_\_ $\text{CH}_4$  \_\_\_\_\_ $\text{FeSO}_4$  \_\_\_\_\_ $\text{SiO}_2$  \_\_\_\_\_ $\text{GaCl}_3$  \_\_\_\_\_ $\text{CoBr}_2$  \_\_\_\_\_ $\text{B}_2\text{H}_4$  \_\_\_\_\_ $\text{CO}$  \_\_\_\_\_ $\text{P}_4(\text{s})$  \_\_\_\_\_

NH<sub>4</sub>Cl \_\_\_\_\_Al<sub>2</sub>O<sub>3</sub> \_\_\_\_\_

KBr \_\_\_\_\_

Li<sub>2</sub>S \_\_\_\_\_SnI<sub>2</sub> \_\_\_\_\_SnCl<sub>4</sub> \_\_\_\_\_Cu<sub>2</sub>O \_\_\_\_\_CuSO<sub>4</sub> \_\_\_\_\_

tetracarbon decahydride \_\_\_\_\_

nickelic perbromate \_\_\_\_\_

chlorine dihydrate \_\_\_\_\_

copper (II) hypoarsenite \_\_\_\_\_

dichromic acid \_\_\_\_\_

aurous hydroxide \_\_\_\_\_

barium bithiocarbonate \_\_\_\_\_

hydrogen chloride \_\_\_\_\_

sulfuric acid \_\_\_\_\_

chromous cyanate \_\_\_\_\_

magnesium thiophosphate \_\_\_\_\_

ferrous iodide \_\_\_\_\_

barium dichromate \_\_\_\_\_

phosphorus \_\_\_\_\_

periodic acid \_\_\_\_\_

tetraphosphorus decaoxide \_\_\_\_\_

hydrotelluric acid \_\_\_\_\_

ammonium bitungstate \_\_\_\_\_

iron (III) peroxide \_\_\_\_\_

neon \_\_\_\_\_

silver hypoarsenite \_\_\_\_\_

copper (II) sulphate pentahydrate \_\_\_\_\_

cyanic acid \_\_\_\_\_

sulfur dioxide \_\_\_\_\_

potassium permanganate \_\_\_\_\_

zinc chloride \_\_\_\_\_

diarsenic pentasulfide \_\_\_\_\_

hypophosphorous acid \_\_\_\_\_

potassium hydroxide \_\_\_\_\_

iron (III) cyanate \_\_\_\_\_

barium chromate \_\_\_\_\_

ammonium thiocyanate \_\_\_\_\_

potassium dichromate \_\_\_\_\_

mercuric tellurite \_\_\_\_\_

platinum (IV) silicate \_\_\_\_\_

Ag<sub>2</sub>Se \_\_\_\_\_Fe(OH)<sub>2</sub> \_\_\_\_\_N<sub>2</sub>O<sub>4</sub> \_\_\_\_\_K<sub>2</sub>S<sub>2</sub>O \_\_\_\_\_HMnO<sub>4</sub> (aq) \_\_\_\_\_H<sub>2</sub>SiO<sub>3</sub> (aq) \_\_\_\_\_CaS<sub>2</sub>O<sub>2</sub> \_\_\_\_\_N<sub>2</sub>S<sub>4</sub> \_\_\_\_\_Au(IO<sub>4</sub>)<sub>3</sub> \_\_\_\_\_PbO<sub>3</sub> \_\_\_\_\_MgMnO<sub>4</sub> \_\_\_\_\_H<sub>2</sub>S (aq) \_\_\_\_\_Fe(H<sub>2</sub>PO<sub>3</sub>)<sub>3</sub> \_\_\_\_\_PCl<sub>5</sub> \_\_\_\_\_Rb<sub>2</sub>SSiO<sub>2</sub> \_\_\_\_\_Ra<sub>3</sub>P<sub>2</sub> · 7 H<sub>2</sub>O \_\_\_\_\_NH<sub>4</sub>OH \_\_\_\_\_

HCN (aq) \_\_\_\_\_

Ni<sub>3</sub>(SPO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_HTeO<sub>2</sub> (aq) \_\_\_\_\_Cu<sub>2</sub>Se \_\_\_\_\_Ga(OH)<sub>3</sub> \_\_\_\_\_B<sub>2</sub>H<sub>6</sub> \_\_\_\_\_

BaF<sub>2</sub> \_\_\_\_\_H<sub>2</sub>CrO<sub>3(aq)</sub> \_\_\_\_\_Pb(ClO)<sub>2</sub> \_\_\_\_\_H<sub>2</sub>Se<sub>(aq)</sub> \_\_\_\_\_CaMoO<sub>4</sub> \_\_\_\_\_C<sub>4</sub>H<sub>8</sub> \_\_\_\_\_ZnSeO<sub>2</sub> \_\_\_\_\_BaF<sub>2</sub> \_\_\_\_\_H<sub>2</sub>Te<sub>(aq)</sub> \_\_\_\_\_Co<sub>2</sub>(HPO<sub>3</sub>)<sub>3</sub>·4 H<sub>2</sub>O \_\_\_\_\_

NaBr \_\_\_\_\_

Ca(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>2</sub> \_\_\_\_\_

cobaltous thioselenite \_\_\_\_\_

tricarbon octahydride \_\_\_\_\_

thiocyanic acid \_\_\_\_\_

silver hypophosphite \_\_\_\_\_

bromine \_\_\_\_\_

silicon tetrahydride \_\_\_\_\_

cesium arsenite dihydrate \_\_\_\_\_

manganic hydroxide \_\_\_\_\_

arsenious oxide \_\_\_\_\_

silver chlorate \_\_\_\_\_

calcium perbromate \_\_\_\_\_

barium phosphide \_\_\_\_\_

nickel (II) cyanide \_\_\_\_\_

beryllium phosphate \_\_\_\_\_

cadmium sulfite \_\_\_\_\_

boron tribromide \_\_\_\_\_

silicon carbide \_\_\_\_\_

mercuric hydroxide \_\_\_\_\_

cupric perchlorate \_\_\_\_\_

gold (III) selenate \_\_\_\_\_

stannic phosphide \_\_\_\_\_

arsenic (V) oxide \_\_\_\_\_

sulfur trioxide \_\_\_\_\_

hydrogen cyanide \_\_\_\_\_

lithium hypoiodite \_\_\_\_\_

magnesium thiosilicate \_\_\_\_\_

zinc phosphide \_\_\_\_\_

aluminum peroxide \_\_\_\_\_

lithium sulfate \_\_\_\_\_

magnesium hypochlorite \_\_\_\_\_

manganese (IV) oxide \_\_\_\_\_

strontium nitrate \_\_\_\_\_

lead (IV) iodite \_\_\_\_\_

zinc chloride \_\_\_\_\_

cobalt (III) hypobromite \_\_\_\_\_

NaCl \_\_\_\_\_

K<sub>2</sub>SO<sub>4</sub> \_\_\_\_\_Na<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_H<sub>2</sub>S<sub>(aq)</sub> \_\_\_\_\_MgTeO<sub>3</sub> \_\_\_\_\_Li<sub>2</sub>CO<sub>2</sub> \_\_\_\_\_Cu(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_Fe(ClO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_BaHPO<sub>3</sub> \_\_\_\_\_

AgBrO \_\_\_\_\_

Cr(NO<sub>2</sub>)<sub>3</sub> \_\_\_\_\_SnCO<sub>3</sub> · 4 H<sub>2</sub>O \_\_\_\_\_BaS<sub>3</sub>O<sub>2</sub> \_\_\_\_\_SrO<sub>2</sub> \_\_\_\_\_As<sub>2</sub>O<sub>5</sub> \_\_\_\_\_H<sub>2</sub>CrO<sub>4(aq)</sub> \_\_\_\_\_AgFO<sub>2</sub> \_\_\_\_\_AuI<sub>3</sub> \_\_\_\_\_Ni<sub>2</sub>O<sub>4</sub> \_\_\_\_\_

$\text{Na}_2\text{HAsO}_2$  \_\_\_\_\_ $\text{SiO}_2$  \_\_\_\_\_ $\text{Ca}_{(s)}$  \_\_\_\_\_ $\text{Rb}_2\text{Cr}_2\text{O}_7$  \_\_\_\_\_ $\text{Pb}(\text{MnO}_4)_4$  \_\_\_\_\_ $\text{HI}_{(aq)}$  \_\_\_\_\_ $\text{TeCl}_2 \cdot 9 \text{H}_2\text{O}$  \_\_\_\_\_ $\text{H}_2\text{SO}_4$  \_\_\_\_\_ $\text{Zn}(\text{OH})_2$  \_\_\_\_\_ $\text{SiH}_4$  \_\_\_\_\_ $\text{HC}_2\text{H}_3\text{O}_2$  \_\_\_\_\_ $\text{CaMnO}_4$  \_\_\_\_\_ $\text{HMnO}_4_{(aq)}$  \_\_\_\_\_ $\text{Cu}_2\text{WO}_4$  \_\_\_\_\_ $\text{Cl}_2_{(g)}$  \_\_\_\_\_ $\text{CsIO}$  \_\_\_\_\_

chromium (III) oxide \_\_\_\_\_

iodine monofluoride \_\_\_\_\_

ammonium perbromate \_\_\_\_\_

carbon disulphide \_\_\_\_\_

aluminum hydroxide \_\_\_\_\_

beryllium sulfite \_\_\_\_\_

lead (II) dihydrogenphosphite \_\_\_\_\_

chromic hydrogenhypophosphite \_\_\_\_\_

iron (III) dihydrogenhypophosphite \_\_\_\_\_

potassium hydrogenarsenite \_\_\_\_\_

mercury (II) bisulfate \_\_\_\_\_

zinc monohydrogentellurite \_\_\_\_\_

sodium bicarbonate \_\_\_\_\_

cobalt (III) bromite \_\_\_\_\_

aluminum hydride \_\_\_\_\_

vanadium (V) oxide \_\_\_\_\_

carbon tetraiodide \_\_\_\_\_

Name: \_\_\_\_\_

mercurous peroxide \_\_\_\_\_

cupric acetate \_\_\_\_\_

acetic acid \_\_\_\_\_

ammonium phosphate decahydrate \_\_\_\_\_

aurous chromate \_\_\_\_\_

ferrous hydroxide \_\_\_\_\_

stannic bromide \_\_\_\_\_

plumbous thiocyanate \_\_\_\_\_

oxygen gas \_\_\_\_\_

arsenic trihydride \_\_\_\_\_

ammonium dihydrogenphosphate \_\_\_\_\_

phosphorus pentachloride \_\_\_\_\_

silver nitrate \_\_\_\_\_

calcium chlorite \_\_\_\_\_

manganese (III) dichromate \_\_\_\_\_

potassium permanganate \_\_\_\_\_

silicon dioxide \_\_\_\_\_

palladium (IV) nitrite \_\_\_\_\_

 $\text{HBr}_{(aq)}$  \_\_\_\_\_ $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$  \_\_\_\_\_ $\text{Hg}_2\text{I}_2$  \_\_\_\_\_ $\text{I}_2_{(s)}$  \_\_\_\_\_ $\text{NiO}_2$  \_\_\_\_\_ $\text{CdHAsO}_3$  \_\_\_\_\_ $\text{Fe}(\text{HCO}_3)_3$  \_\_\_\_\_ $\text{NH}_3$  \_\_\_\_\_ $\text{BaCl}_2 \cdot 3 \text{H}_2\text{O}$  \_\_\_\_\_ $\text{H}_2\text{CrO}_3_{(aq)}$  \_\_\_\_\_ $\text{PCl}_5$  \_\_\_\_\_ $\text{H}_2\text{O}_2$  \_\_\_\_\_ $\text{H}_2\text{Se}_{(aq)}$  \_\_\_\_\_ $\text{AlPO}_3$  \_\_\_\_\_ $\text{BrF}_3$  \_\_\_\_\_

LiOH \_\_\_\_\_  
 Si<sub>2</sub>Cl<sub>6</sub> \_\_\_\_\_  
 Sn(CO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_  
 H<sub>2</sub>SiO<sub>3</sub> (aq) \_\_\_\_\_  
 Fe(OH)<sub>2</sub> \_\_\_\_\_  
 (NH<sub>4</sub>)<sub>2</sub>SiO<sub>3</sub> \_\_\_\_\_  
 NaC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> \_\_\_\_\_  
 SnSCO \_\_\_\_\_  
 H<sub>2</sub>SiO<sub>2</sub> (aq) \_\_\_\_\_  
 XeI<sub>4</sub> \_\_\_\_\_  
 HF (aq) \_\_\_\_\_  
 H<sub>2</sub> (g) \_\_\_\_\_  
 SnO<sub>3</sub> \_\_\_\_\_  
 N<sub>2</sub>O<sub>4</sub> \_\_\_\_\_  
 IBr<sub>7</sub> \_\_\_\_\_  
 P<sub>4</sub> (s) \_\_\_\_\_  
 HNO<sub>2</sub> \_\_\_\_\_  
 CsOH \_\_\_\_\_  
 Au(ClO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_  
 Hg<sub>2</sub>O \_\_\_\_\_  
 diboron hexahydride \_\_\_\_\_  
 sulfur \_\_\_\_\_  
 helium \_\_\_\_\_  
 sulfur hexafluoride \_\_\_\_\_  
 antimonite sulfate \_\_\_\_\_  
 phosphorus pentachloride \_\_\_\_\_  
 selenium hexafluoride \_\_\_\_\_  
 tin (II) cyanide \_\_\_\_\_  
 phosphorus \_\_\_\_\_  
 chlorine \_\_\_\_\_  
 cesium manganate \_\_\_\_\_  
 ammonium chromite \_\_\_\_\_  
 calcium tungstate \_\_\_\_\_

silver acetate hexahydrate \_\_\_\_\_  
 potassium peroxide \_\_\_\_\_  
 sodium thiocarbonate \_\_\_\_\_  
 lithium dithiosulfite \_\_\_\_\_  
 antimonous bromide \_\_\_\_\_  
 tin (IV) hypotellurite \_\_\_\_\_  
 carbonous acid \_\_\_\_\_  
 hydroiodic acid \_\_\_\_\_  
 silver peroxide \_\_\_\_\_  
 sodium thiophosphate \_\_\_\_\_  
 arsenic phosphide \_\_\_\_\_  
 nitrogen gas \_\_\_\_\_  
 strontium dichromate \_\_\_\_\_  
 barium molybdenate \_\_\_\_\_  
 sodium hydride \_\_\_\_\_  
 stannic fluoride \_\_\_\_\_  
 manganese (III) peroxide \_\_\_\_\_  
 cadmium peroxide \_\_\_\_\_  
 lithium hypoarsenite \_\_\_\_\_  
 auric hydrogenphosphite \_\_\_\_\_  
 permanganic acid \_\_\_\_\_  
 phosphorus (V) oxide \_\_\_\_\_  
 silicon dioxide \_\_\_\_\_  
 Cr(CNO)<sub>3</sub> \_\_\_\_\_  
 HIO<sub>4</sub> (aq) \_\_\_\_\_  
 Ag<sub>2</sub>S \_\_\_\_\_  
 CsI \_\_\_\_\_  
 Al<sub>2</sub>S<sub>3</sub> \_\_\_\_\_  
 Ni(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_  
 CoPO<sub>4</sub> \_\_\_\_\_  
 MnSO<sub>3</sub> \_\_\_\_\_  
 Fe(ClO<sub>4</sub>)<sub>3</sub> \_\_\_\_\_  
 GaCl<sub>3</sub> \_\_\_\_\_  
 Cr<sub>2</sub>O<sub>3</sub> \_\_\_\_\_

KNO<sub>2</sub> \_\_\_\_\_Rb<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_(NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub> \_\_\_\_\_Cs<sub>2</sub>CO<sub>3</sub> \_\_\_\_\_Li<sub>2</sub>HPO<sub>4</sub> \_\_\_\_\_Mg(HCO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_Ca(ClO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_Sr(MnO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_SCl<sub>4</sub> \_\_\_\_\_Fe(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>3</sub> \_\_\_\_\_Ag<sub>2</sub>SO<sub>3</sub> \_\_\_\_\_Hg<sub>2</sub>Cl<sub>2</sub> \_\_\_\_\_PtO<sub>2</sub> \_\_\_\_\_NH<sub>4</sub>HSO<sub>4</sub> \_\_\_\_\_P<sub>2</sub>O<sub>5</sub> \_\_\_\_\_NO<sub>2</sub> \_\_\_\_\_SO<sub>3</sub> \_\_\_\_\_CCl<sub>4</sub> \_\_\_\_\_Ag<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> \_\_\_\_\_CuSiO<sub>2</sub> \_\_\_\_\_AsBr<sub>5</sub> \_\_\_\_\_HBr<sub>(aq)</sub> \_\_\_\_\_NH<sub>4</sub>ClO \_\_\_\_\_Sb<sub>3</sub>N<sub>5</sub> \_\_\_\_\_

magnesium sulfate heptahydrate \_\_\_\_\_

mercurous perchlorate \_\_\_\_\_

ferric thiosulfite \_\_\_\_\_

hydroiodic acid \_\_\_\_\_

sodium peroxide \_\_\_\_\_

calcium thiophosphate \_\_\_\_\_

potassium dihydrogenarsenate \_\_\_\_\_

aluminum oxide nonahydrate \_\_\_\_\_

sodium sulfite \_\_\_\_\_

platinic chloride pentahydrate \_\_\_\_\_

cadmium dichromate \_\_\_\_\_

cesium tungstate \_\_\_\_\_

chromous acid \_\_\_\_\_

manganese (II) peroxide \_\_\_\_\_

nickelic hydroxide \_\_\_\_\_

ammonium phosphide \_\_\_\_\_

sodium bicarbonate \_\_\_\_\_

ferrous phosphite \_\_\_\_\_

antimony tribromide \_\_\_\_\_

auric bisilicate \_\_\_\_\_

chlorine dihydrate \_\_\_\_\_

bismuthic chromate \_\_\_\_\_

plumbous oxide \_\_\_\_\_

sulfur trioxide \_\_\_\_\_

tellurous acid \_\_\_\_\_

silver fluoride \_\_\_\_\_

barium bromite \_\_\_\_\_

tetraarsenic decasulphide \_\_\_\_\_

gallium thiocyanate \_\_\_\_\_

hydrocyanic acid \_\_\_\_\_

aurous bisulfate \_\_\_\_\_

calcium carbide \_\_\_\_\_

barium periodate \_\_\_\_\_

platinic cyanide \_\_\_\_\_

hypophosphorous acid \_\_\_\_\_

AsI<sub>3</sub> \_\_\_\_\_KMnO<sub>4</sub> \_\_\_\_\_Na<sub>2</sub>S<sub>2</sub>O<sub>2</sub> \_\_\_\_\_TeO<sub>3</sub> \_\_\_\_\_NH<sub>3</sub> \_\_\_\_\_NH<sub>4</sub>HCO<sub>2</sub> \_\_\_\_\_FeCl<sub>2</sub> \_\_\_\_\_