9/16/2019

For you to try: $MgNO_{32}$

name: (1) $Mg(NO_3)_2$

Mg^{2+} NO_3^- NO_3^- = magnesium nitrate

(2) $Fe_3(PO_4)_2$

$Fe^{?2+}$ PO_4^{3-}
$Fe^{?2+}$ PO_4^{3-}
$Fe^{?2+}$

= iron(II) phosphate

Hydrate

water can "stick" to ionic compounds!

ex: $CaSO_4 \cdot 2H_2O$ (gypsum/sheetrock)

2 waters stuck to each $CaSO_4$!

- can remove H_2O by heating! (LAB)

Naming hydrates: i) Name ionic part! (✓)
ii) write a prefix for # H_2O's ?
iii) write "hydrate" @ end of name.

$CaSO_4 \cdot 2H_2O$

calcium sulfate dihydrate

Prefixes:

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

(greek)

$CuSO_4 \cdot 5H_2O$ = copper(II) sulfate pentahydrate

Cu^{2+} SO_4^{2-}

Naming Molecular Compounds

Ionic: Metals + Non-metals — NaCl
Molecular: Non-metals. — FCl

ex: N_2O, NO, N_2O_5, P_4O_{10}, ... (Molecular)

1) Write name of 1st element (as-is)
2) Write name of 2nd element, but change ending to -ide
3) Use prefix for # atoms.
4) Don't use mono for 1st element
5) Remove last letter of prefix if it sounds better!

N_2O dinitrogen ~~mono~~/oxide

NO ~~mono~~ nitrogen ~~mono~~/oxide

N_2O_5 di nitrogen ~~penta~~/oxide

P_4O_{10} tetraphosphorus ~~deca~~/oxide

Cl_2F_3 = ~~dichloride trifluoride~~ ✗
= dichlorine trifluoride ✓

H_2O = dihydrogen monoxide (DHMO)
WATER.

NH_3 = ammonia

CH_4 = methane

Common Acids

aqueous (dissolved in water)

$HF_{(aq)}$ = hydrofluoric acid
$HCl_{(aq)}$ = hydrochloric acid

$HNO_{3(aq)}$ = nitric acid
$H_2SO_{4(aq)}$ = sulfuric acid
$H_3PO_{4(aq)}$ = phosphoric acid

More fun w/ moles!

molar mass = mass of 1 mol of substance
= sum of all atomic masses!

ex: NH_3 : $1 \times N = 1 \times 14.01$
$3 \times H = 3 \times 1.008$
17.03

$1\ mol\ NH_3 = 17.03\ g\ NH_3$

6.022×10^{23} molecules $NH_3 = 17.03\ g\ NH_3$

Q: How many mol NH_3 are in $5.8\ g$?

$$5.8\ g\ NH_3 \times \frac{1\ mol\ NH_3}{17.03\ g\ NH_3} = 0.34\ mol\ NH_3.$$