Solutions Stoichiometry

Any carbonate any acid salt of the

$CaCO_3 + HCl \longrightarrow$ acid $+ CO_{2(g)} + H_2O_{(l)}$

$CaCl_2 + CO_{2(g)} + H_2O_{(l)}$

Binary acid salt will always have an enduing in an –ide

→ H_2S → sulphide
→ HCl → chloride
→ HBr → bromide

$CaCO_3 + 2HCl \longrightarrow CaCl_2 + CO_2 + H_2O$

Mass?? 50mL
0.20 mol/L

$n = cv$
$= (0.2)(0.05)$
$= 0.001 mol$

$\therefore mass = moles \bullet M_R$
$= (0.0005)(100)$
$= 0.050 g$

$CaCO_3 : HCl$
1 : 2
x : 0.001
x = 0.0005

$M_R\ CaCO_3 = (40.08)+(12.01)+3(16.00)$
$= 100$ g/mol

base acid salt

ex. $3Ca(OH)_2 + 2H_3PO_4 \longrightarrow Ca_3(PO_4)_2 + 6H_2O$

25 mL 30 mL 0.7 g
0.01 mol/L 0.022 mol/L

Which one is the limiting reagent?
Determine the mass of the Calcium phosphate that will be formed when 0.75 g of phosphate was formed, determine the percentage yield, and determine the percentage error

$n = cv$
$= (0.01)(0.025)$
$= \frac{0.00025}{3}$
$= 0.0000833$

$n = cv$
$= (0.03)(0.022)$
$= \frac{0.00066}{2}$
$= 0.0003$

$Cu(OH)_2 : Cu_3(PO_4)_2$
3 : 1
$x = 8.33 \times 10^{-5}$

$M_R = 3(63.55) + 2(30.97) + 8(16)$
$= 310$

$mass = mass \bullet M_R$
$= (8.33 \times 10^{-5})(310)$
$= 0.025823$
$= 2.58 \times 10^{-3}$ g

ex. $Pb(NO_3)_2$ + KI $\longrightarrow$ PbI_2 + $2KNO_3$

10mL 25mL

0.50 mol/L 0.50 mol/L

All group 1 compounds, all nitrates, all ammonium compounds, all acetates and all perchlorates are soluble (they can all dissolve)

Limiting reagent
Mass of Lead(II) Iodide theoretically obtained
1.82 g of Lead(II) Iodide was actually obtained
Determine the percentage yield
Determine the percentage error