Solution Stoich precipitation problems

Solutions

1. Ag+ + Cl-1 🡪 AgCl (s)

(39.47 ml)(.3029 M AgNO3)(1Cl/1Ag)(35.45 g Cl-/1 mol Cl-) = 0.4328 g­

25.0 ml x 1.03 g/ml = 25.75 g total

% Cl = 0.4328 g Cl/25.75 g total x 100 = 1.6%

1. X mol AgNO3 = 26.0 ml)(0.250 M CaI2)(2 mol Ag+/1 mol CaI2) = 13 mmol

0.013 mol/0.045 L = 0.288 M AgNO3

Mass silver: 0.013 mol AgI)(234.7 g AgI/mol AgI) = 3.05 g AgI

1. X mol Pb(NO3)2 = (1.25 L)(2.25 M NaCl)(1 Pb(NO3)2/2 NaCl) = 1.406 mol
   1. l Pb/0.750 M = 1.875 L
2. What volume of 0.100 M Pb(NO3)2 is required…

X mol Pb = 25.0 ml )(0.0832 M SO4-2 = 2.08 mmol/0.100M = 20.8 ml

= 55.8 ml)(0.222 M HCl)(1 Pb/2HCl) = 24.77 mmol/0.100 M = 247.8 ml

= 18.7 ml)(0.389M CrO4-2(1 Pb/1CrO4-2) = 7.27 mmol/.100M = 7.27 ml

1. Pb(NO3)2+ 2KI 🡪 PbI2 + 2 KNO3  Limiting reactant prob

X g PbI2 = 50.0 ml)(0.500M Pb+2)(460.8 g/ mol PbI2 = 11.52 g

X g PbI2 = 75.0 ml )(0.750M I-1)(1 PbI2/2 I-1)(460.8 g/molPbI2) = 12.96 g

11.52 g produced

1. X g Fe =0.107 g Fe(OH)3(1 mol Fe(OH)3/106.88 g)(1 Fe/1Fe(OH)3 (55.85g/1Fe) = 0.0559 g Fe

…(241.88g Fe(NO3)3/mol Fe(NO3)3 = 0.242 g Fe(NO3)3

0.242/0.456 x 100% = 53.0 %

1. X mol Ag = 0.0002 mol AgCrO4 (1 Ag/1AgCrO4) = 0.0002 mol/0.10M = 2.0 ml

X mol Ag+ = 3.00 g AgCrO4)(331.74 g/mol Ag2CrO4)(2 Ag/1 Ag2CrO4) = 0.0181 mol/0.60 M = 0.0301 L or 30.1 ml

X mol Ag+ = (50.0 ml)0.10M K2CrO4)(2 Ag+/1K2CrO4)= 10 mmol/0.6M

=16.7 ml.