***Anion Mixtures-***

S - ppt S CdCO3 , when others in soln; ppt of SO3 and SO4 by BaCl2, dsnt ppt S2O3; BaSO4 insol, BaSO3 sol dil acid. Test S2O3 with AgNO3.

N – \* NH4Cl SA Heat, N^; BrnRg

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| ***Organic-***   |  |  | | --- | --- | | **N** | NaOH FeSO4 FeCl3 HCl | | **S** | NaNPrs., AcA PbAc | | **X** | HNO3 AgNO3, SA CCl4 Cl H2O | | **COOH** | Lit, NaHCO3 | | **PhOH** | FeCl3 | | **CO** | AcA DNP SA, Schf, Tol, FehA + FehB | | **=** | KMnO4 | | **NH2** | HCl NaNO2 BNaph | | **CONH2** | NaOH heat Hg2NO3ppr | | **NO2** | Stephn + NH2 Test | | ***Anion-***   |  |  |  | | --- | --- | --- | | **CO3** | SA Lmwtr | Eff | | **NO2** | SA; Stc+KI+SA | Reddish Brown Gas; Blue Colour | | **S** | SA PbAc; \*NPrs | Black ppt; Purple | | **SO3** | SA dichrPpr; SA KMnO4; \*BaCl2 HCl | Chking↑,pprGr; decol; W(dlvHCl) | | **SO4** | BaCl2 | White (dsnt dlv HCl) | | **S2O3** | SA (WPpt); \*AgNO3; \*FeCl3 | W↓ ;Y→O→Br→Bk; Violet(Fades) | | **Ac** | SA; FeCl3 | Vinegar ↑; R | | **Cl** | SA NH4OH; Chromyl Cl; AgNO3 | Pgnt↑,dnsW NH4OH; ChkRxn;W | | **Br** | SA; AgNO3 | RBr ↑; Pale Y sp.Sol in NH4OH | | **I** | SA; \*ac.NaNO2 | Violet ↑; | | **NO3** | Brown Ring |  | |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | ***Cation Mixtures-***  GP1 (HCl)   |  |  | | --- | --- | | Pb | SA(W); dichr(Y); KI(Y); NaOH(W dslv) #GyW | | H2 | KI(R); NaOH(Bk); SnCl2(Gy); #R |   ;;;Na2PbO2  ;Hg ;Hg  GP2 (HCl+H2S)   |  |  | | --- | --- | | Hg | CoNO3(B); NaOH(Y); SnCl2(Gy); #R | | Bi | NaStn(W); Thiourea(Y) #B | | Cu | KFCyn(Br); NaOH(B); NH4OH #GrB |   ; HgO; Hg+Hg2Cl2  Bi0+BiStannate;  CuFCyn; ;  GP3 ( Boil off H2S, HNO3 NH4Cl NH4OH)   |  |  | | --- | --- | | F3 | KFCyn(B); KCNS(blR); | | Cr | PbAc(Y); SA H2O2 (B); #W | | Al | NH4OH(gW); NaOH(gW dslv) |   Fe2(FCyn)3; FeSCN2+­­;  PbChr; CrO5  GP4 (H2S)   |  |  | | --- | --- | | Ni | NH4OH DMG(R); | | Zn | AcA H2S (W); KFCyn(BW); |   Ni(DMG)2  ZnS; K2Zn[Fe(CN)6]  GP5 (NH4CO3 NH4OH NH4Cl)   |  |  | | --- | --- | | Sr | NH4OH NH4SO4 (W); #crR | | Ca | NH4Ox(W); #brkR | | Ba | K2CrO4(Y); #aplGr |   GP6   |  |  | | --- | --- | | Mg | Na2HPO4; TitanYellow NaOH(R) #W | | Na,K | Flame; |   Mg(NH4)PO4; | | ***Organic Rxns-***  **N**- ((Na+C+N→NaCN)+NaOH+FeSO4→Na4FeCyn)+FeCl3→Fe4FCyn3;(Pruss. Blue)  **S-** S+ [Fe(CN)5NO]2+→[Fe(CN)5NOS]4+(Violet); PbAc+S → PbS(Black)  **X-** X+AgNO3→AgX   |  |  | | --- | --- | | **COOH**- NaHCO3→H2O+CO2↑ +RCOONa | **PhOH**(Green/Blue/Violet) (Red⇒COOH) | | Image result for Litmus blue and red structures | Image result for fecl3 and phenol reaction | | **Fehling’s** (Red)  Image result for fehling's reagent | **Tollen’s-** Ammonical AgNO3 (Ag Mirror)  Image result for tollens reagent | | **DNP**  image | **NH2** Image result for diazo + b naphthol | | **COO** NaOH Boil,Cool HCl | **CONH2**- 2Hg2(NO3)2 + 4NH3 + H2O → Hg2NNO3•H2O + 2Hg + 3NH4NO3 |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | W | White | Br | Brown | O | Orange | SA | H2SO4 | | Y | Yellow | blR | Blood Red | dns | Dense | Stc | Starch | | Gy | Grey | gW | Gelatins W | ↑ | Gas | dslv | Dissolves | | R | Red | crR | CrimsnRed | \* | NaCO3 ext. |  |  | | Bk | Black | brkR | BrickRed | FCyn | [Fe(CN)6]4− |  |  | | B | Blue | aplGr | ApleGreen | dichr | Cr2O7 |  |  | |
| ***Anion Rxn*** | |