***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 |  |

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| ***Cation Mixtures-***GP1 (HCl)

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| --- | --- |
| 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; CrO5GP4 (H2S)

|  |  |
| --- | --- |
| Ni | NH4OH DMG(R); |
| Zn | AcA H2S (W); KFCyn(BW); |

Ni(DMG)2ZnS; 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***     |