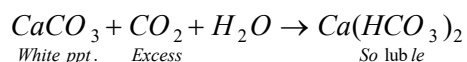


## Test for Different Gases.

### (1) Colourless gases

(i) **Tests for CO<sub>2</sub>**: It is colourless and odourless gas. It gives white ppt. with lime water which dissolves on passing excess of CO<sub>2</sub>.  $\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$ ;

*Lime water* *White ppt.*



*White ppt.* *Excess*

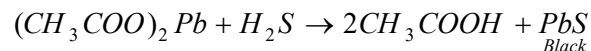
*So luble*

(ii) **Test for CO**: It is colourless and odourless gas. It burns with a blue flame.  $2\text{CO} + \text{O}_2 \rightarrow 2\text{CO}_2$

Note: CO is highly poisonous gas.

(iii) **Test for O<sub>2</sub>**: It is colourless and odourless gas. It rekindles a glowing splinter.

(iv) **Tests for H<sub>2</sub>S**: It is a colourless gas with a smell of rotten eggs. It turns moist lead acetate paper black.



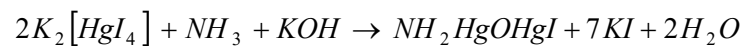
*Black*

(v) **Tests for SO<sub>2</sub>**: It is a colourless gas with a suffocating odour of burning sulphur. It turns acidified K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> solution green.  $3\text{SO}_2 + \text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{Cr}_2(\text{SO}_4)_3 + \text{H}_2\text{O}$

*Green*

(vi) **Tests for NH<sub>3</sub>**: It is a colourless gas with a characteristic ammoniacal smell. It gives white fumes of NH<sub>4</sub>Cl with HCl,  $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$ . With Nessler's reagents, it gives brown ppt.

*White fumes*



*Nessler's reagent*

*Iodine of Millon's base*

*(Brown ppt)*

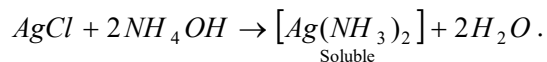
It gives deep blue colour with CuSO<sub>4</sub> solution,  $\text{CuSO}_4 + 4\text{NH}_3 \rightarrow [\text{Cu}(\text{NH}_3)_4]\text{SO}_4 \cdot \text{NH}_3$

*Deep blue*

dissolves in water to give NH<sub>4</sub>OH, which being basic, turns red litmus blue,



(vii) **Tests for HCl gas** :It is colourless gas with a pungent irritating smell. It turns moist blue litmus paper red i.e., it is acidic in nature. It gives white ppt. with  $AgNO_3$  solution. This white ppt. is soluble in  $NH_4OH$ .  $HCl + AgNO_3 \rightarrow AgCl + HNO_3$ ;  
*White ppt.*



(viii) **Test for  $CH_3COOH$  vapours** :These vapours are colourless with a vinegar like smell.

## (2) Coloured gases

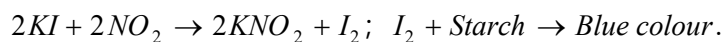
(i) **Tests for  $Cl_2$**  :It is a greenish yellow gas with a pungent smell. In small quantity it appears almost colourless. It bleaches a moist litmus paper,  $Cl_2 + H_2O \rightarrow 2HCl + [O]$ ;

*Colour + [O] → Colourless*. Blue litmus paper first turns red and then becomes colourless.

(ii) **Tests for  $Br_2$**  :Brown vapours with a pungent smell. It turns moist starch paper yellow.

(iii) **Tests for  $I_2$**  :Violet vapours with a pungent smell. It turns moist starch paper blue.

(iv) **Tests for  $NO_2$**  :Brown coloured pungent smelling gas. It turns moist starch KI paper blue



It turns ferrous sulphate solution black,

