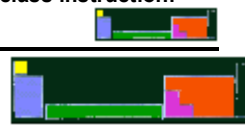


**Revised August 2007**



## Qualitative Testing Factoid Sheet

This is **NOT** an exhaustive list, but it does cover a LOT of what might commonly come up on a typical AP exam.

### Flame Test Colors

Ion	Flame color
$\text{Li}^+$ , $\text{Sr}^{2+}$ , $\text{Ca}^{2+}$	<b>Red</b> (various shades)
$\text{Na}^+$	<b>Yellow/Orange</b>
$\text{K}^+$	<b>Lilac</b>
$\text{Ba}^{2+}$	<b>Green</b>
$\text{Cu}^{2+}$	<b>Blue-green</b>

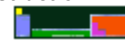
### Transition metal ion colors

	+1	+2	+3	+4	+5	+6	+7
<b>Sc</b>			Colorless				
<b>Ti</b>			Violet	Colorless			
<b>V</b>		Violet	Green	Blue	yellow		
<b>Cr</b>		Blue	Green			Yellow ( $\text{CrO}_4^{2-}$ ) Orange ( $\text{Cr}_2\text{O}_7^{2-}$ )	
<b>Mn</b>		Pale pink		Brown		Dark Green	Purple
<b>Fe</b>		Pale green	Yellow/Brown				
<b>Co</b>		Pink	Orange/Yellow				
<b>Ni</b>		Green					
<b>Cu</b>	Colorless	Blue					
<b>Zn</b>		Colorless					

### Common Precipitate colors

WHITE	BLUE	YELLOW	BLACK	GREEN	RED/BROWN
AgCl	Many Copper (II) ppt's.	AgI	Many Sulfides	Many Fe(II) ppt's.	Many Fe(III) ppt's.
BaSO <sub>4</sub>		PbI <sub>2</sub>			
PbCl <sub>2</sub>					
<b>Many</b> non-transition metal hydroxides					
<b>Many</b> non-transition metal carbonates					
<b>Many</b> non-transition metal sulfates					

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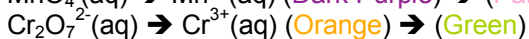
### Common Tests for gases

Gas	Test
Hydrogen	Squeaky pop with lighted splint
Oxygen	Re-lights glowing splint
Carbon Dioxide	Turns limewater milky
Ammonia	Pungent odor, turns red litmus paper blue, gives dense white fumes in contact with conc. HCl fumes

### Common tests for cations and anions

Ion	Test
Carbonate and Hydrogen carbonate	Release CO <sub>2</sub> gas with acids
Sulfate	White ppt. of BaSO <sub>4</sub> with barium ions
Chloride	White ppt. of AgCl with silver ions
Bromide	Cream ppt. of AgBr with silver ions
Iodide	Yellow ppt. of AgI with silver ions
Ammonium	NH <sub>3</sub> released with hydroxide ions

### Color Changes in REDOX reactions



### Acid/Base Indicator Color changes

	ACID	BASE
Methyl orange	Red	Yellow
Methyl red	Red	Yellow
Litmus	Red	Blue
Universal	Red	Blue/Purple
Phenolphthalein	Colorless	Pink

### Miscellaneous other "color data"

HALOGENS: Fluorine gas – pale yellow/green, Chlorine gas – green, Bromine liquid – orange/brown, Iodine solid – dark purple

NO<sub>2</sub> gas – orange/brown