

■■■ LITMUS ■■■

Amines – basic, amides – almost neutral

Carboxylic acids – acidic, alcohols, aldehydes, ketones - neutral

Acid / acyl chlorides – acidic, haloalkanes – neutral

Esters, alkane, alkenes – neutral (insoluble in water)

■■■ UNIVERSAL INDICATOR ■■■

ACIDIFIED **DICHROMATE** / ACIDIFIED **PERMANGANATE**

reduced to

chromium (III) / colourless **Mn²⁺**

Have a reaction when warmed with

Primary alcohol (1° alcohol → aldehyde)

Aldehyde (aldehyde → carboxylic acid)

Secondary alcohol (2° alcohol → ketone)

ACIDIFIED **PERMANGANATE** is also decolourised when shaken with an alkene (alkene → diol)

It stinks!!!



Pleasant, floral, fruity - esters



Fishy, rotten & decaying – amines



Sharp, vinegarish, rancid butter – carboxylic acids

Tollens Ag⁺/NH₃ – aldehyde – silver mirror, ketone – no reaction

Fehlings/Benedicts Cu²⁺ – aldehyde – **red ppt of Cu₂O**, ketone – no reaction

Lucas Test ZnCl₂/conc. HCl – 3° alcohol - rapid cloudiness due to insoluble haloalkane, 2° alcohol – cloudy in 10 mins, 1° alcohol – no cloudiness

Silver nitrate in alcohol – haloalkanes react to form ppt of AgX

Bromine water – test for unsaturation C=C or C≡C – **orange** to colourless, unsaturated e.g. alkene – very slow reaction with uv and/or heat