

- It is sprayed or poured onto the evidence, and a permanent purple or violet fingerprint results.
- On the downside, it is toxic and causes blinding headaches if inhaled

Ninhydrin Reaction

6.6 ACID CHEMISTRY

- An acid is a substance that can release hydrogen ions (H^+) into an aqueous solution.
- Strong acids are fully dissociated:
- $HCl \rightleftharpoons H^+ + Cl^{1-}$ (100%)
- Weak Acids are only partly dissociated:
- $HCN = H^+ + CN^{1-}$ (3-5%)

Keep in mind that HF is a weak acid, but inhalation can be fatal. A strong acid like HNO_3 may be concentrated or dilute (less dangerous).

A serial no. restoration kit uses acids to restore the S/N etchings.

6.7 BASE CHEMISTRY

- A base is a compound that produces hydroxide ions (OH^{1-}) in aqueous solution.
- Terms such as alkali, alkaline, and caustic are used for bases. Acids are said to be corrosive.
- Strong bases are strong electrolytes because they are fully dissociated in solution. $NaOH \rightleftharpoons Na^{1+} + OH^{1-}$ (100%)
- Weak bases like weak acids, exist mainly as molecules and not ions.



6.9 THE pH SCALE AND BUFFERS

- The pH scale tells how acidic or alkaline a water solution is. The acidic range is from ~0 to 6.999 for solutions and from 7.001 to ~14 for basic ones.
- 7.00 is a neutral solution.
- The pH is defined as the negative logarithm of the H^+ concentration.
- $pH = -\log[H^+]$

Battery cola fruit blood "M.O.M." Drano gel

Citrus rain ocean NH_3 bleach

Some household substances are acidic.

They have a low pH.

Other products have a higher pH than 7.

They are basic or alkaline.

pH Calculations with Calculators

- To calculate pH from $[H^+]$: