• 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 (100%)

• **Weak Acids are only partly dissociated:**
  
  - HCN = H⁺ + CN⁻ (3-5%)

  Keep in mind that HF is a weak acid, but inhalation can be fatal. A strong acid like HNO₃ 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⁻) 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
  
  - Na⁺ + OH⁻ (100%)

• **Weak bases, like weak acids, exist mainly as molecules and not ions.**
  
  - NH₃ + H₂O = NH₄⁺ + OH⁻ (~5%)

**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 NH₃ 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⁺]:

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*Preview from Notesale.co.uk*