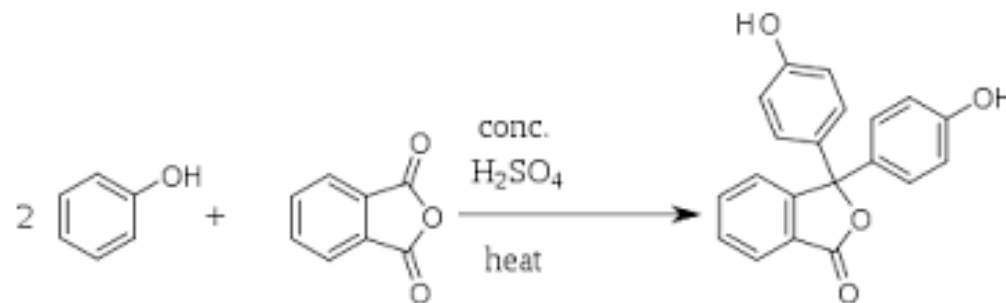


Application of Rosaniline

- ❖ It is used to dye polyacrylonitrile fibers.
- ❖ Pararosaniline is used as a colorimetric test for aldehydes, in the Schiff test. It is the only basic fuchsine component suitable for making the aldehyde-fuchsine stain for pancreatic islet beta cells.
- ❖ It has use as a Antischistosomal GB 908634.

Synthesis of Phenolphthalein dye

Phenolphthalein can be synthesized by condensation of phthalic anhydride with two equivalents of phenol under acidic conditions.



Application of Phthalein dyes

1. pH indicator

Phenolphthalein's common use is as an indicator in acid-base titrations. It also serves as a component of universal indicator, together with methyl red, bromothymol blue, and thymol blue.

2. Concrete carbonation

Phenolphthalein's pH sensitivity is exploited in other applications: concrete has naturally high pH due to the calcium hydroxide formed when Portland cement reacts with water. As the concrete reacts with carbon dioxide in the atmosphere, pH decreases to 8.5-9. When a 1% phenolphthalein solution is applied to normal concrete, it turns bright pink. However, if it remains colorless, it shows that the concrete has undergone carbonation. In a similar application, some spackling used to repair holes in drywall contains phenolphthalein. When applied, the basic spackling material retains a pink color; when the spackling has cured by reaction with atmospheric carbon dioxide, the pink color fades.

Education

In a highly basic solution, phenolphthalein's slow change from pink to colorless as it is converted to its $\text{In}(\text{OH})^{3-}$ form is

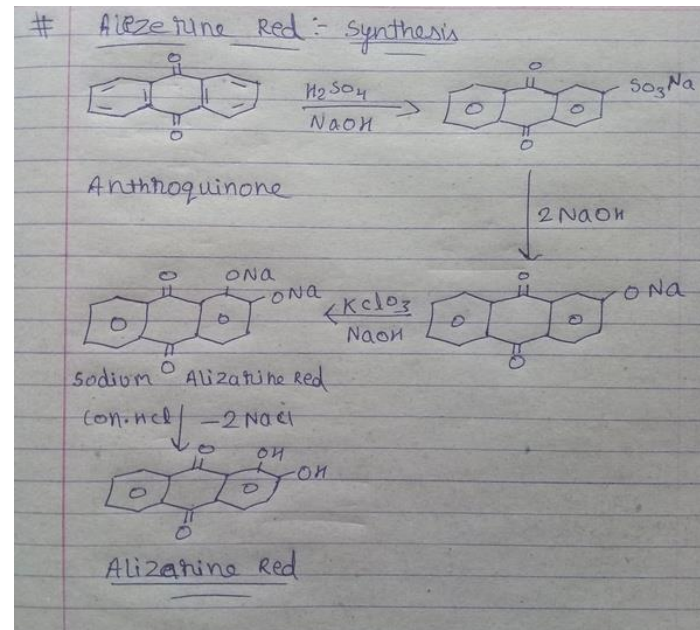
used in chemistry classes for the study of reaction kinetics.

Natural dye

Natural dyes are dyes or colorants derived from plants, invertebrates, or minerals. The majority of natural dyes are vegetable dyes from plant sources—roots, berries, bark, leaves, and wood—and other biological sources such as fungi and lichens.

Synthesis of Alizarin

- ❖ Extracted from the pigment of root of madder
- ❖ First natural dye to be produced synthetically by Graebe & Liebermann sharp decline in France's madder growing industry.
- ❖ Process involves the replacement of the sulfonate group followed by an oxidation of oxygen from the atmosphere.

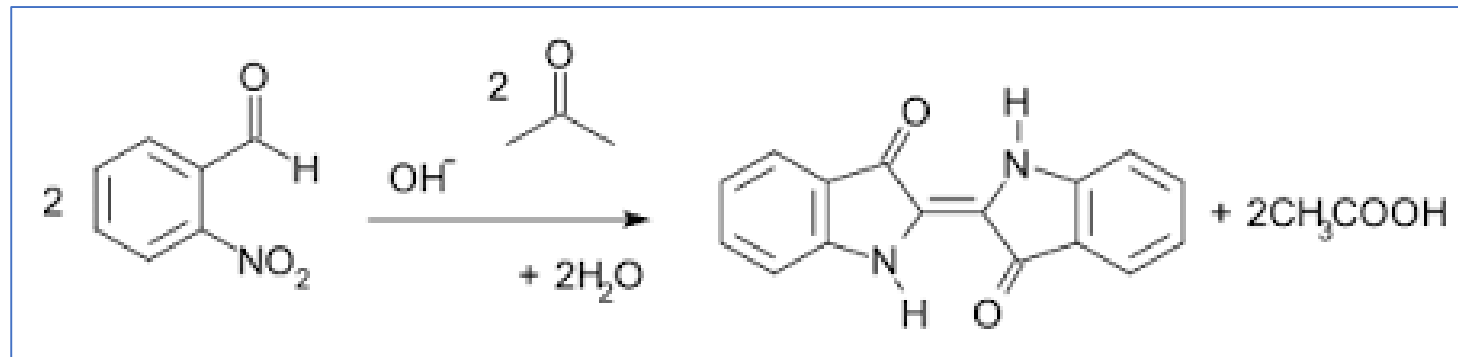


Application of Alizarin

- ❖ pH indicator
- ❖ 0-6.4 yellow
- ❖ 6.4-12.0 red
- ❖ Biochemical assay (stain)
- ❖ Can be used to identify calcium in tissue sections
- ❖ Calcium sites covered & surrounded by heavy orange-red precipitate

Synthesis of Indigotin Dye

- ❖ It involves an aldol condensation of o-nitrobenzaldehyde with acetone, followed by cyclization and oxidative dimerization to indigo.
- ❖ This route is highly useful for obtaining indigo and many of its derivatives on the laboratory scale, but was impractical for industrial-scale synthesis.



Application of Indigotin Dye

- ❖ The primary use for indigo is as a dye for cotton yarn, which is mainly for the production of denim cloth for blue jeans.
- ❖ On average, a pair of blue jean pants requires 3–12 g of indigo.
- ❖ Small amounts are used for dyeing wool and silk.
- ❖ Indigo carmine, or indigo, is an indigo derivative which is also used as a colorant.