

# Ink Refills

## Background

Ink consists primarily of dyes or pigments, or both, in a carrier medium. This medium may contain resins, lubricants and other materials to control flow, thickness and ink coverage which assist the application process in question, be it printing or writing. The final appearance of the dry ink will be determined by a combination of all these components.

Writing Inks began with lamp black and oak gall but the advent of mass production of the Fountain Pen in the 1880's saw rapid development of new inks. These inks arose from the need to ensure the pen did not clog or corrode, thus water based dye inks were developed.

The requirement for a "fair hand "or legible writing gave rise to cursive writing or joined up letters. Considerable care was need when using a steel nib dip pen to avoid blots on the paper and ink stained fingers; hence the impetus to develop the fountain pen.

## Fountain Pen Ink

These are almost all water based dyes because pigment based ink particles would clog the narrow passages of the ink feeder, which funnels the ink to the nib.

Bottled ink is the mainstay for fountain pen enthusiasts whereas plastic cartridges are the general requirement for everyday usage. There is a standard European fitment cartridge which fits a wide number of fountain pen brands; however some major pen brands design their pens to take their own specific design cartridge.

## Rollerball Ink

Designed to combine the convenience of ballpoint pen with the smooth "wet ink" effect of a fountain pen. These are water based dyes as opposed to gel inks which usually contain pigments.

The principal advantage of a Rollerball over a ballpoint is that less pressure needs to be used to write cleanly thus reducing the stress on the hand.

The main characteristic is the distinctive writing quality generated by the liquid ink which is less viscous than a paste ink. It tends to penetrate the paper deeper than a ballpoint. In general they need to be used on heavier paper whereas a ballpoint can be used on lighter papers.

## Ballpoint Ink

These are oil based paste inks with dyestuffs suspended in an alcohol solvent. They dry quickly on paper but have more drag on paper than liquid ink. This type of ink refills lasts longer than a Rollerball because less ink is absorbed by the paper.

## Gel Ink

This is a suspension of pigment dyes in a water based gel. Apart from "paint pens" neither Rollerballs nor Ballpoints can appear as bright on dark papers as a gel ink. This is due to the opaque nature of the pigments.

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