

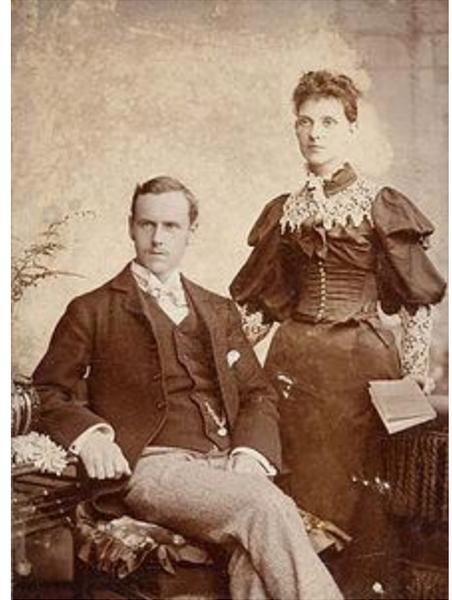
# Photographic print toning

*From Wikipedia, the free encyclopedia*

In [photography](#), **toning** is a method of changing the color of [black-and-white](#) photographs. In [analog photography](#), toning is a chemical process carried out on silver-based [photographic prints](#). This darkroom process can not be done with a color photograph and although the [black-and-white](#) photograph is now toned, it is still considered a black and white photograph as it is monochromatic. The effects of these processes can be emulated with software in [digital photography](#).

## History

Beginning in the 1880s, [sepia](#) was produced by adding a [pigment](#), called sepia, made from the [Sepia officinalis cuttlefish](#) found in the [English channel](#),<sup>[1]</sup> to the positive print of a photograph.



## Chemical toning

Most toners work by replacing the metallic [silver](#) in the [emulsion](#) with a silver compound, such as [silver sulfide](#) ( $\text{Ag}_2\text{S}$ ) in the case of sepia toning. The compound may be more stable than metallic silver and may also have a different color or tone. Different toning processes give different colors to the final print. In some cases, the printer may choose to tone some parts of a print more than others.<sup>[2]</sup>

Toner also can increase the range of visible shades visible in a print without reducing the contrast. [Selenium](#) toning is especially effective in this regard. Some toning processes can improve the chemical stability of the print, increasing its potential longevity. Other toning processes, such as iron and copper toners, can make the print less stable. Many chemical toners are highly toxic. It is extremely important that the chemicals be used in a well ventilated area. [Rubber gloves](#) and face protection should be worn when handling them. Some toners contain chemicals that are [carcinogenic](#).

## Selenium toning

[Selenium](#) toning is a popular archival toning process, converting metallic silver to [silver selenide](#). In a diluted toning solution, selenium toning gives a red-brown tone, while a strong solution gives a purple-brown tone. The change in color depends upon the chemical make-up of the photographic emulsion being toned. [Chloro-bromide](#) papers change dramatically, whilst pure [bromide](#) papers change little. Fibre-based papers are more responsive to selenium toning.

Selenium toning may not produce prints quite as stable as [sepia](#) or [gold](#) toning. Recently, doubts have surfaced as to the effectiveness of selenium toner in ensuring print longevity.

1. In most applications, selenium toning was not used for its sepia or red tone by fine art photographers. In fact it was used for the opposite of those effects
2. Agfa Portrigras Rapid and Agfa Record Rapid (the highest silver content black and white photographic paper made for the mass market) had a brownish green tone. Depending on strength of selenium tone mixed to water, a three to four minutes tray bath, with continuous circulation, removed the brownish green tone and provided a deep rich black.
3. Higher concentrations of selenium toning and longer tray baths produced the red to desired effect. 99% of vintage prints in museums, sold at galleries and auction that are selenium toned, are toned, to remove the brownish green tone and provided a deep rich black,
4. Most reported tests over the years in tech photography publications had selenium toned prints at twice the longevity of untoned prints.

## Sepia toning

Sepia toning is a specialized treatment to give a [black-and-white](#) photographic print a warmer tone and to enhance its archival qualities. Chemicals are used to convert the [metallic silver](#) in the print to a [sulfide](#) compound, which is much more resistant to the effects of environmental pollutants such as atmospheric sulfur compounds. [Silver sulfide](#) is at least 50% more stable than [silver](#).

There are three types of sepia toner in modern use;

1. [Sodium sulfide](#) toners - the traditional 'rotten egg' toner;
2. [Thiourea](#) (or 'thiocarbamide') toners - these are odorless and the tone can be varied according to the chemical mixture;
3. [Polysulfide](#) or 'direct' toners - these do not require a bleaching stage.

Except for polysulfide toners, sepia toning is done in three stages. First the print is soaked in a [potassium ferricyanide](#) bleach to re-convert the metallic silver to [silver halide](#). The print is washed to remove excess potassium ferricyanide then immersed into a bath of toner, which converts the silver halides to silver sulfide.

Incomplete bleaching creates a multi-toned image with sepia highlights and gray mid-tones and shadows. This is called *split toning*. The untoned silver in the print can be treated with a different toner, such as gold or selenium.

## Assignment Directions:

Open both the Chapter 9/10 & 11 Worksheet link and print yourself a new copy to fill out, or you can use the worksheet passed out in class. Read the general overview on the previous page after reading Chapters 9-11 in your text book, and answer the questions on the worksheets as completely and as best as you can. All answers can be found in the above information as well as the text.

If you have any questions...feel free to email me at [amy.sutter@celinaschools.org](mailto:amy.sutter@celinaschools.org)