

## FACT SHEET

# TONING B&W PRINTS

## USING TONERS WITH ILFORD PAPERS FOR CHANGING THE IMAGE COLOUR AND PROTECTING THE PRINT

ILFORD MULTIGRADE FB WARMTONE and ILFORD MULTIGRADE RC WARMTONE papers are specially designed to be receptive to all toners and can be toned to give subtle colour changes or dramatic effects.

ILFORD ILFOSPEED and ILFORD ILFOBROM GALERIE FB papers respond to some toners. As a general rule, the latest paper emulsions, for example, ILFORD MULTIGRADE IV papers, are designed to be resistant to image colour changes and hence they maintain their quality in poor processing conditions.

All ILFORD papers can be toned for the protective effect of some toners.

ILFORD papers are toned in a similar way to other papers. Toning resin coated papers is generally more convenient than toning fibre base papers, because of the shorter washing times. Some toners, although with similar names, for example, blue toner, can give different results depending on their formulation.

Before using toners, please read their safety data sheets carefully and observe the safety precautions written in them. These sheets are available, free of charge, from the suppliers of the chemicals. In the absence of any specific safety precautions you should always:

- 1 Work in a well ventilated area.
- 2 Wear safety spectacles and gloves when handling chemicals.
- 3 Wash your hands thoroughly after handling chemicals.
- 4 If you feel you have come into contact with the chemicals and feel unwell, seek medical advice and take the chemical container with you.
- 5 Never eat or drink while handling chemicals.
- 6 Never smoke while handling chemicals.

### REASONS FOR TONING

There are many reasons for toning prints.

#### **Aesthetic effect and creating mood**

For many years, photographers have used toners to improve the appearance of their pictures and as an aid in creating a certain atmosphere that they may wish to convey. For example, subjects like portraits, sunlit landscapes and sunsets often benefit from warm brownish or even reddish toning whereas subjects such as snow scenes, seascapes and night views suit the use of blue toners.

#### **Additional protection**

Some toners convert or coat the silver image giving it greater resistance to damage from external contaminants.

#### **Instant test of adequate fixing**

Prints that are not fully fixed will show staining when transferred to a toning bath.

#### **Increased maximum density**

Some toners increase density (for example, blue and selenium toners) while others reduce the density (sulphide toners, direct and indirect, and most dye toners). More details are given overleaf.

#### **Different overall print colour**

Dilute toning baths can give prints with a different overall colour for some tastes.

### **INDIRECT SULPHIDE TONERS**

Prints toned in indirect sulphide toners generally have lower density and contrast than untoned prints.

Indirect sulphide toners use a two-step, bleach and redevelop, process to convert the silver image, either partially or completely, to brown silver sulphide.

The bleach is usually a ferricyanide bromide type which converts the silver image to silver bromide. The darkening (redeveloping) solution can be a solution of sodium sulphide. However, this solution has a very nasty smell and most darkroom users now prefer to use the odourless toners.

Odourless toners use an alkaline solution of thiourea to convert the silver bromide image to silver sulphide. Apart from being odourless, they also have the advantage of allowing the resulting image colour to be adjusted by controlling the pH of the second bath. The pH adjustment is achieved by adding more or less sodium hydroxide solution to the second bath. More additive gives a colder image tone, less additive gives a warmer image tone. Prints toned to have a very warm image tone generally have considerably lower density and contrast than untoned prints.

These variable warmth toners work well with all ILFORD papers, but a larger addition of the sodium hydroxide solution is needed with MULTIGRADE WARMTONE paper to prevent the image tone from becoming too yellow.

The sulphide sepia toners and non-variable warmth thiourea toners work well with MULTIGRADE WARMTONE papers, but give a rather cold brown image colour on MULTIGRADE IV papers.

Prints toned in sepia toner can be further toned in blue (iron) toner to give a green tone or, if only partially bleached, a blue/green/sepia split tone. They can also be treated in a gold toner to produce an orange-red image.

#### **Examples**

Examples of commercial indirect sulphide toners include: Berg Rapid RC Sepia, Kodak Sepia, Photographers' Formulary Sepia Sulphide 221 and Tetenal Sulphide.

Examples of commercial thiourea toners (non-variable warmth) include: Photographers' Formulary Thiourea and Speedibrews Speedisepia.

Examples of commercial thiourea toners (variable warmth) include: Fotospeed ST20 sepia toner, Rayco Varisepia, Tetenal Triponal and Tetenal Tri-toner.

### **DIRECT SULPHIDE TONERS**

Prints toned in direct sulphide toners generally have similar density and contrast to untoned prints.

Direct sulphide toners are single solution toners which act on the image directly to convert it, partially or completely, to silver sulphide.

Direct sulphide toners have the advantage that toning can be stopped when the desired colour is reached and partially toned prints can be further treated in other toners.

These toners can be used at room temperature but they act very slowly, taking up to 30 minutes to reach completion. This can be shortened considerably by raising the temperature to 38°C.

Direct sulphide toners have very little effect on MULTIGRADE IV papers, but they work well with MULTIGRADE WARMTONE papers.

#### **Examples**

Examples of commercial direct sulphide toners include: Agfa Viradon, Kodak Brown Toner, Photographers' Formulary Hypo-alum and Photographers' Formulary Polysulfide.

### **SELENIUM TONERS**

Prints toned in selenium toners generally have higher density and contrast than untoned prints. They also have a higher maximum density.

Selenium toners are single solution toners that partially convert the original silver image to silver selenide. The degree of toning can be varied by changing the toning time or solution dilution.

MULTIGRADE IV papers show very little colour change in selenium toners. MULTIGRADE WARMTONE papers are very responsive to selenium toners. Toning MULTIGRADE WARMTONE papers with higher dilutions (for example, 1+10, 1+20) of selenium toner gives a slight cooling of the image tone and a shift in the hue towards red. Used at lower dilutions (for example, 1+3, 1+5), a purplish brown can be achieved.

#### **Examples**

Examples of commercial selenium toners include: Berg Selenium, Fotospeed SLT20 Selenium, Kodak Rapid Selenium Toner and Maco Selenia.

### **GOLD TONERS**

Prints toned in gold toners generally have similar density and contrast to untoned prints.

Most commercial gold toners are single solution toners which, when used on their own, shift the image colour of a print to blue-black. However, they are often used in combination with a sepia toner to produce an attractive orange-red colour.

#### **Examples**

Examples of commercial gold toners include: Berg Gold Protective Solution, Photographers' Formulary Gold 231 and Tetenal Gold Toner.

### **METAL REPLACEMENT TONERS**

Prints toned in blue toners generally have higher density and contrast than untoned prints, and a higher maximum density. Prints toned in red toners generally have lower density and contrast than untoned prints, and a lower maximum density.

Metal replacement toners, usually a single solution, convert the original silver image to the ferrocyanide salt of a transition metal. A number of metals can be used. These toners can produce very vivid colours. When using a blue toner with fibre base papers, it is recommended that the highlights are cleared in a 2% solution of sodium chloride. With MULTIGRADE WARMTONE papers, metal replacement toners are expected to be used mainly in combination with other toners.

#### **Examples**

Examples of commercial metal replacement toners include: Berg Brilliant Blue, Fotospeed BT20 blue toner, Fotospeed RT20 red toner, Maco LP Azur, Photographers' Formulary Iron Blue, Rayco Blue, Speedibrews Blue, Tetenal Blue Toner and Tetenal Copper-Red-Toner.

### **DYE TONERS**

The silver image is replaced with a dye image. Examples of these dye toners include those from Colorvir and Berg.

### **GUIDELINES FOR BETTER TONING**

#### **Exposure**

Some toners increase density (for example, blue and selenium toners) while others reduce the density (sulphide toners, direct and indirect, and most dye toners). Accordingly, it is often necessary to adjust print exposure slightly following some initial tests.

#### **Development**

It is most important that prints are always fully developed. In fact with sepia toning, overdevelopment (+50%) is a good way of obtaining the slight extra density needed.

#### **Stop bath**

A stop bath is essential as it prevents uneven development which is much more apparent after toning.

#### **Fixing**

Fixing should be thorough to prevent staining. Two bath fixing is preferred, and the use of hardening fixers is not recommended. The use of a hardening fixer will make fixing, washing and toning the prints much more difficult.

#### **Washing**

Washing should be thorough as many toners react with residual thiosulphate to produce staining and/or bleaching. Exceptions are hypo-alum toner and Kodak T21 gold toner, which can be used with a short wash after fixing. However, it is possible to wash out the optical brighteners in MULTIGRADE FB WARMTONE paper with prolonged washing.

#### **Using toners**

Always use a generous amount of toning solution in a dish one size bigger than the paper. Toning can be uneven if insufficient solution is used. Use intermittent agitation, that is, intermittently rock the dish when toning single sheets, or interleave them when toning several sheets of paper at once.

Always wear protective gloves when using toners.

#### **Bleaching**

Where there is a bleaching step, this is usually taken to completion, unless a split toning technique is being used.

#### **Sulphiding or darkening solutions**

The solutions normally used in bleach and redevelop sepia toning are either a 1–2% solution of sodium sulphide or an alkaline solution of thiourea. Both of these need very careful handling. Thiourea is a powerful fogging agent and great care should be taken to avoid any contamination. Sulphide solutions give off hydrogen sulphide gas which has a very offensive odour. High concentrations of the gas may be toxic and can also act as a fogging agent.

**Washing after toning**

Some toners contain thiosulphate (Kodak Rapid Selenium, Kodak Polytoner and hypo-alum) and need a full wash after toning. With fibre base papers, the use of a washing aid, such as GALERIE WASHAID, is advisable. Some other toners (blue being the most common) produce an image which is slightly soluble in alkaline tap water, so the wash times with fibre based papers should be kept as short as possible, or the wash water could be slightly acidified with acetic acid.

**Drying**

Avoid heat drying toned prints as there is often a loss of colour.

**SPLIT TONING**

Split toning techniques are used to obtain different colours for the highlights and shadows of prints by using two toners one after the other. When toning, the highlights of the print are usually the first to change colour followed by the shadows. Thus a reduced time in the first toner starts the toning process and affects the highlights of the print. The second toner completes the toning process and affects the shadows of the print. By adjusting the time in the first toner, more or less of the tonal range of the print is affected by the first toner.

As a guide, try reducing the toning time in the first toner to about 25% of the recommended time. Wash the print well before using the second toner. Tone the print in the second toner until the desired effect is seen.

First toner	Second toner	Effect
Sepia	Blue	Sepia highlights, blue shadows, green mid-tones
Sepia	Selenium	Brown purples
Selenium	Gold	Purple-blue mid tones
Blue	Selenium	Blue shadows and buff highlights

Some toners, for example, Kodak T-21 (Nelson Gold) toner, tone the highlights and shadows at the same time. These are not so effective for split toning techniques. However, with such toners the whole print is toned at a uniform rate, so the toning can be stopped when the desired hue is reached.

**USING TONERS TO PROTECT PRINTS**

Prints made for display must be toned to protect them from the oxidising gases that are found in many environments. Oxidising gases come from everyday items such as newly laid carpet, wet gloss paint, newly applied adhesives and traffic fumes. Not all toners protect the image.

**Sulphide or selenium toning**

The silver image is converted into silver sulphide or silver selenide. This gives an image of increased permanence. Sulphide (sepia) and polysulphide toning generally offers the greatest protection from external contaminants. Polysulphide toners include Agfa Viradon and Kodak Brown Toner. Selenium toning generally offers slightly less image protection under extreme conditions.

**Metal replacement toning**

The silver image is replaced during a series of chemical reactions leaving a compound of some other metal. Thus the image is made up of colour pigments. Some metal replacement toners, for example, gold toner and platinum toner, can protect the image. With other metals, such as iron (blue toner) and copper (red toner), the image might have a reduced life compared with standard black and white prints.

**Dye toning**

The silver image is replaced with a dye image. Such an image will have a reduced life compared with standard black and white prints. Examples of these dye toners include those from Colorvir and Berg.

**Other protection methods**

Also recommended for image protection are image stabilising solutions, such as Agfa Sistan, Tetenal Stabinal and Fuji AgGuard.

Laminating may also help to protect the image, but ideally prints should be toned before laminating. ILFORD ILFOGUARD laminating and encapsulating films are recommended.

A wide range of fact sheets is available which describe and give guidance on using ILFORD products. Some products in this fact sheet might not be available in your country.