

SECTION FIVE

PLATES AND PLATEMAKING

LITHO PLATES

Offset litho plates must meet certain essential qualities. They must have a durable base. They must also have a surface that is water-receptive but will also accept and keep a substance that is grease-receptive.

For the small printing unit, only four kinds of plates need consideration: direct image, chemical transfer, electrostatic and pre-sensitized metal.

The Direct Image Plate

This is a plate on which the image is applied directly by typewriter, pen or pencil. The base is either paper or plastic treated with a water-retentive substance. The typewriter ribbon, or pen or pencil, produces an image with soft, greasy characteristics. This is held on the surface of the plate and destroys the water-retentive properties in those areas.

This plate can reproduce only same-size work as it is the master as well as the printing surface. It can only be used for short runs. After about 100 prints the image starts to deteriorate.

Chemical Transfer Plate

This kind of plate has a direct link with early photocopying techniques. The master is put in direct contact with paper negative material and placed in a lightbox and exposed. The

exposed negative is then fed through a chemical processor where it is brought into contact with the printing plate made of paper, plastic or foil. Paper plates can be used only for short runs. Plastic plates will easily last for 500 copies and foil ones for 2,500.

The main limitation is that of being able to reproduce only same-size images.

Electrostatic Plate

To produce this kind of plate, the master is exposed to a lightsource which reflects the image onto a special plate where it creates an electrostatic charge. Oppositely-charged particles of a grease-receptive substance are then attracted to those areas of the plate where the image has created the charge. The plate is then passed through a heating machine which fuses the greasy image permanently onto the plate. These plates will last for about 2,000 copies, but can only reproduce same-size images.

Comparing the First Three Methods

These are the three simplest methods of platemaking. Depending on the size of the printing unit, any of them could be used. The direct image plate is the cheapest, but quality is poor and the length of run limited. It is not to be recommended as the main method but it could be used in conjunction with one of the others.

There is little to choose between the other two methods. The chemical transfer uses two wet chemicals. These, together with the negative sheets and the plates, are the only recurrent costs. With the electrostatic method, the recurrent costs are the plates and the etch solution (or powder) used to form the image.

Both systems can produce paper, plastic or foil plates, and both need electricity. Little skill is required, and a few minutes' tuition should be sufficient for the average technician. With both methods, plates can be made in five minutes and stored ready for use, but they must be kept in dry conditions to avoid deterioration. They can also be stored after use if a re-run is likely.

Pre-Sensitized Metal Plate

The fourth type of plate available to the small unit is the pre-sensitized metal plate. It consists of a thin sheet of aluminium, one side of which has a fine grain imparted to it in manufacture. To this is added a light-sensitive, grease-receptive coating. Before the plate can be used, a film negative or positive is required. To obtain this either a process camera is needed, or access to a printing unit in the area that can provide film for you. When the plate is brought in contact with film in the platemaker and exposed to ultraviolet light, the coating on the exposed areas is hardened. The remainder, which is the non-printing area, stays soft and is washed away with chemicals.

Many kinds of pre-sensitized plates are manufactured. They differ in that some use a single chemical, some use water with chemical additives, and some use water only. All of these plates are good for long-run work and can be produced quite quickly once the film is to hand. Exposure times vary from three to five minutes. The development time is about the same depending on the type of plate being used and the style of image that is required.

A certain amount of skill is necessary for making pre-sensitized plates. The length of exposure times needed for different images has to be judged. Although the manufacturers give guidelines for the various exposure times, it is only with experience that the operator will be able to get a perfect plate every time.

Platemaking Units

Pre-sensitized plates need special equipment to expose the film to the plate. These are called platemaking units. Many types are available. All have two things in common: a lightsource, and a vacuum bed to hold the plate and film in close contact. Some have a vacuum bed that swings over to present the plate and film to a lightsource contained below in the body of the unit. In others the lightsource is above the vacuum bed, and these can be used as tabletop units. The lightsources are controlled in different ways: in some units the light is always on and the exposure is governed by the bed flipping over when the necessary time has elapsed.

This is commonly called a 'flip-top' platemaker. Other models have a timeswitch built into the lighting system and the lights switch on and off to give the correct exposure. A darkroom is not necessary, but plates should be handled in subdued light to prevent daylight from fogging the plate during the time spent positioning the film on it.

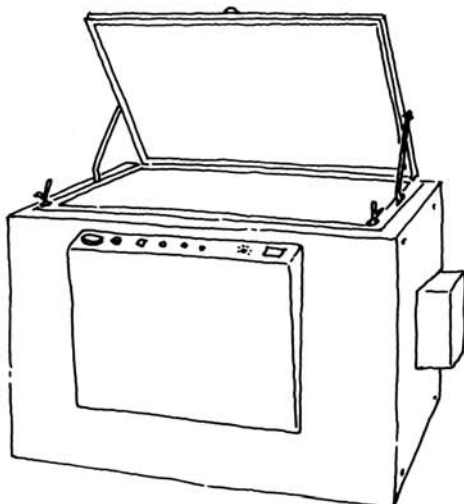


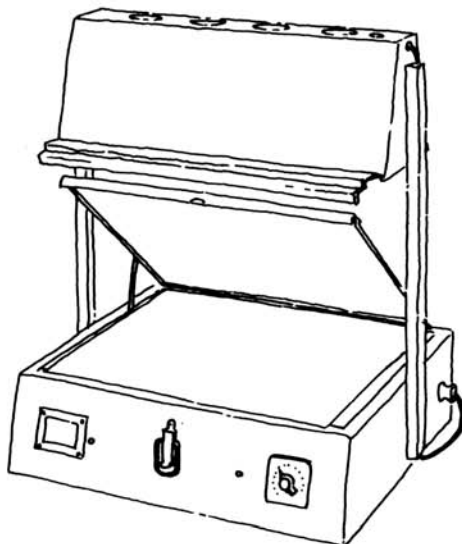
Diagram 12: A flip-top platemaker

Electricity and running water are necessary for platemaking and the unit should, if possible, be housed in a room that is comparatively dust free. The only other running cost involved in platemaking is for the replacement of the lamps in the lightsource. The cost of these varies considerably. Some of the chemicals used in the plate-development, although not harmful, are extremely strong-smelling, and an extractor fan or other ventilation would make the working environment much more pleasant.

Plate Processing

There are plate-processors on the market which differ very little from film processors. They are used for developing the plate after it has been exposed in the platemaking unit.

The plate is fed into the processor after exposure and the chemicals develop the plate as it is fed through the machine. They are very expensive and can be justified only if over 100 plates are needed each day.



*Diagram 13: Platemaker with overhead light source
(bench model)*

The running costs for the processing side of platemaking are taken up almost entirely with the purchase of chemicals, and this is not a small item. With hand processing, unless great care is taken, more chemicals are used than are necessary. This problem is difficult to rectify as it is part of the operator's skill to judge just how much chemical to pour onto the plate. With a processing machine the problem is different: if the throughput is in keeping with the maker's recommendations, there will be no waste. However, if the chemicals are left in the processor with very little work passing through, they will deteriorate quickly. In most processors the chemicals have to be changed at least once a week.