What we find fascinating is the prospect of spraying liquid LiteSpeed directly onto a press cylinder, imaging it in place, and then washing it away when the print run is finished.

Milliwatts, Millijoules

The reason the sensitivity spec is important for thermal plates is that it governs the amount of laser power and exposure time that will be required for platemaking. A joule is a unit of energy (work), while a watt is one joule per second (*i.e.,* how fast the work is getting done). Thermal plate sensitivity could be expressed as joules per square meter, but it's usually convenient to work with smaller units: square centimeters and millijoules (thousandths of a joule). For very sensitive plates, it's handy to use microjoules (millionths of a joule).

Given a sensitivity in millijoules per square centimeter, and the time in which you would like to expose one square centimeter of material, it is possible to compute the minimum laser power required:

$$p_{min} = A * s / t$$

where p_{min} is the theoretical minimum laser power, in milliwatts; A is the area to be exposed, in square centimeters; s is the sensitivity of the material, in millijoules per square centimeter; and t is the time in seconds you are willing to spend exposing the plate.

For example: A plate material requires 100 millijoules per square centimeter of exposure, and you would like to expose a one square meter (10,000-square-centimeter) plate in 100 seconds.

p_{min} = 10,000 sq. cm × 100 millijoules per sq. cm ÷ 100 seconds = 10000 milliwatts (or ten watts).

Real life is, of course, more complicated. First, the actual laser power required will be larger than the theoretical minimum because the laser's wavelength is probably not the same as the plate's wavelength of peak sensitivity. Second, the chemicals in the plate coating may require minimum cooking times or threshold power levels. Third, plates are sometimes given more exposure than the minimum in order to improve run length, ensure proper dot size, etc.

—Eliot Harper

The Thermal No-Process plate was demonstrated at Drupa by exposure in a Trendsetter 3230 and printing on a Speedmaster 74. It is now in beta testing. KPG expects to begin commercial shipments by year-end.

Thermal plates. There are also some new thermal approaches. One, under development at Mitsubishi Paper Mills, is a single-layer polymer that is very sensitive—the plate shown at Drupa required a mere 10 mJ/cm^2—yet uses ordinary alkaline processing. It is also claimed to be quite durable, holding a 10-micron dot for 200,000 impressions.

No release date or price has been set. Mitsubishi says that the next step is to work with several platesetter makers to explore how high the imaging speed and resolution can be pushed. While that's going on, Mitsubishi will work on getting the sensitivity still higher. In the lab, we were told, Mitsubishi has tested plates down to 1 mJ/cm^2 with results that are at least partially successful. (Microphotos of bar-code images showed some thinning of hairline strokes, but not actual breakup of the lines.)

Asahi described its processless plate, which it said would be ready for market in 6–12 months. It uses a hydrophilic polymer coating that, when exposed to 830nm light, becomes lipophilic. There's no washing step; just ink it up and run.

There are two drawbacks right now. First, the coating is rated for only 50,000 impressions. Second, the coating is not very sensitive: 500 mJ/cm^2. We're told that better sensitivity is under development, and that even the current coating is quite sufficient for some purposes. It can be exposed in a 40-watt Trendsetter, taking just three minutes to burn a 605×740mm plate at 2,540 dpi. Taking all these factors into account, Asahi thinks it would be a good match to a DI press.

Another approach is Agfa's Thermolite plate, which is based on the LiteSpeed material *(see Vol. 29, No. 11, p. 19)*. LiteSpeed is a water-soluble, latex-like polymer that cures when exposed to 830nm radiation. After exposure, the printer mounts the plate on the press and applies the dampening roller for a few revolutions, exactly as with any litho plate. The dampening water does not dissolve the raw polymer, but it weakens the bond between the latex and the underlying aluminum. When the ink rollers are applied, the tack of the ink shreds the latex and pulls it off the plate. Shortly thereafter, the ink is carried away on the image-bearing areas of the plate and deposited on the makeready sheets.

Thermolite plates are rated for only 20,000 to 30,000 impressions. They will be commercially available in late fall, at a price that hasn't been decided yet.

What we find fascinating is the prospect of spraying liquid LiteSpeed directly onto a press cylinder, imaging it in place, and then washing it away when the print run is finished. In effect, you would eliminate all plate-changing tasks. Komori and Shinohara are developing presses that, if all goes well, would use this technique. But it will be a couple of years before they are ready to sell such machines.

Cost effective? Prepress consultant Michael Mittlehaus of Germany has estimated that processless plates reduce the productivity of the platesetter by 25–50 percent because the lower sensitivity of the plates requires longer exposure times. He also thinks that the plates will be as much as 50 percent more expensive than other CTP plates.

Mittelhaus illustrates this by a comparison between the Agfa Lithostar Ultra and the Agfa Mistral. The savings in plate pricing alone, despite the additional chemistry needed for the Lithostar, would pay for the processor within one year, assuming a consumption of 7,500 square meters of plates per year.

Despite that note, the Agfa and Presstek plates (which can be delivered in quantity) were quite well received. Whether the market as a whole will switch to processless plates is still open to question. So far, the main contribution of all the announcements has been to cause more uncertainty over what plate technology is right for the long haul.