CTP Plate Making: Understanding the Real Costs

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Overview

The move to computer-to-plate has increased the productivity and efficiency of printers by simplifying the production process and streamlining workflow. Despite the cost savings achieved by moving from film-based plate making to CTP, there are still important costs incurred in getting the plate from the platesetter to the press. Most printers accept these as unavoidable costs of doing business, and therefore do not track these costs very carefully. As the pressure on printers to increase efficiency and speed continues to grow, understanding these costs and their implications becomes increasingly important. This white paper identifies and highlights some of these often neglected costs and summarizes the experiences of printers using different types of digital plates. Reviewing this information will assist printers in developing a clear picture of the costs they actually incur during the plate making process.

Key findings include the following:

- **Chemistry can account for as much as 30% of the price of the plate, and there are additional hidden costs that can bring the total cost of plate making even higher**
  - Processor maintenance and cleaning
  - Process control, stability and consistency
  - Waste disposal
  - Inventory

  The typical printer can spend $40,000 to $100,000 per year on chemistry and related items.
- **Many, if not most, printers tend to underestimate the total cost of chemistry, processing, and maintenance**
  - Printers who keep good records or whose suppliers provided reporting relative to the value of the chemistry purchased report spending considerably more than those who only estimate chemistry use
- **There is no free lunch**
  - Low plate costs typically mean higher chemistry costs
  - Low chemistry use is associated with higher plate costs
  - Consignment buyers pay more
  - Those who use consumables to finance equipment pay more
- **Chemistry-free reduces most costs**
  - Process-free eliminates them entirely
  - Only one vendor, Presstek, offers these solutions today
  - We expect more to come

Introduction

Computer-to-plate (CTP) systems today all work very well. They differ in features, speed, automation, and, of course, laser type, but just about all can reliably image a plate and produce a high quality printable dot. As they move to computer-to-plate, printers have improved workflow efficiencies, in part by simplifying and streamlining the prepress manufacturing process. This is obviously true of the shift from analog to CTP. But it also applies to the CTP process as well; printers must continue to rationalize and increase the efficiency of the production process as CTP technologies continue to mature.

The cost of CTP is not limited to the cost of the system and of the plate. Keep in mind that CTP systems—and the costs associated with them—vary, and there are subtle differences in how they operate, the cost centers associated with their operation, and the overall implications to the production workflow. This results in real differences in the true cost of getting the plate on to the press.

Printers *must* understand and know all of their costs, regardless of where they are incurred within the operation. They should never assume that a given cost is unavoidable or cannot be improved. It is an absolute requirement—especially in today's competitive environment—to have all production processes under control. It should also be kept in mind that each step in the production process represents an opportunity for error, and elimination of process steps not only increases efficiency and reduces cost but also reduces opportunity for costly and time-consuming mistakes that can increase product cycle time, cause extensive rework, and ultimately lead to customer dissatisfaction and, ultimately, defection. Thus, it is critical to understand the potential sources of error and the costs associated with making these mistakes. A critical element in this analysis is understanding the cost of each and every piece of the operation.

Keep in mind that CTP systems—and the costs associated with them—vary, and there are subtle differences in how they operate, the cost centers associated with their operation, and the overall implications to the production workflow.

A recurring theme in this white paper is printers' lack of awareness of the total cost of getting a plate on press. While some printers do an excellent job of accounting for costs, most do not, and many printers, unfortunately, do not even understand the requirement. For example, as computer-to-plate solutions began to hit the market, many did not recognize the potential benefits of migrating from traditional analog processes to these new, more efficient, digital solutions. Additionally, it is important to keep in mind that while the cost of the chemistry itself may appear to be relatively small, it in fact often represents a significant proportion of the overall cost of producing a plate. Moreover, NAPL estimates that the cost of operating a plate processor can be as high as $90,000 per year or more. These are not insignificant costs, and it is critical that they be well understood so that opportunities to reduce them can be exploited.

Methodology and Sample Demographics

During the summer of 2003, we spoke with 63 printers, gathering detailed information about their plate and chemistry use and costs. We attempted to speak with plants using different types of plates, including thermal (both bake and no-bake) and violet, representing all of the major manufacturers. As prices can vary substantially with plate volume, we spoke with printers of all sizes to gain a more accurate cost picture. A number of the plants included are part of very large organizations and "national accounts". This means that while the information we collected represents costs incurred at the plant level, the prices they paid naturally reflect the parents' buying power.

Printers provided information about plate sizes, volumes, and prices; amount and cost of the different types of chemistry used (developer; replenisher; neutralizer; and finisher); processor maintenance and cleaning; inventory levels; and waste disposal. In most cases, costs came from invoices or other accounting documents, delivering a high level of confidence in the accuracy of the information. Some respondents, however, estimated their actual chemistry use due to lack of complete records. As we will discuss later, it is our opinion that they tended to underestimate these costs, since those who provided their records or received the information from their suppliers reported higher relative volumes and costs than those who simply estimated their chemistry use.

To compare the very different types of plants and plates, we converted the costs to dollars per square foot of plate media consumed.

Figure 1 reflects the plate types included in the study, and the percentage of the sample each represented.

Figure 2 presents the breakdown of establishment sizes included in the study. As you can see, respondents were evenly distributed among small, mid-size and larger print operations.

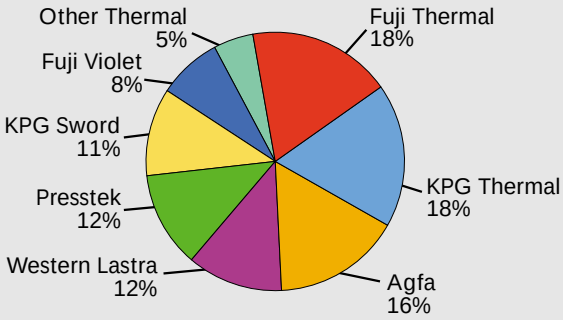


Figure 1. Plate Types Represented

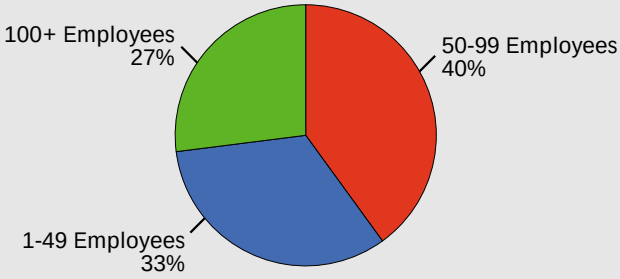


Figure 2. Establishment Size

After imaging, most plates need additional processing. These post-imaging costs are often considered unavoidable, or even ignored, yet they can add significantly to the total cost of plate production. And remember, each additional step in the production process represents an opportunity for error. As one vendor newsletter states,

> "All the benefits of CTP can be thrown right out the door if the imaging and PROCESSING parameters are not kept in check. One bad plate can cause countless hours of press down-time if it has not been developed properly and will bring about a hasty, unscheduled, processor clean. This usually means diverting staff (from an already reduced workforce) away from their dedicated jobs to carry out the maintenance."
> *KPG CTPeXPOSURE Newsletter, 21 October 2002*

This white paper presents a thorough discussion of the costs incurred in getting the plate on press experienced by printers of different sizes, with different CTP systems, and using various types of plates, focusing principally on chemistry, processing, and maintenance.

Plate Production Process

On the platesetter, the image formation is initiated by the laser. The latent image then must be brought out or "developed" and fixed. For almost all plates, this requires chemical processing. Some plate types require pre-heating prior to developing, either as a separate step (as with KPG Thermal Gold, for example) or integrated into the processor (as with many visible light plates). The plates are then developed and rinsed, with a gum finisher applied at the end of the process to protect the plate and image. Many plates can be baked after processing to improve run length and/or chemical resistance.

> Plate developing chemistry, by its very nature, is unstable.

Plate developing chemistry, by its very nature, is unstable. For example, for positive working thermal plates, the developer is typically an alkaline solution. As plates are run through the processor, the developer can neutralize and weaken. Many systems rectify this through the addition of replenisher to boost the pH. But after a certain number of times, the pH level of the developer can no longer be restored — it's "worn out" and needs to be changed. The frequency depends on plate volume, the time interval between changes, and other manufacturer's recommendations. During the change of chemistry, most printers completely clean the processor.

Figure 3 depicts the steps involved in the various plate making processes.

Figure 3. Plate Making Process Steps

	IMAGE PLATE	PRE-BAKE	FIX OR PRE/HEAT/WASH	DEVELOP PLATE	WASH WITH WATER	FINISH	POST-BAKE OPTIONAL FOR LONG RUN	FINISH OPTIONAL FOR LONG RUN	PRINT
Process-free Thermal CTP (one step)	●								●
Chemical-free Thermal CTP (two steps)	●				●				●
No-Bake Chemically Processed Thermal CTP (three steps)	●			●		●			●
Visible Light CTP (four steps)	●		●	●		●			●
Pre-bake Thermal CTP (six steps)	●	●		●		●	●	●	●

Differences in Plate Cost

The cost of plates can vary widely from plant to plant, from less than $0.80 per square foot to more than $2.00. The volume-weighted average price paid by the plants surveyed, adjusted for rebates, is $1.14 per square foot.

There are a number of reasons for this wide range of prices paid for plates, including such things as volume of plates purchased; plate contracts that leverage preferred customer status (particularly for national accounts); and sizes of plates. Other, more hidden influences include rebates; using plate purchases to finance a range of equipment; and other incentives. While it is difficult to determine the impact of special deals and incentives on nominal prices, we can look at two areas-plate volume and plate manufacturer and type-to gain a better understanding of plate pricing variances.

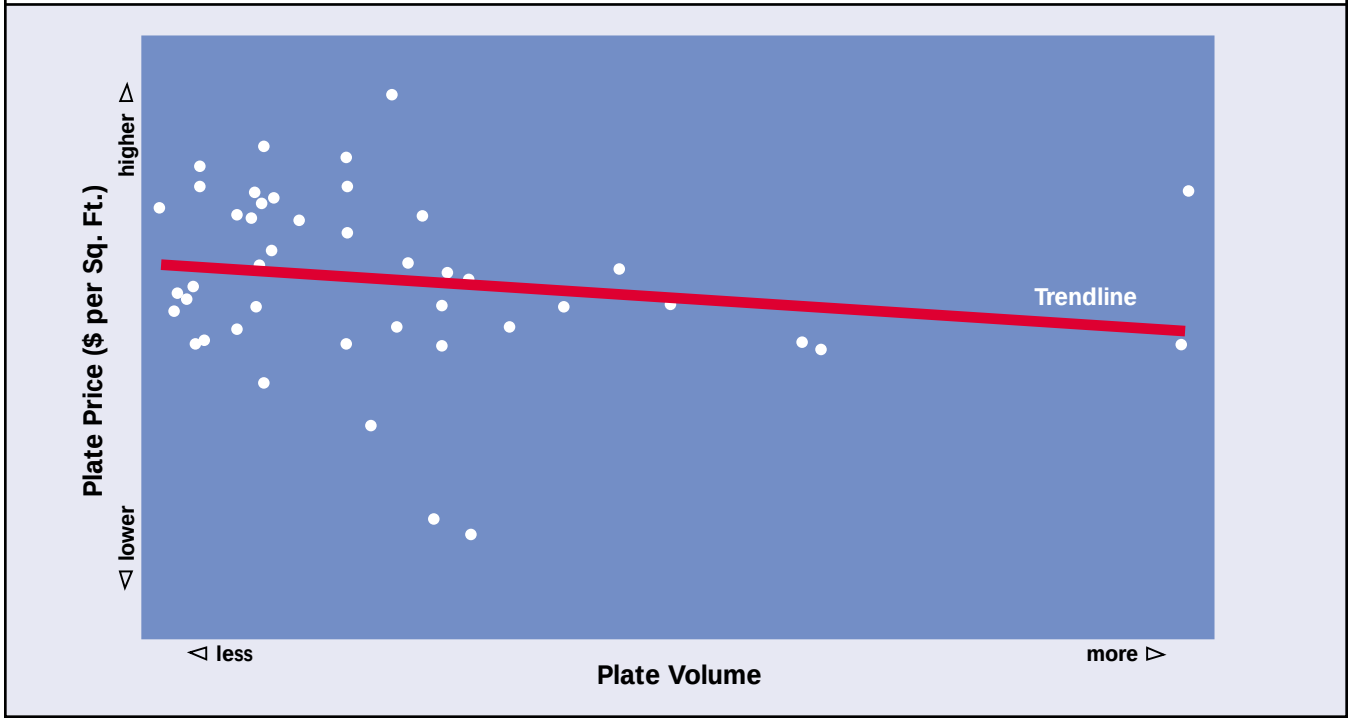
Plant Size and Plate Volume

All things being equal, one would expect larger volume plate users to pay somewhat less than those who use a lower volume of plates. And, as indicated in Figure 4, this is generally the case; but the association is actually fairly weak. In fact, volume of plates consumed at the plant only accounts for about 8% of the variation in plate prices. Other factors include such things as whether plates are purchased on consignment; are financing an equipment purchase; or if the plant is part of a national account or buying group.

Manufacturer and Type of Plate

Plate prices can also vary dramatically by type of plate and, especially, by manufacturer. Figure 5 shows the range of reported prices paid for plates, by manufacturer and type of plate.

Figure 4. Impact of Volume on Price



Note: The prices reported by most plants were pre-rebate; others, however, reported net prices after rebates; and of course, some plants do not receive rebates. In order to make the reported prices consistent for comparison purposes, we adjusted where appropriate for actual rebates, or assumed the industry-standard 30%.

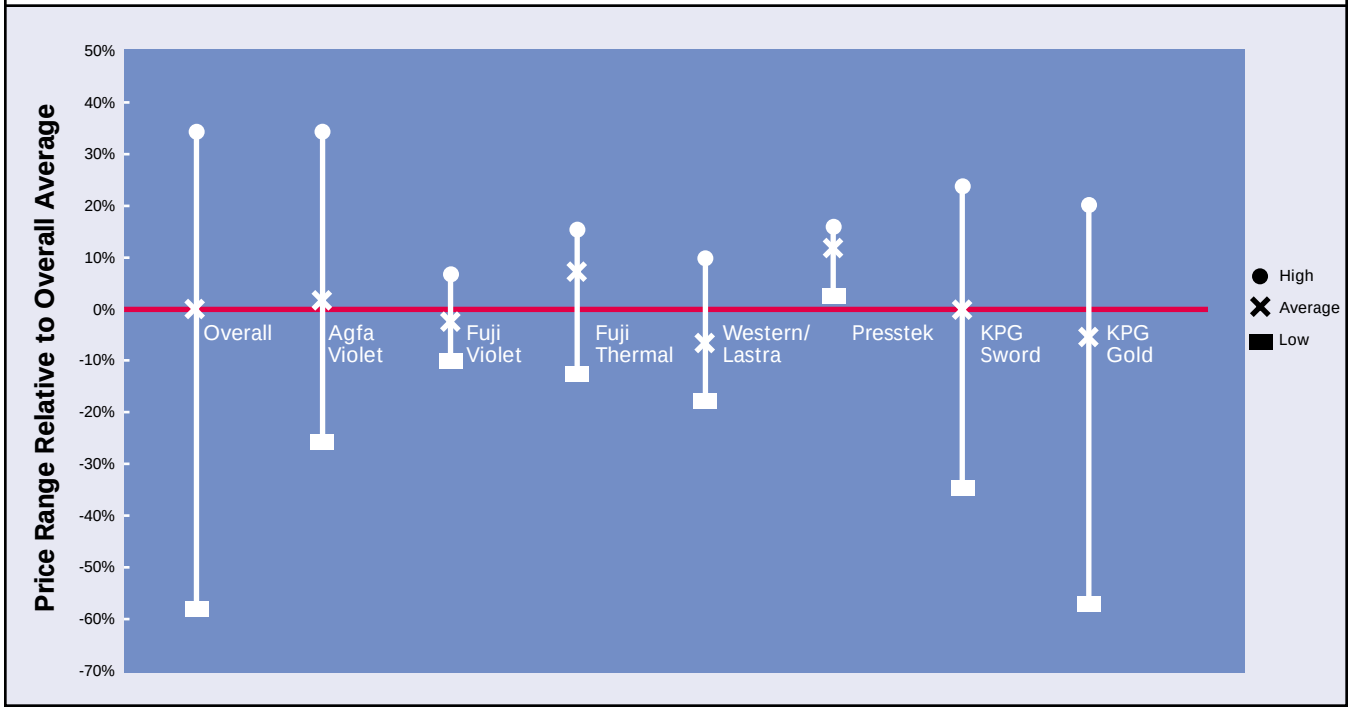
As we are primarily interested in the range and variation of prices, and in order to maintain confidentiality, the prices are indexed. The (unweighted) overall average price paid by each plant is shown as 0%. The high, low, and average prices for each plate are shown relative to the overall average price.

As Figure 5 clearly demonstrates, the ranges can be quite wide. One plant, for example, switched from the KPG 830 thermal plate to Spectratech to the KPG Thermal Gold plate (not always because of price), with a price swing of more than 40%.

There are, of course, some differences *between* vendors. Western/Lastra and Spectratech, for example, tend to be less expensive than other brands. Presstek Anthem, which uses no chemistry, is generally found among smaller printers. As they have less purchasing power based on volume than larger plants, they tend to pay more for consumables. This is reflected in the survey results. Nevertheless, the typical price paid by a printer is fairly consistent across brands and types of plates, as one would expect for a mature product. Because of the wide range of prices for thermal plates, there are no significant differences between prices paid for visible and thermal plates.

The prices paid, however, differ much more widely *within* a brand or type of plate. As Figure 5 indicates, prices for Fuji violet plates appear to have much less variation than prices charged by

Figure 5. Range of Plate Prices



other vendors. As a relatively new product, pricing is naturally more consistent. This may change as it enters into wider distribution. In contrast, the more mature KPG plates have the greatest variation in price. There are a number of reasons for this. First, KPG has by far the largest market share in digital plates and would, therefore, have the greatest variety of customers. This not only means that KPG sells to both small and large plants, but also that KPG customers are likely to have plate contracts and pricing that reflect the full range of pricing options, financing, and creativity. This is compounded by the fact that KPG does not manufacture its own CTP system; the company has, over the years, had strategic relationships with a number of equipment suppliers, including Creo, Heidelberg, and Screen. Moreover, "national accounts", which are most likely to use KPG Thermal/Gold plates, are able to negotiate very low prices for plates.

Perhaps nothing in the current market for products in the printing industry is more complicated than the pricing for plates. The nominal prices shown on the invoice often bear no resemblance to the real price.

First, a majority of printers receive some type of "rebate" directly from the manufacturer, from their dealer, or both. Rebates can be provided on specific products (e.g., plates only) or on all purchases. These rebates can be substantial, as much as 30% or more. They are paid periodically, at varying intervals, with quarterly being the most common, and are "earned" based on meeting an agreed-upon volume commitment. For various reasons, the printer may elect to receive a rebate rather than a lower price at time of purchase.

Second, plate pricing can also be used to subsidize equipment, either directly or indirectly. In a "direct" subsidy, the price of the platesetter, for example, can be tied to a plate contract, with the platesetter price lowered as the plate price and contract length increases. Less directly, the plate processor is provided at "no charge," but, of course, it is in fact paid for by the use of plates and chemistry.

Perhaps nothing in the current market for products in the printing industry is more complicated than the pricing for plates.

Third, a rebate on plates can be applied toward loan or lease payments on the equipment. These payments can be made by the printer (in which case the rebate provides a more predictable cash flow with which to make the payments) or by the plate supplier, who may finance the purchase.

While the plate price and/or rebate is most typically and obviously tied to the relevant associated equipment (plates and processor or platesetter), this is not always the case. One printer notes, *"Our consumables finance all kinds of equipment, but we don't receive a rebate."* In another more complicated example, the printer has a CTP system from one manufacturer, workflow from a second, and is using plates from a third vendor. In this instance, the plate supplier purchased the workflow software for the printer and is applying the higher plate price toward the software purchase.

Another respondent stated, *"Plate pricing is extremely complicated. We're on all sorts of different contracts. We don't pay for service at all; on some devices, plates are tied up with the lease agreement, on others not."*

Processing Costs

Once the plate is imaged, it needs to be processed. The cost of processing is not trivial. This is a real cost center; whether or not you choose to track these costs, you must be aware of them. NAPL estimates the annual cost of operating a 4-page plate processor to be $80,000 to $100,000 per year. **(Cost Study on Digital Prepress Operations).** These estimates are fully burdened and include labor, depreciation, overhead, and other costs.

We will focus on a few important components of the cost of processing a plate:

- The cost of the processor, including floor space.
- Cost of chemistry
- Cost of maintaining the processor
- Inventory costs
- Baking
- Waste disposal

Cost of Plate Processors

Plate processors can cost from $20,000 to $40,000 or more, depending on size, vendor, and plate type. Very few printers, however, explicitly pay for their processors. Almost all processors are provided "free" with even a minimal volume of plates. Accordingly, we have omitted the cost of the processor as an explicit cost, since its cost is already "buried" in the price of the plates.

Floor Space

One of the hidden costs of plate making is the cost of the space it consumes. Printers rarely allocate this cost because they, unfortunately, do not always account for all of their costs. The space required for the processor is typically small. The attitude of most is, "We have the space," so they do not see a reason to charge for it. In fact, only one of the plants contacted (an operation of one of the larger printers in North America) explicitly charges for floor space used by the processor.

Nevertheless, using even very simple assumptions, the cost of space can be very expensive, frequently as much as the chemistry itself. Charges for floor space ranged from $6 to $10 per square foot. Obviously, in higher-rent urban areas such as New York City, San Francisco or Boston, costs can be much higher. But even using these lower figures, the space consumed by the processor can cost as much as $5,000 to $10,000 per year. Even for a moderate to large plant that spends $100,000 to $150,000 a year on plates, the cost of the space can amount to 10% of the cost of the plates.

Cost of Chemistry

Chemistry is often considered a non-discretionary cost of doing business, and thus, these costs are often not tracked accurately. Printers *must* understand and know *all* of their costs. This is an absolute requirement—especially in today's environment—in order to have *all* production processes under control.

Further, each step in the production process represents an opportunity for error. It is critical to understand the potential sources of mistakes and their associated costs. In so doing, it is necessary to analyze the cost of each piece of the operation. While the cost of the chemistry itself may appear to be relatively small, it in fact often represents a significant proportion of the cost of the plate. Failure to understand its true cost can be symptomatic of broader business issues.

Printers can spend as little as $2,500 per year on chemistry, or as much as $75,000 or more, depending on their plate volume, type of plates, and operational practices. The variation in the prices of chemistry-particularly of developer but also of replenisher and finisher-is much less than that of the plates. This is true both across manufacturers as well for the same product purchased in varying volumes. The major source of price differential comes from quantity purchased at a single time and/or container size (e.g., 2½ gallon jugs versus 55 gallon drums).

> Printers must understand and know all of their costs. This is an absolute requirement—especially in today's environment—in order to have all production processes under control.

Printers' chemistry practice and use, however, differ dramatically, even among similarly sized plants using the same plates. And in estimating cost and chemistry usage, not every printer included all costs. For example, some printers indicated they employ a replenisher, priced differently from the developer, while others do not. Many printers omit the cost of water or other neutralizing processes. For printers who bake, some mention pre-bake chemistry, while others do not. Accordingly, their chemistry costs per square foot vary.

Overall, however, chemistry is typically equivalent to about 18% to 20% of a printer's annual expenditures on plates, although it can be more than 70% and as low as 5%. There are a number of reasons for the variation, but the major ones are plate volume; the specific requirements of each type of plate; and the ability of the chemistry to be "pushed" beyond the manufacturer's recommendations.

Figure 6. Chemistry Expense as a Percentage of Plate Cost

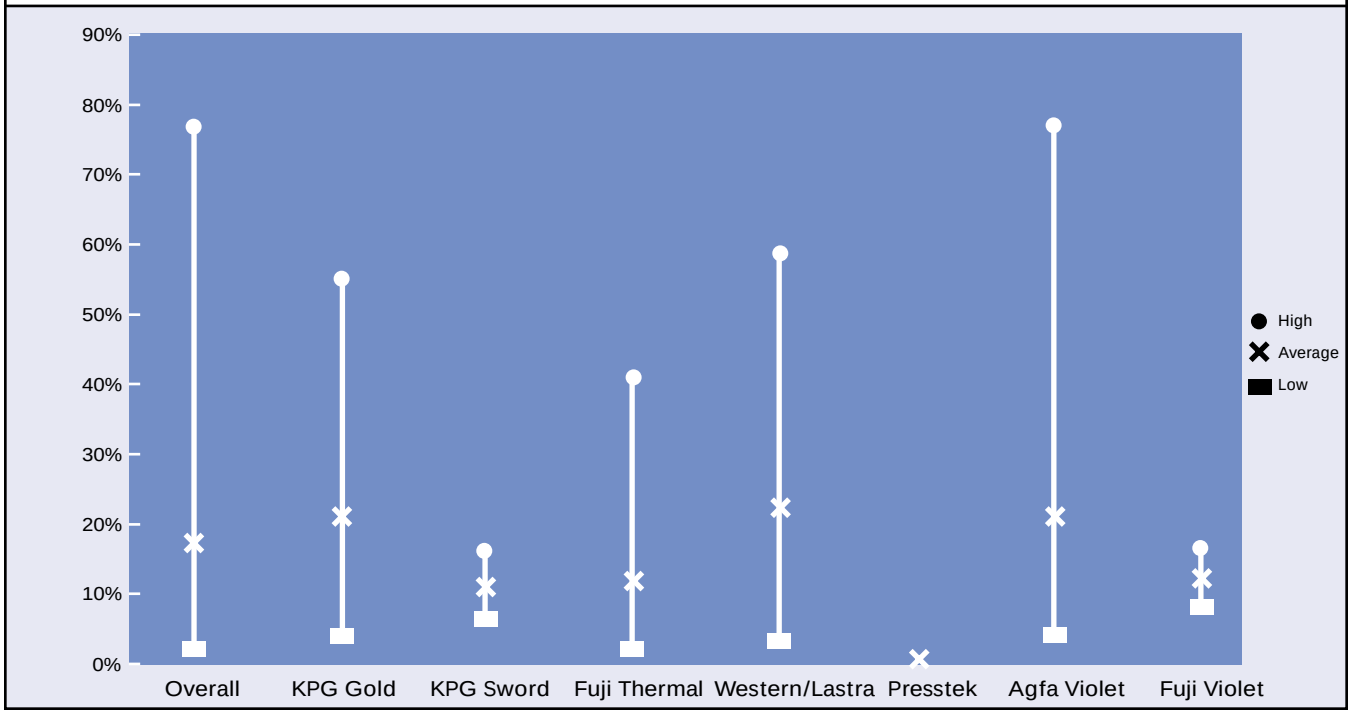


Figure 7. Chemistry Cost per Square Foot of Plate Media

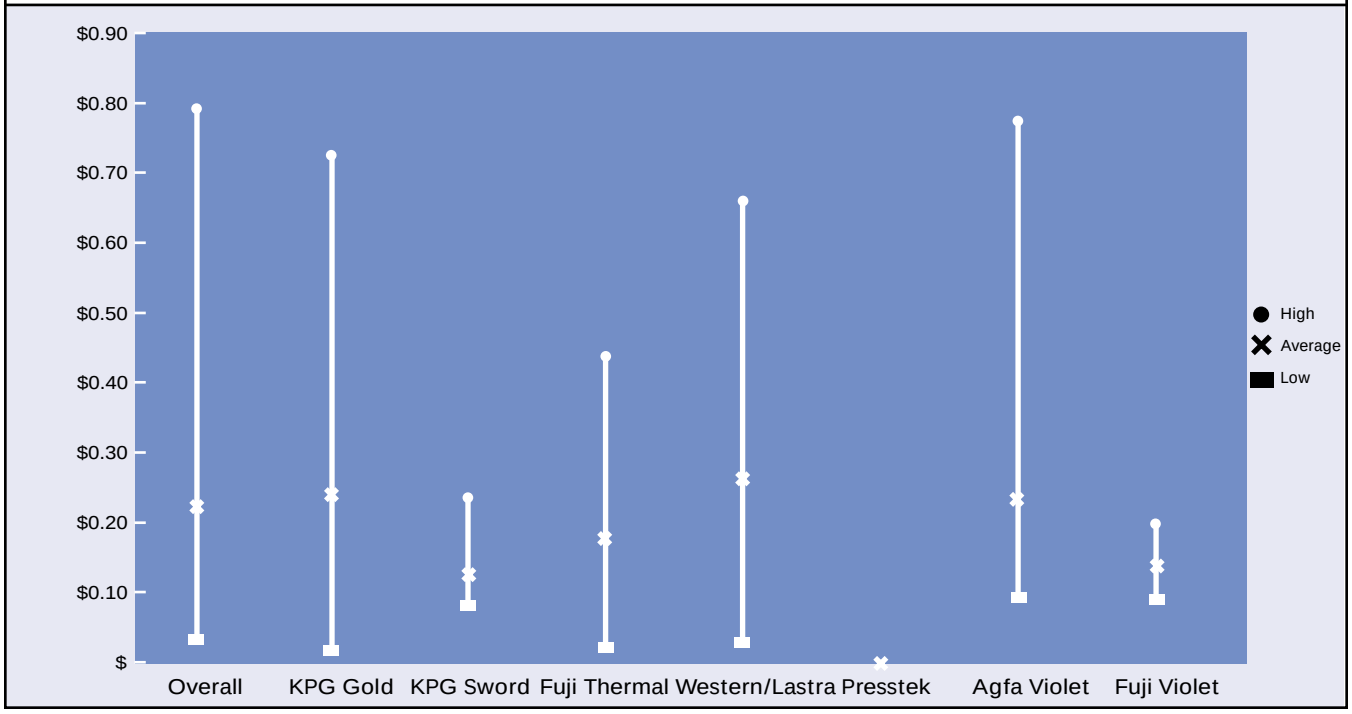
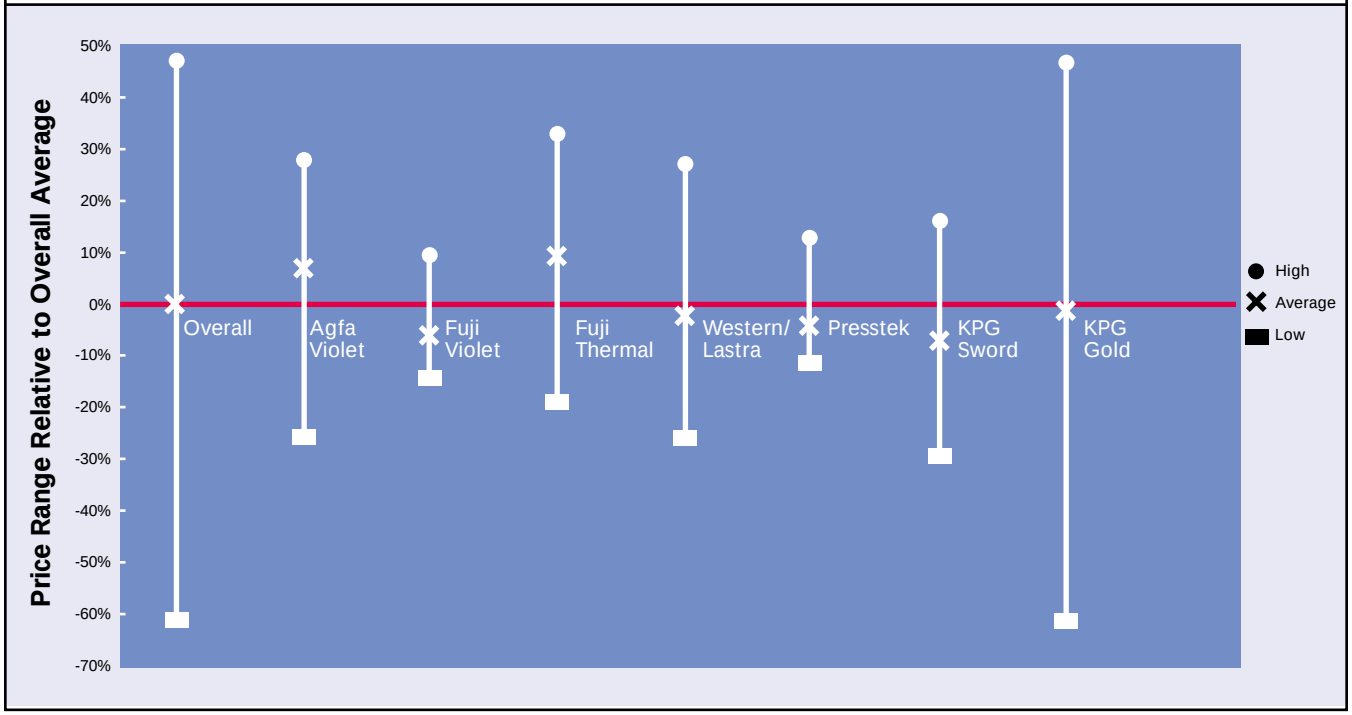


Figure 8. Combined Cost of Plate and Chemistry



Costs can vary based on low or high plate usage. Although a few printers had low enough plate volumes to need to change chemistry before the plate volume would otherwise require it, most printers do not feel they "waste" chemistry due to low plate volumes or variability of usage. However, in practice, the cost per plate decreases as more plates are run through the chemistry.

Chemistry expenses are reflected in Figures 6, 7, 8, and 9.

Chemistry for Thermal Plates

KPG Thermal/Gold/830

Printers who use the bakeable KPG plates, primarily the Thermal Gold, typically spend about 20% of plate costs on chemistry, although some plants on consignment can spend fully half as much on chemistry as they do on plates. Chemistry costs about $0.20 to $0.25 per square foot of plates, on average, although the range is from a low of less than $0.03 for high volume national accounts to more than $0.70 per square foot of plate material for some users. The average chemistry expenditure is about $25,000 to $30,000 per year, reflecting the higher-volume nature of plants using this plate and the added costs of pre-bake chemistry, among other factors.

KPG Sword

The range of chemistry cost for printers who use the no-bake KPG Sword plate is much narrower, between 8% and 18%, as a percentage of plate expenditures. The chemistry for the Sword costs printers about $0.12 per square foot of plates, or about $10,000 per year.

Fuji

Chemistry costs Fuji LHPI thermal plate customers about $0.18 per square foot of plate media. Some plants spend as little as $0.03 per square foot, while the high end is about $0.45 per square foot. This is an average of 10% to 15% of the typical customer's expenditure on plates, with the low being about 3% and the high 40%. Depending on plate volume, this works out to about $10,000 to $15,000 per year for chemistry.

Western/Lastra

A typical Western/Lastra thermal plate customer spends about $16,000 per year on chemistry. Although the range of total chemistry expense is very narrow, the cost per square foot of plate developed varies greatly and ranges from as little as $0.05 to more than $0.65, with an average expenditure of $0.25 per square foot. Some printers actually spend half again as much on chemistry as they do on plates, but on average, chemistry expense is about 25% of the cost of the plate.

Presstek

Presstek plates, of course, use no chemistry. The Anthem plate requires a water wash after imaging. Costs are therefore zero (most customers use tap water).

Chemistry for Visible Light Plates (Violet)

Agfa

Chemistry costs Agfa visible light plate customers about $0.20 to $0.25 per square foot of plate media. Some plants spend as little as $0.10 per square foot, while the high end approaches $0.80 per square foot. This is an average of a little more than 20% of plate costs, with the low being about 6% and the high 75%. Depending on plate volume, this works out to an average of about $10,000 to $15,000 per year spent on chemistry.

Because Agfa violet plate customers change their chemistry more frequently than others, typically every week or two, smaller volume printers are more likely to have excess waste. As one owner put it, “My chemistry costs wouldn’t go up at all if I ran twice or three times the volume.”

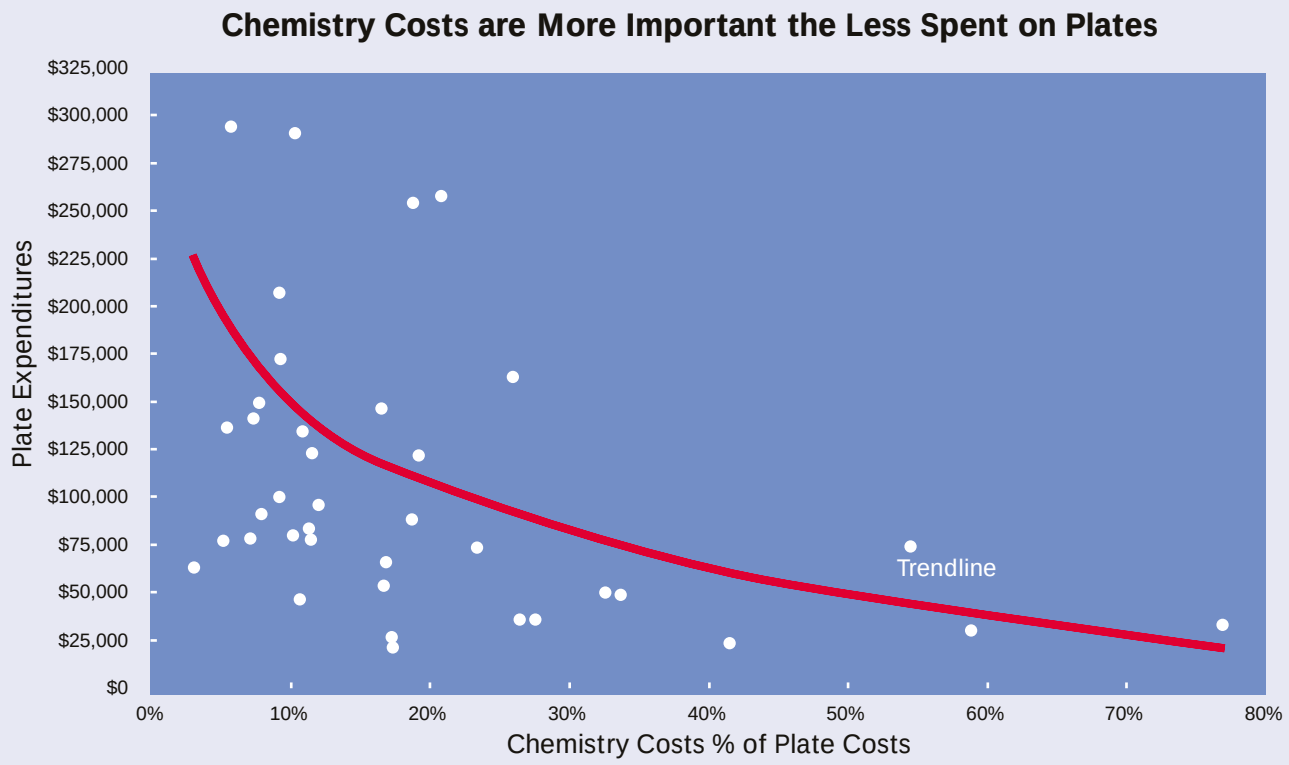
Fuji

Chemistry costs Fuji violet plate customers less than $0.15 per square foot of plate media. Some plants spend as little as $0.09 per square foot, while the high end approaches $0.20 per square foot, for a printer with relatively small plate consumption. This is about 10% to 15% of the average customer’s expenditure on plates. Depending on plate volume, this works out to about $13,000 per year spent on chemistry.

Baking

The cost of baking is another cost that most shops do not account for-other than the cost of

Figure 9. Low Plate Usage Drives Higher Proportional Chemistry Costs



the oven itself, of course. Oven operating costs are difficult to identify and track. And, as with most things that aren't measured, they do not appear to be important in the overall scheme of things.

But in fact, for those who bake plates—which includes a significant proportion of those using thermal technology—the added cost can be substantial. Most indicated the added cost of operating an oven (excluding the capital expenditure for the oven itself) is in the range of $10,000 to $15,000 per year, although for one $100 million printer, the reported cost was closer to $5,000 a month.

Baking may also require a pre-bake solution, which can add another $2,500 to $6,000 or more per year in expenses.

Thus, it would behoove printers to gain an understanding of the cost of baking in order to clearly grasp its overall impact on operational costs.

Inventory

Printers must maintain some inventory of chemistry, both for routine operation and to meet unexpected and emergency needs. Although interest rates-and therefore carrying costs-are relatively low, maintaining any inventory nevertheless has a financial implication that should be minimized. Those printers whose inventory is on consignment generally pay more for chemistry and plates.

Most hold about one to two chemistry changes in inventory, with enough replenisher and neutralizer to last between changes. The typical printer holds about 7% or 8% of the annual chemistry spend in inventory, although many have as little as 1% or 2%, and some have as much as 60%.

In practical terms, this works out on average to one week to two months of chemistry, typically two to three weeks. The average dollar value of the chemistry in inventory is about $850, although there is a fairly wide range around this, from $125 to $2,500 or more.

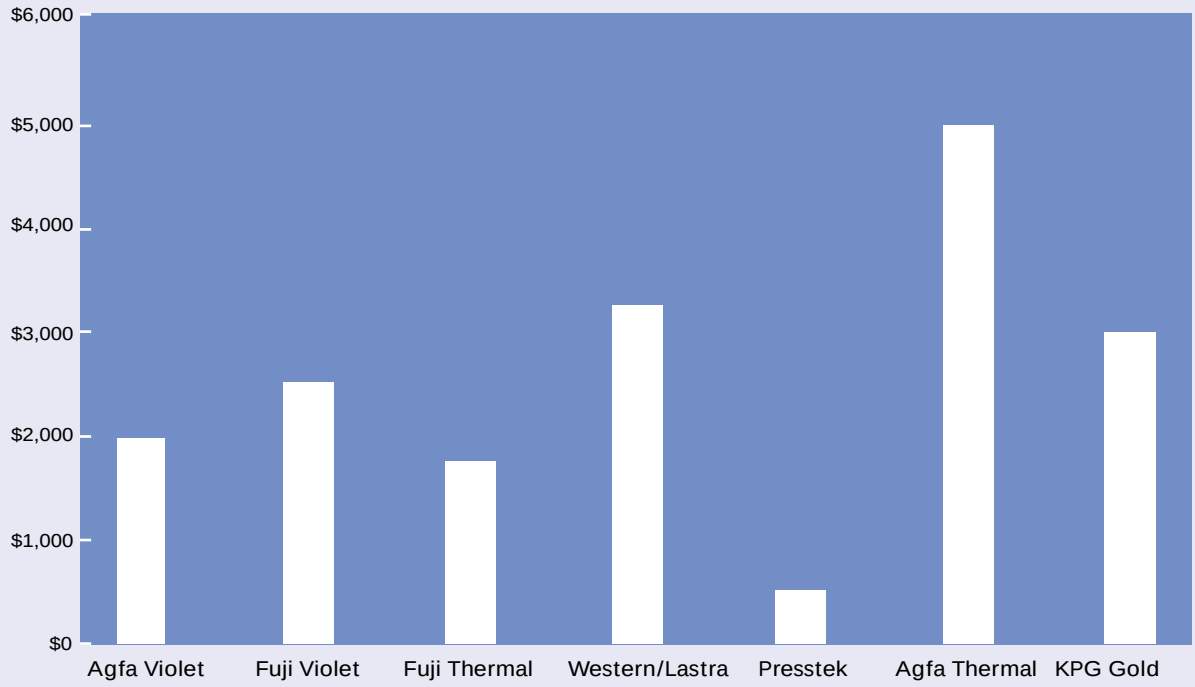
Processor Maintenance

The plate processor needs to be maintained. All brands and models, for all plate types, require checking the chemistry and adding developer or replenisher to maintain the proper concentration or pH levels. Most processors also require some minimal level of daily or weekly cleaning, typically of parts such as rollers, as well as a more thorough servicing at each major chemistry change.

While maintenance schedules and practices vary, printers generally spend about an hour each week in routine processor upkeep, with an average of another hour or two per week for chemistry changeover. The overall mean is almost $2^{1}/_{2}$ hours per week for processor maintenance. At an average cost of $20 per hour ($15 labor, $5 benefits and overhead) that works out to $2,600 per year for labor for routine maintenance alone. It should be noted, however, that NAPL estimates fully burdened labor costs at more than $40 per hour, which would double this annual figure.

Maintenance requirements naturally differ by plate type and manufacturer, as outlined below.

Figure 10. Average Annual Processor Maintenance Cost



Thermal Processors

Agfa

Printers who use Agfa thermal plates change the chemistry weekly, with the changeover taking approximately four to five hours.

Standard annual cost - maintenance only: $5,000.

Fuji

Chemistry for the Fuji LHPI thermal plate is apparently fairly forgiving. Printers using this plate typically change the chemistry every month; many extend the chemistry life far beyond Fuji's recommendations. One mid-size printer only changes the chemistry *"every few months... We use stochastic screening. We couldn't be consistent on reprints until the chemistry is just right. We don't change it in order to hold the chemistry consistency, and we found it wasn't necessary to do so. We clean the processor every 30,000 square feet or so, just to see what's going on in the bottom of the tanks. The replenishment rates have been balanced to the mix of plate sizes and volumes and stay consistently consistent."*

"We spend 5 hours a week cleaning; and for a complete chemistry change it takes 2 people about 10 man hours cleaning."

Accordingly, the average weekly maintenance for these processors is less than 2 hours per week. According to one respondent, *"Fuji is very nice. The chemistry can be dumped and changed in 1-2 hours."*

Standard annual cost - maintenance only: $1,750

KPG Bake (Thermal/830/Gold)

As one of the most popular digital plates, the experience and practices of printers using KPG thermal bakeable plates (including the 830 and particularly the Thermal Gold) are naturally quite varied. Printers spend an average of 2 to 3 hours a week cleaning and maintaining their processors, although some spend as little as 1 hour or as much as 10 hours. While most change

chemistry weekly, the average is slightly less frequently, with some printers only changing chemistry every month or two.

Standard annual cost - maintenance only: $3,000

KPG No Bake (Sword)

KPG Sword chemistry appears to require relatively infrequent changes, typically every two to four weeks. Accordingly, processors require only about 1½ to 2 hours each week to maintain; few printers spend more time.

Standard annual cost - maintenance only: $1,800

Western/Lastra

Chemistry for the Western/Lastra DiamondPlate LT-2 is apparently very complex. While most printers change the chemistry weekly, a few change it much less frequently. One respondent commented, *"Western guarantees the chemistry for a month, but we get 4 months before we change it."*

Processor maintenance is a bit more intensive, however. The chemistry "doesn't have to be dumped to clean [the processor]," said one printer. *"We clean it once a week, the top rollers every evening."* This combined with the difficulty of cleaning the processor increases the average time allocated to maintenance to about two to three hours per week, with some users spending even more time. Another printer indicated, *"It's a heavy chemistry. We spend 5 hours a week cleaning; and for a complete chemistry change it takes 2 people about 10 man hours cleaning... There's a lot of grit on the dryer unit... It also takes a while to warm it up and get to operating temperature [after a change]."*

Standard annual cost - maintenance only: $3,250

Presstek

The Anthem plate from Presstek uses a water wash. Presstek users clean the washer every week or two, although some report doing so monthly. Cleaning takes about 15 to 30 minutes, the more meticulous can spend longer. We also found one Applause beta site; as there is no water wash for Applause, there is no processor to clean.

Standard annual cost - maintenance only: $500

"We spend 5 hours a week cleaning; and for a complete chemistry change it takes 2 people about 10 man hours cleaning."

Visible (Violet) Processors

Agfa

Printers using Agfa LAP-V violet plates typically change chemistry every two weeks. These plate processors require an average of two to three hours of weekly maintenance. One small printer indicates he needs 25% of one full-time employee for processor maintenance and cleaning. Another comments, "*We're on a four week cycle... It's a5-hour process for 2 people (10 man-hours). We do full maintenance every month; it's not required but it provides a better plate appearance. It doesn't affect the quality of the plate, just the appearance; there's less squawking out of the press room*".

Standard annual cost - maintenance only: $2,000.

Fuji

Chemistry for Fuji violet plates, which are relatively new on the market, is typically changed every one or two weeks, somewhat more often than Fuji thermal plates. Processor maintenance is therefore slightly greater, typically 2 hours a week. "*It takes a full day to clean the processor,*" noted one respondent.

Standard annual cost - maintenance only: $2,500.

Waste Disposal

Most chemistry can be neutralized and made acceptable for disposal by adding water or an appropriate neutralizing agent. Accordingly, almost all printers dispose of their waste chemistry by putting it down the drain into the public sewage system.

Nevertheless, many do not, preferring to dispose of their waste chemistry using a hazardous waste removal company. An exception is the Agfa LAP-V violet plate. As with other processes, waste chemistry is often neutralized and disposed in the drain. Printers using this plate must remove the silver. Although the silver can be treated/diluted for disposal down the drain with the neutralized waste chemistry, most have it trucked away with other hazardous waste; some also dispose of their waste chemistry in this manner. The cost of this disposal can vary markedly. The cost of disposal of the hazardous waste averages about $2,500 per year, and can range from a low of about $0.02 per square foot of plate media to a high of about $0.15 per square foot. This can be between 6% and 45% of total chemistry costs, so it's not insignificant.

"I wish we had considered the cost of silver. It was never mentioned. It costs $5 per gallon just to dispose of that."

Users of this plate technology shared the following comments:

"*There is minimal toxicity; it's on the borderline between [safe to] dump or [having it] removed; we can probably dump, but we have hazardous waste removal to be safe.*"

"*We don't have any sewage; so everything is hauled away, even waste water. It ain't cheap.*"

"*I wish we had considered the cost of silver. It was never mentioned. It costs $5 per gallon just to dispose of that.*"

We can expect environmental regulations to become even more burdensome. So, while it probably will remain possible to neutralize the waste chemistry, tolerances will be tighter and it is therefore likely to become more expensive to continue to dump this waste into the public waste system. According to Tony King of Agfa,

> Many countries now see the environmental laws tightening with restrictions to any processor waste being discharged directly to drain, especially where higher pH developers are used. So containerized collection of processor waste is increasingly becoming the norm for many.
> *Print 21 Online website*

Moreover, the generator of the waste is ultimately responsible for that waste, with no time limit, even if all rules associated with hazardous waste handling and disposal are followed. If an improperly disposed of barrel is ever discovered, the printer is responsible for its clean up, as well as the associated fines. Costs are therefore likely to increase, either directly for waste disposal or indirectly to ensure that the effluent meets environmental regulations.

...the generator of the waste is ultimately responsible for that waste, with no time limit, even if all rules associated with hazardous waste handling and disposal are followed.

Summary: Total Costs of Chemistry

As we have discussed here, the cost of getting a plate on press can vary for any number of reasons, including:

- the type of plate and the accompanying chemistry requirements
- plant procedures and processes
- plate volumes

While chemistry prices vary across plate types, prices paid by printers are consistent for a specific chemistry. Chemistry costs are, however, influenced by the nature of the plate contract, including pricing, length, and whether inventory is consigned.

In addition to the cost of plates and chemistry, other cost centers that must be considered in accounting for total plate production costs include:

- chemistry inventory (for routine use; replacement; and emergencies)
- processor, including floor space
- processor cleaning and maintenance
- cost of baking (if appropriate)
- waste management and disposal.

Larger printers with higher volumes and throughput tend to make more efficient use of chemistry and pay less for it. For a typical mid-sized printer, chemistry alone can be $20,000 to $35,000 per year, while a smaller printer can spend $10,000 to $15,000 per year. With the addition of other required operating costs—excluding capital costs - total plate production costs can easily double the cost of chemistry. Figure 1 summarizes the annual expense ranges reported by printers for each of the key cost centers discussed in this report.

Figure 11: Summary Annual Expenses

Cost Center	Average	Low	High
Chemistry	$17,500	$0*	$75,000
Inventory	$850	$0*	$2,400
Processor	$0	$0*	$0
Floor Space	$10,000	$5,000	$15,000
Baking	$10,000	$0*	$60,000
Maintenance	$2,600	$500	$10,500
Waste Disposal	$1,600	$0*	$5,000
Total	**$42,500**	**$5,500**	**$170,000**

* Virtually no respondent reported paying for their plate processor. Also, some plates (visible and thermal) require no baking. Presstek Anthem users report no cost for baking, inventory, chemistry or waste disposal.

About J Zarwan Partners

J Zarwan Partners, founded in 2003 by John Zarwan, works with a limited number of companies to develop and implement market strategy and improve business performance. Dr. Zarwan is an internationally recognized expert in the graphic arts, printing and publishing industries. He has spoken at Imprinta, FOGRA, Print Media Congress, Seybold, Graph Expo, as well as major trade associations, including, GAMIS, IPA, PIA, LPIA, NPPC, and Web Offset.

Dr. Zarwan has held senior management positions in marketing, product management, business development, and finance at Agfa (Compugraphic) and NEC Technologies. He was a principal at State Street Consultants, a graphic arts marketing research firm, and vice president of PIMS Associates of the Strategic Planning Institute, a strategy consultancy. Dr. Zarwan has degrees from Stanford and Yale Universities, and a Certificate in Business from New York University Stern School of Business.

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