Use of Silver in Photography – Latest Trends

Don Franz
Publisher, Photofinishing News

At an investor conference in early September, Bob Brust, Kodak’s CFO spoke about Kodak’s two portfolios: digital and traditional. For the second quarter of 2005, digital portfolio revenues grew 43% year-on-year to reach $1.843 billion, while traditional portfolio revenues declined 15% year-on-year to the identical $1.843 billion. Each portfolio covers products and services in Digital & Film Imaging Systems, Graphics Communications Group and Health Systems.

Because picture-taking is a popular consumer activity, we have all read about the transition of photographers from film-users to digital still camera (DSC) users and the impact that this rapid change is having on the sales of film, along with how it is affecting silver-bearing product manufacturers. This news is also having an effect on the perception that investors and even consumers have of the silver industry. Let’s look at the facts.

**Figure 1** (below) shows how much of the total silver fabrication demand in 2004 is used in the photo imaging industry. **Figure 2** shows the demand for fabrication of the different product types within the photo-imaging industry.

As shown in **Figure 2** (opposite), we have broken the silver-bearing photo-imaging products into four segments: photography, graphic arts, motion picture and X-Ray.

**Photography Products**

Undeniably, avid amateur photographers who used a lot of film shooting pictures have migrated to digital photography. On the professional side, almost all photographs that are used in advertisements and brochures are shot digitally, and more portraits are being created with digital cameras. However, there are still situations where film is necessary to capture all the “image information”, although once developed the film can be scanned to create a digital image. And, unquestionably, digital picture-making, the process of turning the “picture-in-the-camera” into prints and other products, has benefited from digital imaging capabilities. But how does all this affect the use of silver?
As shown in Figure 3 (above), the number of rolls of color negative film being purchased worldwide has been steadily falling since 2000 – and was already falling before 9/11 when tourism, a major picture-taking activity, dropped dramatically. In fact, from 2000 through 2009, we are projecting a Compound Annual Growth Rate (CAGR), or average annual change, of −8.1%. However, we all need to realise that, whereas the 24-exposure 35mm colour negative roll is the main product sold in developed countries like the US, Japan and European nations, in developing countries the predominant type of colour negative film being sold is 36-exposure 35mm rolls. Consequently, the amount of silver being used in the production of photography film will drop at a lower −5.1%/year CAGR during the 2003-2009 period.

This decline in film sales produces a similar drop in the number of prints that are being produced from films. However, there has been an explosion of DSC sales worldwide, along with an even bigger growth in the number of camera phones being sold. And while the number of prints made for each digital picture taken is only a small percentage, the number of pictures being taken is far greater than was being taken with film cameras. As a result, we estimate that the number of prints being made from digital pictures captured on DSCs and camera phones will grow a CAGR of 47.5% from 2000 through 2009.

Figure 4 shows the estimated number of prints being made from digital and film photography. This chart includes all printing for digital, whether in the home, through an online sharing/printing service or through a retail outlet.

Figure 5 shows our estimate of those prints made at retail and those produced on home printers.

As we all know, printing at home is performed on either inkjet or so-called dye sub (really dye diffusion thermal transfer) printers. Within the retail printing sector, silver-based photography printing has definite advantages: it is less expensive and substantially faster. However, it does require chemicals for processing and the capital investment is significantly more expensive than the other technologies. Still, a vast majority of prints being made at retail are on silver-based paper. And, through 2009, our projections for the growth in photographic paper usage for digital prints will result in a CAGR of +0.5% for the 2003-2009 period.
Combining the decline in silver usage for manufacturing photography films with the slight increase in silver demand for making photography papers gives the result shown in Figure 6 (below). In the consumer and professional photography segment, worldwide use of silver in product fabrication was 73.64 million tr. oz. in 2003, with a projected 2009 usage of 58.20 million tr. oz., representing a CAGR of −3.3%/year.

Graphic Arts Products

Like the photography segment, the transition to digital in the graphic arts segment has been occurring faster than was anticipated only a couple of years ago. In developed countries, there is a strong trend towards variable data printing – meaning that each impression, or printed piece, contains different information (personalisation). This is promoting a rapid growth in sales of digital presses, which do not use any silver-based materials. As a result, graphic arts films prices have been falling every year. Recording film has experienced an average price drop of 7.0% per annum from 2003 to 2009, and contact and camera film prices are falling 2.0%.

Silver is also used in burgeoning Computer-to-Plate (CtP) systems that are created for long-run production without the intermediate steps (many involving silver-based products) previously required. This growth of CtP has accelerated the decline in film usage, and new, non-silver-bearing CtP technologies are gaining popularity.

As a result, silver usage in the manufacturing of graphic arts products is projected to decline from 27.08 million tr. oz. in 2003 to 17.74 million tr. oz. in 2009, representing a CAGR of −6.8%/year for that period, as shown in Figure 7.

Motion Picture Film Products

The one exception to a rapid transition into digital is the motion picture industry. While amateur cinematographers have long abandoned their 8mm ciné cameras for camcorders, directors in the motion picture industry all prefer to use silver-based film for shooting rather than digital. The motion picture industry is also growing rapidly in both India and China, with the number of movie theatres also rising in both countries, although in China, in particular, there is a growing concern about the illegal DVDs being created almost before the general release of major films, which affects industry revenues and a greater growth in film usage. In many developed countries, consumers are opting to watch newly released movies at home, either through on-demand TV/entertainment channels or via purchased/rented DVDs.

Still, as technology makes it easier to use digital image projection systems and the cost for such systems decreases, more cinemas may shift to digital. This could possibly affect growth towards the end of this decade, but almost certainly will affect growth beyond 2010. Consequently, our projections for the silver demand in this segment are shown in Figure 8.
The projected silver demand for manufacturing motion-picture products from 2003 through 2009 is +0.7% CAGR. But, at 12.62 million tr. oz. in 2003 it is the smallest sector in photo imaging for using silver. In 2009, projections indicate a usage of 13.18 million tr. oz.

**X-Ray Products**

There is also a strong move towards digital medical and dental diagnostic systems. However, despite the transition into digital diagnostic technology occurring in developed countries and major cities in developing countries, traditional X-Ray films are still being consumed in large amounts. While growth is still being projected in developing countries, it is insufficient to offset declines in the developed nations. In 2003, it is estimated that 79.23 million tr. oz. of silver was used to make silver nitrate allocated for manufacturing medical, dental and technical/industrial X-Ray films. This is projected to drop to 67.58 million tr. oz. in 2009, representing a CAGR of -2.6%, as shown in Figure 9.

So there will be continued demand for basic X-Ray films in these countries, although the loss of demand in high-population urban areas is not offset by the increased demand in low-population rural areas.

Although the amount of silver recovered for recycling from the manufacturing waste and processing of these silver-bearing products by segment, application and even country, overall we estimates that 50% of the total silver used in manufacturing photo-imaging products is recovered and recycled.

Consequently, we project that the net demand for silver in the manufacturing of photo-imaging products will drop from 97.39 million tr. oz. in 2003 to 79.46 million tr. oz in 2009, representing a CAGR of -3.3%. This is shown in Figure 10.

More details on the trends in this industry are contained in a newly-released report from The Silver Institute entitled *A Review of The Worldwide Silver-Halide Photo-Imaging Products Market 2003-2010*.  

There are significant advantages to digital diagnostic systems, such as the ability to rapidly obtain the opinions of experts, regardless of their location on the globe. However, in developing countries, outside of the major urban areas, medical/dental care facilities are still lacking.