

2011 Q4 RAW MATERIAL UPDATE LIQUID PACKAGING AND LABEL INKS

2011 ended much like it began. During Q4 we saw several materials increase in cost; and we saw several announcements or comments regarding price increases which would take place in the first quarter of 2012.

None of us have a crystal ball to know what will happen in 2012, if we did we would not have been surprised by the volatility we experienced in 2011. 2011 volatility was historic. We had not seen broad market cost increases of this magnitude in the past. So we can only review the current situation and make educated assumptions about what will happen based on historical patterns and experiences.

Typically we can anticipate what is “likely” to happen for a quarter, maybe two. Beyond that the variables in the market are too many and too complex to accurately forecast. This is due to the small size of the ink industry compared to some other industries competing for the same materials, the global supplier base of specialty chemical manufacturers being impacted and influenced by global macro economic conditions, and the optional outlets for many of the specialty chemicals and their feedstocks.

Some feed stocks are continuing to increase, but in general it appears we may be reaching a point of increasing stability for a number of materials marked by a slower rate of increase. Currently we don't see any materials on allocation. There is some tightness for a few items, but supply is not the issue we saw for various items in 2010 and 2011. Due to the length of the supply chain we anticipate we will see some RM price increases continue into Q1 as the price increases of 2011 move through the supply chain; but most signs point to a more stable market in 2012 marked by a much slower rate of increase; with the exception of a few materials (see comments in the detail section). We don't expect to see erosion of the raw material price increases pushed through in the last year. The reason for this stability is the projection of lower economic growth for the end of 2011 and 2012. China, a large user and supplier of specialty chemicals has down graded its GDP projections. And, the sluggish economies in Europe and North America are depressing demand slightly from earlier expectations. This has helped stabilize prices as demand has been dampened.

Titanium dioxide (white pigment) is a major exception. We experienced quarterly price hikes in 2011. And have already received announcements of increases for Q1 2012. We will likely continue to see quarterly price increases well into 2012 on TiO₂.

2011 Q4 RMC ANALYSIS AND RAW MATERIAL FORECAST

KEY MESSAGES

1. Supply availability is generally good.

- Most materials are available as supply and demand has balanced out over the last year. There are a few exceptions, but we don't anticipate availability problems. Although a few specific materials may continue to be problematic.
- Global economics will play a large role in 2012. A slow growth cycle will aid stability, while a recessionary cycle could soften market demand.

2. Crude oil is expected to trade in the US\$90-100 per barrel range well into 2012.

- Crude oil has been relatively stable over the last few quarters. This stability must continue in order to quiet the specialty chemical markets.
- Tensions in the Middle East could have a negative effect, both short term and longer term. A great deal of refining capacity has been added to the Middle East in the last few years compounding the issue. With both supply of crude and the refining becoming more dependent on Middle East capacity, stability in the region is a big concern.

3. Nitrocellulose availability has improved, but prices are still at peak levels

- All nitrocellulose grades are generally available now.
- Prices appear to have stabilized at a peak level. We expect the stability to last only for a few months. Price increases have already been announced for Q2.
- High price of cotton linters and wood cellulose are poised to push pricing higher. There are only three producers of the specialty wood pulp globally, and one is currently experiencing down time.

4. Titanium dioxide (TiO₂) supply tight

- TiO₂ capacity is short of general demand making this a sellers market. There are no substitutes for TiO₂. Its unique qualities make it nearly impossible to replace by other chemicals; leaving these industries to compete for the available supply.
- Some new material is becoming available from Asia. This has reduced the tightness to relieve supply outages, but has not impacted prices.
- Prices for TiO₂ are expected to continue to go up quarterly for at least the next two to three quarters.

SPECIFIC MARKET HIGHLIGHTS

Acrylates – (feed stock used in water and energy cured products) We are seeing good stability on most of these products. Availability should continue to be good for the foreseeable future.

Styrene – (used in water based resins) Styrene prices peaked in mid 2011 then dropped slightly and has been stable for the remainder of the year.

Organic Pigment - Violet 23 is generally available now and the shortages from last year have eased significantly. Yellow and red pigment demand is in good balance with supply. A run up in inventory has occurred ahead of the Chinese New Year holiday (January 23 through February 6). We do not anticipate a problem, but short term disruptions could occur if the inventory stock is insufficient to meet demand during this period, or start up problems occur after the holiday. Benzene a critical feed stock for many pigments increased 25% at beginning of Q1 2012. This will have to be watched to see if it remains high and will potentially impact organic pigment pricing.

Fluorescent pigments – prices increased 3-5% due to the impact of TiO₂. TiO₂ is part of the fluorescent pigment manufacturing process. The steady escalation of TiO₂ prices has caused this price movement.

Titanium Dioxide - (pigment for all white inks) TiO₂ supply continues to be tight, but demand has slacked slightly in the last few months. No significant new capacity is planned for 2012. Therefore the current supply tightness is expected to continue through 2012. Besides the capacity constraints, feedstock shortages (limonite and sulphuric acid) are also putting pressure on pricing. Price will continue to rise as long as sellers are at a capacity deficit to demand and experiencing feedstock cost increases. Macro economic conditions will have the largest influence on TiO₂ pricing.

Nitrocellulose – (widely used in many solvent based products) All grades are generally available and NC prices were stable during Q4 for the first time in 2011. There are still severe feed stock issues. Cotton

linters are in short supply and one of the three global suppliers of a specialty grade of wood pulp used in NC is experiencing down time. This is likely a temporary issued, but even when they get back to full production it is expected to have minimal positive impact for cost. A Q2 price increase for NC has already been announced.

Phthalo Pigments – (Used in blue and green inks) In the last letter we discussed the issues related to supply of phthalo pigments. The concern at the time was that blue would be tight, but green would see real shortages. The situation has improved slightly but both colors remain tight. Blue pigments generally have good availability now. Although the serious shortages we anticipated with green pigment have not occurred, there are some spotty shortages on green pigment. Environmental impact from green manufacturing in India is still the concern. The Gujarat High Court ruling to determine waste water limits has been postponed. Until this issue is addressed in court, there will continue to be concerns related to green pigment capacity. Many manufacturers continue to run at 50-60% of name plate capacity until the court hands down a decision. Supply has been helped slightly with some new global capacity coming on stream.

Currency - The CNY has strengthened against the dollar and the dollar has strengthened against the Euro. This will have a major impact on all the products sourced in China (pigments) and all products traded in US dollars.

The chart below shows the source of raw materials used in the ink industry. As you can see petroleum plays a key part in the supply chain. But, since crude oil is several processing steps away from the specialty chemical manufacturer its impact is often muted and or delayed.

