



Rising crude prices A lacklustre world for paints

Although oil and natural gas have primarily been responsible for fluctuations in the prices of raw materials, a number of reasons could be cited for the current escalation in cost of raw materials for the paints & coatings industry. The industry relies on oil derivatives as the source for its raw materials and imports half of these raw materials to fulfill its needs. The rise in the cost of raw materials has put tremendous pressure on margins, and the industry is adjusting to this new reality. This article discusses the role of various factors that have shaped the current price fluctuations.

Dr Mosongo Moukwa

Crude oil continues to climb high values. In July 2008, the prices of crude oil closed at an average of around \$ 135 per barrel on the Nymex Commodity Futures Exchange. The price of crude oil has steadily increased from \$ 65 a year ago to over \$130 per barrel recently. Over the past three months, industry witnessed the rise in prices by about 30 per cent. With this ongoing trend, experts expect the price of oil to increase up to \$ 200 within two years from now. The prices of natural gas have also increased (but not as sharply as the oil prices) that reached to \$ 8 per million Btu - up from \$ 6 per million Btu last year.

The increase in the prices of gas and crude oil is significant. It presents a source of major concern for manufacturers of paints and

coatings, as 60 to 70 per cent of the raw materials are based on petrochemicals derivatives. The main raw materials such as titanium dioxide (TiO₂), phthalic anhydride (PA) and pentaerythritol (PENTA) represent about 45 per cent of the total costs. Other materials include soybean oil, castor oil, and turpentine. The situation in India is such that out of the 300 raw materials used in paints and coatings, about half of them are imported.

There are a number of factors at play; some of these are related to the rise in the price of crude oil and natural gas, while others are macro economic considerations.

Paints & coatings consist of three major components. These include resin or polymers that form the coating layer; a pigment that imparts colour, and a solvent or vehicle that holds the resin & pigment in liquid



form and evaporates once the liquid mixture is applied. Additives can be used to alter the flow characteristics of the paint or the glossiness of the applied product.

Crude oil and natural gas

Crude oil and natural gas are the starting points for nearly all chemicals used in manufacturing paints and coatings. The chemicals industry uses natural gas not only as an input for fuel and power, but also as the raw material for feedstocks. It is estimated that every \$ 1 per million Btu increase in the cost of natural gas adds \$ 3.7 billion in cost to the chemicals industry. This is because over 96 per cent of all the manufactured goods are directly touched by chemistry - and so many industries rely upon it - that has broader economical implications.

Energy-intensive sectors such as farming, cement, aluminium, steel and chemicals bear the brunt of higher oil and gas prices. It is estimated that over 70 per cent of feedstocks for basic chemicals are derived from natural gas. The skyrocketing increase in the crude oil prices directly affect the price of naphtha and the aromatics (benzene, xylene, toluene, turpentine). In the past six months, the cost of oil derivative like mineral turpentine oil - a chief input used in decorative paints - has gone up by nearly 50 per cent.

Propylene and ethylene

Propylene and ethylene are made from the processing of crude oil and natural gas. Ethylene is the chemicals industry's most important 'building block.' It is used in the production of important plastic resins and petrochemicals intermediates, including polyethylene, polyvinyl chloride, polystyrene, and ethylene glycol. The other two major building blocks are propylene and benzene. Energy (natural gas and oil) accounts for the bulk of ethylene's production

costs, so its price tends to follow energy prices rather closely. As a commodity, ethylene prices have been shaped by demand/supply conditions, particularly over the short term. The changes in the prices of ethylene and propylene directly impact the prices of vinyl acetate and natural gas, respectively.

Markets in developed countries are maturing and the opportunities for the growth have migrated to overseas, primarily Asia. A massive amount of new capacity from the Middle East and Asia is coming on stream during 2009-11. As a result, it is anticipated that ethylene supply will considerably exceed the demand during that period. Global ethylene production capacities are currently pegged at about 121 million metric tonne. By the end of 2011, global capacity will zoom up to 156 million metric tonne.

In the meantime, producers of ethylene-based products increased their prices to deal with the current situation. For example, Arkema - manufacturer of ethylene vinyl acetate copolymers - has passed on its part of the cost of raw materials, energy and transportation to its customers. BASF, a leading manufacturer of ethylene carbonate and propylene carbonate, has also increased the prices for these two products. Ethylene carbonate and propylene carbonate are the chemical intermediates that are used in a wide

range of applications in the lubricants, foundry, polyurethane and coatings industries.

The result of price hike

As the energy prices and demand increased, suppliers started looking out for various opportunities to sell their products. In many cases, they choose to produce gasoline rather than focussing on raw materials for producing the paints & coatings. For instance, the production of propylene is similar to that of the gasoline - by stripping it out of the 'gas' - that makes the gas burn better and is then sold to other industries. Therefore, with the increased gas prices, it makes better business sense to leave it to the gasoline. As the prices of gasoline increase, the availability of ethylene and propylene becomes less, which drives the prices higher.

The need for 'on-purpose' polypropylene is changing the historic cost-relationship between propylene and ethylene. Historically, polypropylene was created as a co-product from gasoline and ethylene with propylene amounting to around 80 per cent of the cost of ethylene. But propylene demand has exceeded this 'natural' supply, thus requiring additional propylene sources. These 'on-purpose' sources are generally more expensive than the co-product sources, which results in more price

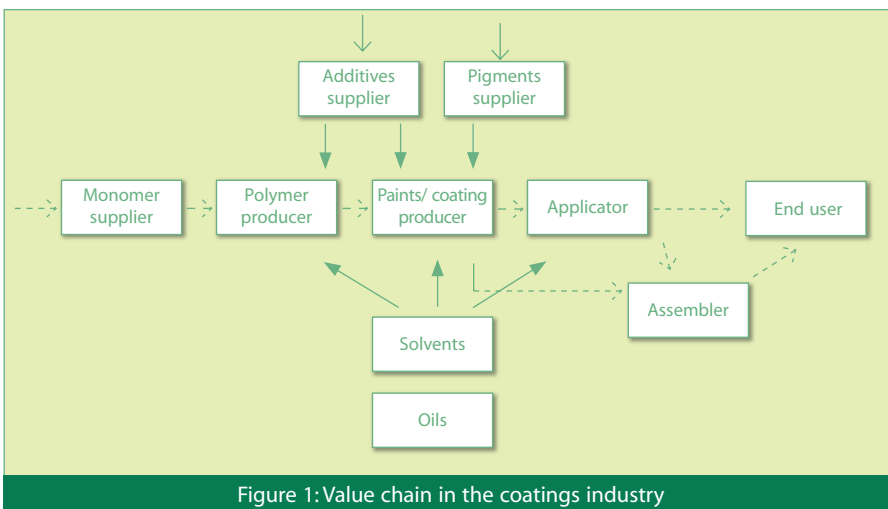


Figure 1: Value chain in the coatings industry

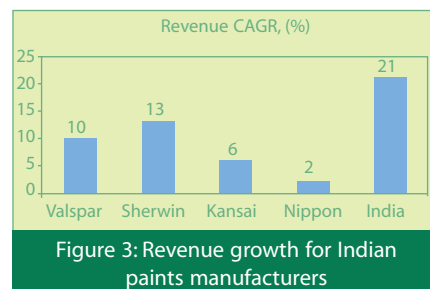
rise as compared to ethylene. The changes in the propylene prices are similar to that of the ethylene. This slows down the propylene growth since its total cost per cubic inch advantage is either reduced or eliminated. A further change will result from the displacing of gasoline by biofuel, which will further reduce the propylene co-product and further increase the need for more expensive 'on-purpose' polypropylene.

There is some good news on the horizon too. Since new capacities are being added in the Middle East and Asia, starting with the second half of 2008, resins prices are expected to weaken further. However, the bad news is that the bottom of the trough will be priced at least two times higher than the price level of previous troughs. Though the next two years could bring some relief, the days of \$ 0.20-0.30 per lb resin have long passed. To balance risks, one should not be carried away and forecast lower prices of resin. The risks to resin prices are arguably on the higher side, given their dependence on oil and natural gas. The oil price forecast, which is used to generate the price

predictions, might look optimistic. In reality, no one can look through the crystal ball and predict what oil could do in the future. There are good arguments for steadily increasing prices but this situation is softening steadily as some new oil production capacities are set into operation.

Pigments

In 2007, the production costs for the inorganic and organic pigments were on the rise. Oil was the key driver for pushing an upward pressure on energy & key intermediates as well as for the elimination of VAT in China. These significant increases were fuelled by the decline in capacity of both pigments and specific raw materials. Rising fuel and raw material prices continue to plague the pigments market and there will continuously be a heavy emphasis on improving efficiencies. After regulations, this trend of improved efficiency is the second largest driver in the paints industry. The biggest impact felt would be in the cost-cutting for the pigment grinding, which is approximately 35 per cent of the cost of manufacturing and



tends to be the second highest cost component after raw materials.

Increased consumption in emerging countries

In a country like China, not only is the need for raw materials increasing, but the demand for finished goods has also improved. For instance, propylene is used for making polypropylene, which is used in a variety of products such as computer monitors, fill - for winter jackets, etc. Propylene is also used as the starting ingredient for producing acrylate monomers that are used in paints, as super absorbent polymers, and are a critical component in the disposable diapers. As China and other nations buy more disposable diapers, the demand for super absorbent polymers is increasing, further limiting the acrylates available to make paints.

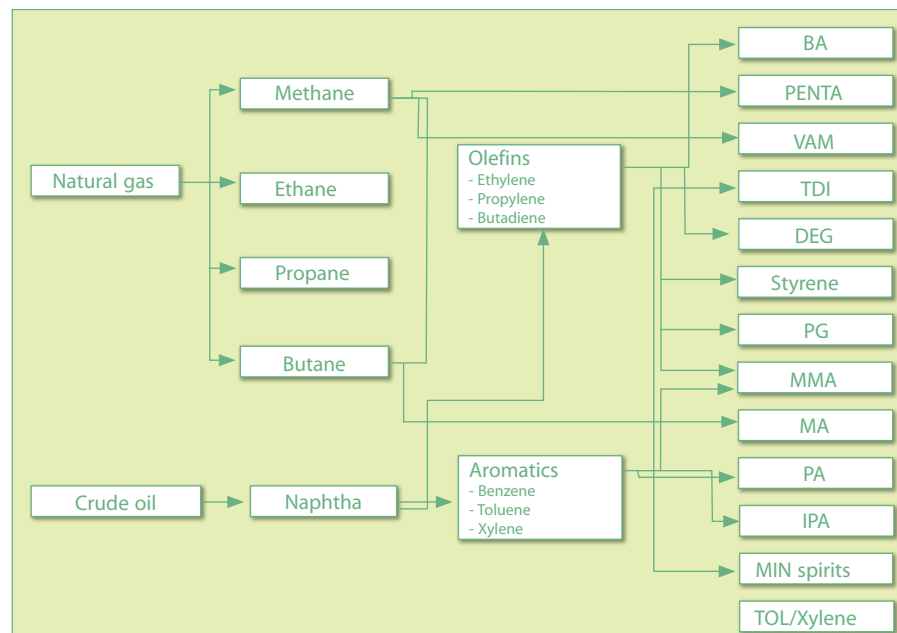


Figure 2: Petrochemical chart with the important ingredients used in the paints and coatings industry


The depreciation of Rupee vis-à-vis other currencies

Last year was particularly good for the paints manufacturers with respect to the relative appreciation of Rupee against the US Dollar and the Euro. The sinking value of the US Dollar, especially compared to the Euro, interrupted the 2006 trend of an upswing in exports from all major trading regions. These were good years for the US manufacturers who took business from European exporters and were hurt by the expensive Euro. The fall of the Dollar compared with other currencies worked to the advantage of US chemical exporters by making products manufactured in Dollars more attractive (when priced in foreign currencies).

Since paint manufactures in India import about half of the raw materials to fill their needs, the depreciation in Dollar proved to be a blessing. For example, in 2006, \$ 100 worth of US chemicals could have been sold in India at an average of only Rs 4,000, while in 2008 the same chemicals are sold at Rs 4,300. The favourable situation that the paints and coatings manufactures enjoyed last year has suddenly vanished. The current currency exchange has heightened the pressure on the cost of goods sold and the margins. This may be temporary if one were to believe some experts who predict that with the expected economic growth in India in the coming years, the Rupee will again appreciate and stabilise at about one Dollar equal to Rs 35 by 2014.

The rising cost of raw materials increased the cost of goods sold to the paint companies by an estimated 2 to 3 per cent in 2003, but 5 to 8 per cent in 2008. Both resins suppliers and TiO₂ producers have successfully passed on the price increase. In 2002, paints companies attempted to raise prices, but only received a mere 2 per cent increase. In 2008, these companies hope for a 5 per cent increase to ensure profit growth. This year may be a difficult one because, in particular, the OEM sector is struggling due to reduced demand for durable goods, thus leading to marginal capacity utilisation and a marked reduction in capital spending for this sector.

Conclusion

The Indian paints and coatings industry has shown resilience, and could ride off the current situation, while stabilising the profitability. Compared to their counterparts overseas, Indian manufacturers have seen their revenues grow at a much faster rate (Figure 3). They have capitalised on the booming economic trends as they have reported high revenues and this trend is expected to continue. The country's GDP growth for FY08 is estimated at 8-9 per cent and the industry growth is predicted at 14 per cent in both volume and value. The overall demand for paints will continue to remain healthy and will be boosted by the government policies that are conducive for the growth of construction industry, rapid urbanisation, and increased government focus on infrastructure development. 



Dr Mosongo Moukwa is vice president - technology at Asian Paints Ltd based in Mumbai. He was vice president - global technology at Reichhold, based in North Carolina, and before that vice president - global technology at Johnson Polymer (now part of BASF). He holds a PhD from the Universite de Sherbrooke, Quebec, Canada, and an MBA from Case Western University, Cleveland, Ohio. He is a member of the American Chemical Society, the Commercial Development and Management Association, and the Licensing Executive Society. Email: mosongo.moukwa@asianpaints.com



Our solution can turn around your business faster...
faster than you can imagine

WAM BOMBAY has assumed the role of a catalyst in turning the industry's wheels of progress by turning around businesses everywhere. It's today one name that's synonymous with innovation in bulk material handling technology and equipment supply. So, join us as we take the industry's expectations further.

Products for Chemical Industry

WAH

- Range: from 75 to 15,000 litres (2.6 to 530 cu ft)
- Drives: from 4.0 to 200 kW (5.5 to 270 HP)
- Capacity: from 2 to 450m³/h (1.2 to 265 cfm) depending on recipe and configuration of the mixer



Tubular Screw (stainless Steel)

- Standard design in 304 L or 316 L stainless steel
- Polygonal or cylindrical inlet and outlet spouts according to WAM standard
- End bearing assemblies with externally adjustable shaft seals (stuffing box, air or gas-purged, others)



Micro-Batch Feeders

- Feed rate: 2.6 dm³/h (0.009 cu.ft.ph)
- ~ 4,160 dm³/h (146 cu.ft.ph)
- Body & Feeder Screw made from SINT material



RSM

- Manual Bag Emptiers
- Available with de-dusting filter or equipped for centralised dust suction




WAMFLO®

- 304 stainless steel flanged cylindrical shape body
- Filter surface from 1 to 48m² (11 to 517 sq ft)
- Air volume from 60 to 4,500m³/h (35 to 2,650 cfm)



Other Products that could interest you:

- Butterfly Valve • Slide Gate • Fluidisation Pad (Oli Products)
- MVE • SINT Screws

 **WAM BOMBAY**
BULK HANDLING EQUIPMENTS INDUSTRY PVT. LTD.
A SUBSIDIARY OF WAMGROUP, ITALY
Regd. Office & Factory: Plot No. C-39 (B&C), MIDC, TTC Ind. Area, Pawne, Turbhe- Mahape Navi Mumbai- 400 705, Maharashtra, India. Tel: +91 22 27618091 / 27615368 / 27618607
Fax: +91 22 27618498 Email: wam@vsnl.com Website: wambombay.com