

DECIPHERING DEMAND

As chemical companies reported third quarter earnings in late October, many executives attributed better-than-expected results to fierce cost-cutting actions and a minor resurgence in demand. Despite some very cautious optimism, no one had a clear vision of the demand landscape in coming months. Now, end-of-the-year maneuvering may further muddy their crystal balls.

The Bureau of Economic Analysis reported an upturn in manufacturing in Q3. Chemical production grew by 5.6% and utilization rates climbed to 72.3% from 70.5% in Q2. Third quarter GDP numbers showed a broad rebound in demand. And sales of chemical products grew for the first time in a year. All in all, it looked like demand was picking up modestly and chemical companies were responding with increased production.

But now, the season is upon us when all good companies will try to finish out the year with zero inventory. And companies at nodes all along the chemicals supply chain are extending seasonal goodwill to shareholders in the form of longer holiday shutdowns, two weeks instead of the traditional one — the final attempt of cost savings for 2009.

The problem is that this has injected additional pressure into the supply chain in November. Suppliers are trying to gage inventories and ensure that they dwindle to nothing by the new year. At the same time, their customers are trying to build inventory prior to extended shutdowns. The result is that suppliers are experiencing an unexpected surge in demand that they cannot handle. And they're having trouble sorting out what part of this demand build is due to the nascent economic recovery and what is an artifact of the year-end inventory game.

The big question now is how much will demand pick up in early 2010? And will suppliers have the wherewithal to supply that demand? Bottlenecks could quickly form as the recovery gains traction.

Insiders fear that all this uncertainty could lead to irrational panic once the industry starts up again in January. If the panic takes the form of a buying binge, prices could quickly escalate. ■

HOT MELTS ON THE RISE

The supply issues plaguing hot melt raw materials did not disappear with the economic recession. Declining demand softened the impact of supply bottlenecks and offered a brief respite to stressed-out purchasing managers. In truth, the downturn has only briefly postponed the inevitable. When demand rebounds, supply issues will reappear. And the industry will have to contend with considerably reduced production capacities for several key feedstocks.

Tackifiers: Crude tall oil, the predominant source of rosin in North America, is used to produce rosin tackifiers. A by-product of the pulp and paper industry, it is produced from processed wood pulp. The supply of crude tall oil tightened this year. The demand for paper is down, which means that less pulp is available to make crude tall oil. In addition, fatty acid demand has softened. Fatty acids are a more profitable by-product of crude tall oil than rosin, so when fatty acid demand drops, the incentive to make crude tall oil drops with it.

At the same time, demand for tall oil rosin is growing. This is partly due to modest demand recovery from the adhesives industry. It is also a result of cost-cutting measures motivating users to switch from higher-priced hydrocarbon tackifiers to the traditionally lower-cost rosin tackifiers. And, rising prices for Chinese gum rosin, an alternative to tall oil rosin, are also playing a role.

As the harvest progressed this fall, the prices of Chinese gum rosin climbed precipitously. According to DeWitt, supply may not be sufficient to meet demand. The export price at the end of November was 51% higher than at the beginning of August. As prices climbed, rosin buyers switched to tall oil rosins. This has added to the pressure on tall oil rosins. In response, North American suppliers are raising prices.

The supply of hydrocarbon C5 and C9 tackifiers is tight, due largely to the shift to lighter cracking slates. When flexible cracker operators elect to improve cracker economics by cracking lighter and cheaper feeds, they forgo the production of many heavier molecules, like C5 and C9, which are the building blocks for hydrocarbon tackifiers.

In addition, as cracker feeds migrate lighter, the quality of the C5 and C9 output diminishes. DeWitt reports that reactables content in North America has declined by 20%. This means that



tackifier producers must process a greater volume of raw materials to maintain product quality, which lengthens production time and drives up cost.

As a result, tackifier prices have climbed this year. Currently, one major producer has imposed sales controls on C5 tackifiers due to a shortage of feedstock. Insiders expect more price increases in coming months.

Waxes: In 2009, the market experienced a brief but welcome respite from the chronic tightness in Fischer-Tropsch wax supply. As demand subsided, material was more readily available. Now, demand is recovering and the market is shortening again.

There are only two manufacturers of this wax in the world. A 5-to-6-week planned maintenance shutdown at Sasol's main Fischer-Tropsch production site in South Africa before the end of the year will further tighten supply. An additional 3-week shutdown is scheduled in March 2010. This means that inventory levels will not recover until well into 2010 and prices will remain high.

The supply of paraffin wax has also shortened recently: demand is firming and producers have nominated price increases. Exports from China, one of the largest global exporters of paraffin wax, have slowed due to planned and unplanned outages at group I base oil refineries. This is curtailing supply. Meanwhile base oil prices are on the rise and will further affect the price of paraffin wax.

Styrene Block Copolymers (Rubber):

Despite tightening of the butadiene market in Q3, adhesives formulators weathered the supply crunch and were able to source enough styrene-butadiene rubber (SBR) to keep customers happy. They had to pay higher prices for it, though. SBR prices rose again in Q4 but are expected to hold steady in Q1 2010.

Styrene-butadiene-styrene (SBS) prices have climbed steadily this year but the rate of increase has slowed in Q3. According to DeWitt, the prices of raw materials used to formulate SBS in November were over 70% higher than in January. DeWitt reports that the SBS market is free of supply issues now that the paving season is over. However, if stimulus packages finally manifest next year as real projects, the consultancy worries that SBS producers will not be able to meet demand. The new year could bring significant shortages and price increases.

The supply of styrene-isoprene-styrene (SIS) is related to the tightness in isoprene and the C5/piperylene supplies. Most large SIS producers have secured isoprene from overseas producers, but at a premium. Isoprene prices have climbed this year and appear to be stable for Q4.

In the past four months, adhesives formulators have taken increases in all rubbers, but especially in SBS. Insiders now expect the market to remain stable — at least until road paving season resumes in April. They do not expect prices to decrease. ■

UPDATE: CRACKING SLATES

The move to lighter cracking slates isn't a new story. What is new is that CMAI says that feedstock flexibility is not unlimited and the shift appears to have gone as far as it can for existing North American crackers. The good news is that production rates could stabilize once producers ramp back up to full capacity. The bad news is that the level of these new production rates for key feedstocks like propylene, C4 (for butadiene), C5 and C9 used to make the raw materials for waterborne and hot melt adhesives will be much lower than in the past.

This year, producers have accelerated the retooling of crackers to accept lighter feeds. According to DeWitt, 70% gas flexibility is the new target for former liquid crackers to remain competitive. Fortunately, the drop in demand levels has helped to ease the pressure on the supply chain. Despite some tightness in the C4 market throughout most of the year, supply has largely been sufficient to meet demand. Any pick-up in demand, though, will quickly shift

the balance. The supply of critical feedstocks will tighten and prices for downstream derivatives will surely rise.

CMAI forecasts that the relationship between natural gas and crude prices will continue to favor lighter feeds (ethane, propane and butane) for cracking. The consultancy expects the butadiene-to-ethylene production ration to fall 9% in Q4 and decline another 4% in Q1 2010. Lighter slates should account for 90% of ethylene production in 2010 and 2011.

This means there will be less propylene, C4, C5 and C9 produced going forward. And demand for some chemicals, like butadiene from C4, will outpace supply as early as Q1 2010, CMAI said in a recent report.

"Butadiene prices will increase significantly. They will not return to the extreme highs seen last year but should at least return to levels seen in 2007, which were thought at the time to be outrageous," the consultancy said. "The anticipated tightness in the butadiene market should support high prices for the foreseeable future." ■



SPOTLIGHT: UV/EB COATINGS

Ultra violet (UV) and electron beam (EB) cured coatings are used in a wide range of applications. They impart shine and scuff resistance to magazine covers and orange juice cartons, and can add metallic effects to a variety of packaging.

The pressure is growing on the materials used to formulate UV/EB coatings. Supply issues and rising feedstock prices for raw materials, including epoxy resins, acrylic oligomers and specialty additives, are setting the stage for higher coatings prices in coming months.

Epoxy Resins

Bisphenol-A (derived from benzene) is reacted with epichlorohydrin (derived from propylene) to form epoxy resin. Benzene prices have climbed steadily this year. A number of refinery turnarounds tightened supply in October. Higher upstream energy prices are also contributing to increasing prices. As a result, benzene prices are up over 180% since January.

An equally steady rise in propylene prices this

year has pressured epichlorohydrin prices as well. An ongoing shift to lighter cracking slates (see article in this issue) has reduced propylene supply to the market. Propylene prices have climbed over 130% in 2009. CMAI forecasts the rise will continue in December.

Acrylic Oligomers

Acrylic oligomers are also derived from propylene and are affected by the feedstock's supply/demand and pricing dynamics. Despite soft demand, all major acrylic oligomer producers have recently implemented price increases.

Additives

UV/EB coatings rely on a wide range of special additives to enhance performance characteristics. While these chemicals are crucial to the effectiveness of the coatings, they are often extremely small-volume products for the companies that produce them. The recession-driven drop in demand along

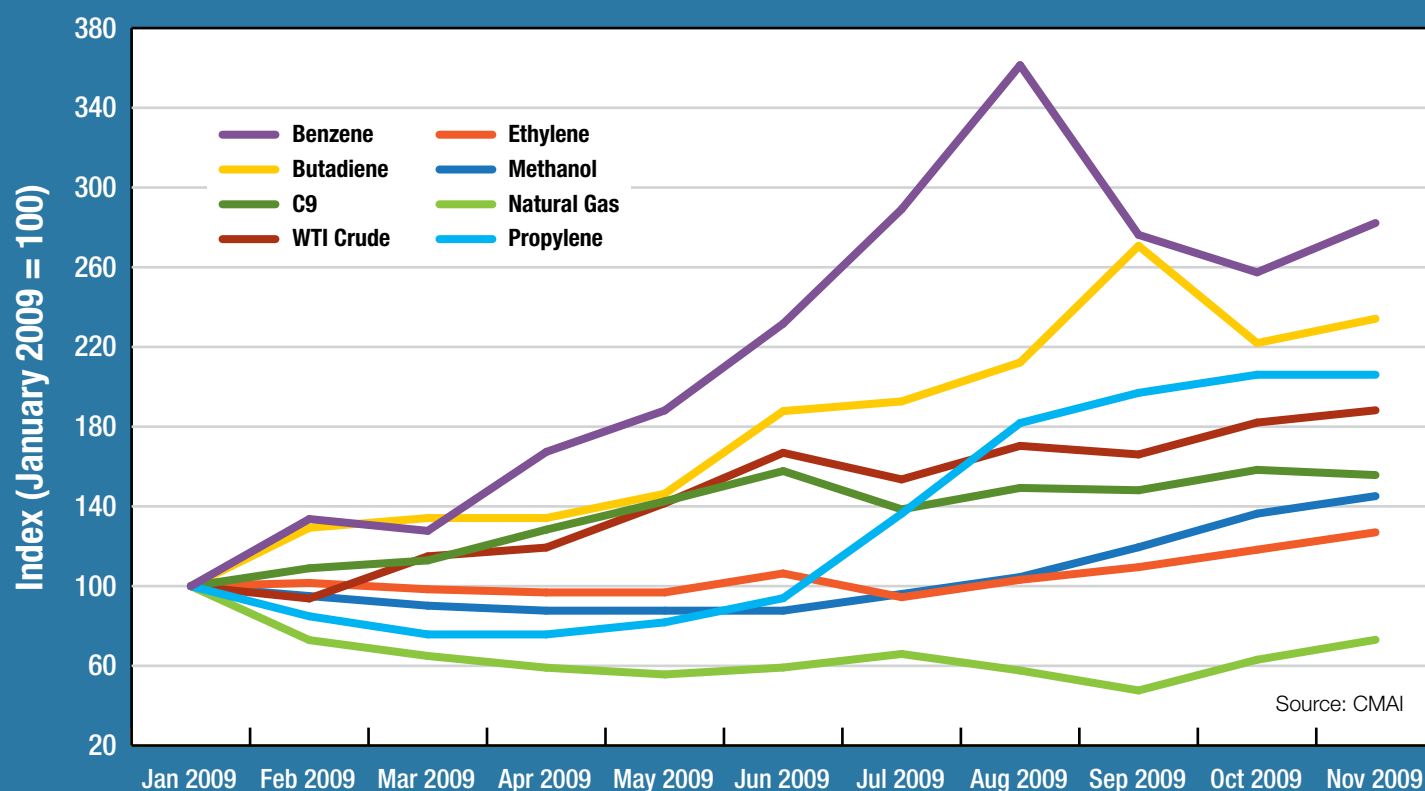
with a global push for rationalization and cost-cutting measures has threatened the supply of many of these additives.

Some additives have become unprofitable at current demand levels. Larger suppliers, pushed by Wall Street to implement corporate cost-cutting programs, have seen incremental margins drop so far that they are choosing to discontinue the production of key additives. Smaller, often privately-owned, companies are being forced to raise prices on additives in order to survive pinched margins and continue to supply customers.

The end result is a reduction in competitiveness in the supply chain, which invariably leads to higher prices. ■



ADHESIVES & COATINGS RAW MATERIAL FEEDSTOCKS



The prices of many feedstocks used to formulate the raw materials for adhesives and coatings have increased this year. This has put pressure on the cost of adhesives and coatings. The divergence in the prices of natural gas and crude oil have not helped. Natural gas prices have declined over 25% while crude prices are up almost 90%. This has encouraged cracker operators to favor the use of lighter feeds (from natural gas) over heavier ones (from crude). This has also resulted in the reduction in volumes of propylene, butadiene and C9 produced this year, and is largely responsible for their higher prices. ■

UPDATE: WATERBORNE ADHESIVES

Vinyl Acetate Monomer (VAM)

Sharp feedstock price increases along with feedstock availability issues have put pressure on the supply of VAM and its derivatives used in waterborne adhesives.

The prices of ethylene and methanol — the upstream precursors to VAM — have increased steadily this year. Contract ethylene prices are up almost 25% since the beginning of the year. Methanol prices have climbed 45% in the same period.

CMAI reports that the U.S. methanol market is balanced, although demand is picking up, spot inventories are tight and prices are maintaining an upward trend. Methanol is a globally-traded commodity, events in other parts of the world can quickly impact local prices. The consultancy reports that strong demand in China is expected to drive up global prices in Q4, which would impact downstream products, including acetic acid and VAM.

The global acetic acid market is tight. Almost all producers have been affected by planned or unplanned outages at their suppliers or their own operations. This has shortened the global supply of VAM and its derivatives.

“One of the consequences of reduced availability at a time of the year when demand is seasonally strong is that inventories are exceptionally low,” CMAI said in a recent report.

Tightening supply will provide support for VAM pricing. Several suppliers have nominated price increases on the order of 10% for Q4. Low inventories and reduced operating rates could also set the stage for shortages as early as Q1 2010, should demand resume even at a steady pace.

Casein

Casein, a protein derived from milk, is a key raw material used in the formulation of waterborne labelling adhesives. Casein prices are on the rise again this year driven by strengthening demand for dairy products.

Casein comes from milk but it is produced at the expense of other dairy products, like cheese, yogurt and skim milk powder. Casein prices must be high enough to encourage dairy producers to make it. This hasn't been the case this year and producers have chosen to produce milk powders, which are generating a higher return, instead of casein.

Part of the problem is that global milk prices

dropped significantly in late 2008 and remained depressed through early 2009. This pinched margins throughout the supply chain. Now, prices are on the rebound. Fonterra, the world's largest exporter of dairy products, saw prices bottom in July and surge over 25% in August as demand strengthened. Casein prices followed suit, climbing over 20% by the end of September. Analysts expect casein prices to maintain the upward trend for at least the next quarter.

Acrylates

The price of propylene, a precursor to acrylic acid, has climbed over 130% this year. This was largely caused by the shift in cracking slates, which reduces the production of propylene by about 80%. Reduced ethylene production rates, in response to the economic downturn have also depressed the volume of propylene coming to market.

Technon reports that acrylic acid prices do not yet reflect the increase in upstream propylene. This means that producers of downstream derivatives could begin to raise prices in coming months. Acrylic emulsion producers have already implemented price increases of 5% for Q4. ■