

ACRYLATES SUPPLY SHORTAGE

The global acrylics market shortened dramatically in recent months. A string of unexpected production problems restricted the availability of acrylic acid. This is limiting the feedstock for important derivatives, like 2-ethylhexyl acrylate (2-EHA) and butyl acrylate (BA), which are used in the formulation of pressure sensitive adhesives and sealants. Industry experts do not anticipate any easing of the supply shortage until well into Q3. The ongoing shortage, along with escalating feedstock propylene costs and tightness in the oxo-alcohols supply, is leading to significant price inflation. This, in turn, is affecting the cost of adhesives.

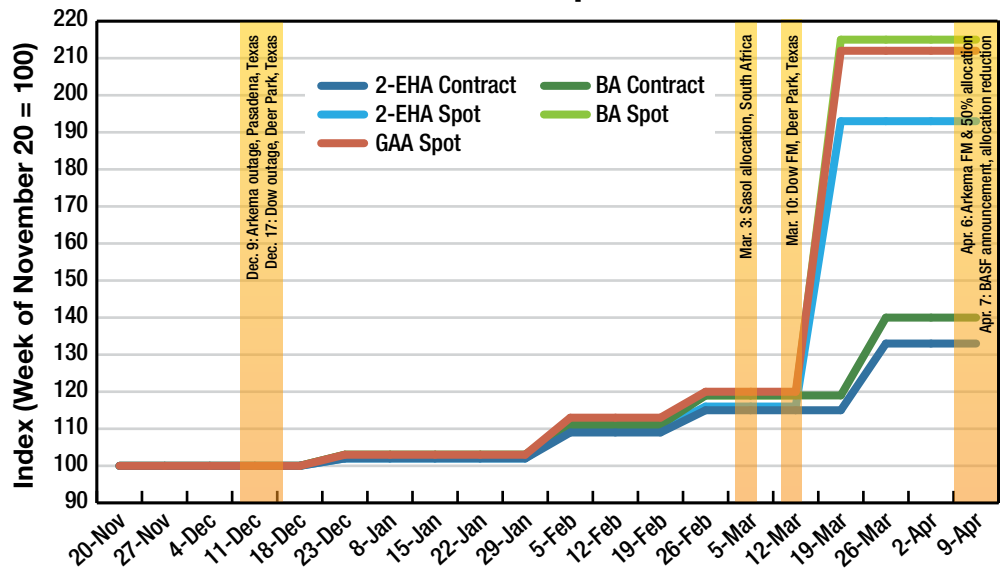
Chronology of a Supply Shortage

Last fall, no one in the industry could have predicted the trajectory of the current supply shortage.

Supply was adequate to meet demand, however, following the recession, inventories were very low — setting the stage for a rapid tightening of supply.

On December 9, an explosion shook the Arkema (American Acryl JV) plant in Pasadena, Texas. The company announced sales allocations on glacial acrylic acid and BA. This was followed by another unexpected outage on December 17 when a supply train went down at Dow Chemical's Deer Park, Texas acrylic acid plant. Dow implemented sales controls in response. According to ICIS, the two outages took approximately 25% of North American capacity offline.

Price Development



Sources: ICIS Pricing and ICIS News

Since December, prices have responded to announcements of outages and allocations. Additional increases can be expected as a result of more bad news in April.

BASF accounts for the remaining acrylic acid production; however, a large part of it is used internally. BASF reacted to heightened demand resulting from the outages by putting glacial acrylic acid and acrylate esters on 100% sales allocation.

This initial shortage sent many North American buyers to overseas markets in search of additional material. There wasn't much to be found. Demand was picking up in Asia and the European market was tightening after several maintenance shutdowns. In early March, Sasol, a regular, albeit minor, supplier to the North American market, placed its BA production on 70% sales control for three months



following an unplanned outage at its Sasolberg, South Africa acrylic acid plant.

The situation worsened in March when a second production train at Dow's Deer Park facility went down. The company declared *force majeure* on glacial acrylic acid and reduced sales allocations below 100%. ICIS reported allocations as low as 75%.

The bad news continued in early April. BASF announced a three-week maintenance turnaround for its Freeport, Texas acrylic acid facility beginning in June. The company said that it could no longer delay maintenance on the facility. BASF reduced allocation levels on glacial acrylic acid and acrylate esters, and extended the controls through the end of July.

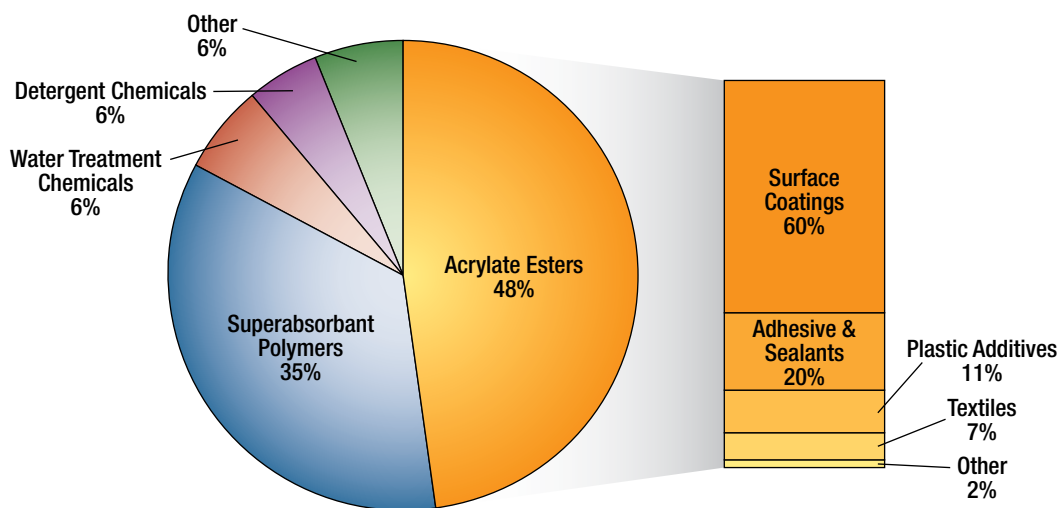
Things are no better in Europe. An "unexpected technical incident" at Arkema's Carling, France plant — the only source of material for the company's European customers — forced the company to declare *force majeure* on glacial acrylic acid and acrylate esters on that continent. Additional maintenance shutdowns are scheduled for other European producers in coming weeks. Back in the U.S., Arkema reduced its allocation on 2-EHA to 50%.

Timing the Return to Normal

The global shortage comes at a time when demand for acrylic acid and derivatives is still depressed compared to pre-recession levels, although demand in 2010 is much improved over 2009 levels. ICIS reports that major users of acrylic acid, including superabsorbant polymers and industrial and municipal water treatment chemicals, have enjoyed "stable-to-robust demand" in early 2010. Adhesives suppliers are also reporting increased volumes. And Q2 is traditionally a strong quarter in which paints and coatings markets pick up with improving weather.

There is little information on when plants will return to normal production. Industry insiders expect some easing of the shortage by the end of September. However, any relief depends on plants coming back on line quickly and without

INTERMATERIAL COMPETITION U.S. Acrylic Acid Consumption (2006)



Source: SRI Consulting

The adhesives industry accounts for only 10% of the total acrylic acid market. Growing demand from the superabsorbant polymers segment is diverting supply from other end-use markets. The recent supply shortage will only intensify competition for acrylic acid and drive prices higher.

incident. Even when production returns to normal levels, it will take several months to refill pipelines and work the effects out of the supply chain.

Until then, all global markets are tight. A number of outages in Europe will maintain pressure on supply. Some buyers are securing additional material from Asia, although a shortage of feedstock propylene and oxo-alcohols is curtailing production in China. Competition for limited Asian export volumes is fierce, prices are high, shipping containers are scarce, and there is a 6-to-8-week delay before the material will arrive in North American plants. In the meantime, these plants need to keep running.

As a result, prices are rising quickly. The price of propylene, the feedstock for acrylic acid, is now 54% higher than it was in November before the Arkema explosion. The contract price of glacial acrylic acid is up 40%, while spot prices have more than doubled. The contract prices of 2-EHA and BA climbed 33% and 40%. Spot prices, when material is available, are reported to be up by 200 to 300%. Many buyers are willing to purchase material at any cost in order to keep operations running and customers supplied, according to ICIS.

Prices are expected to continue to rise in coming weeks as all available material is squeezed out of the supply chain. Then all eyes will turn to the plant restarts, hoping for no new surprises. ■