Tecnon OrbiChem

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# CHEMICAL BUSINESS FOCUS

## A MONTHLY ROUNDUP AND ANALYSIS OF THE KEY FACTORS SHAPING WORLD CHEMICAL MARKETS

CONTACT: JANET WRIGHT
Email: janet@orbichem.com

SODA • CHLORINE

- Ineos agrees to purchase vinyls and chlor-alkali assets from Norsk Hydro
- … And separately agrees to sell its E-PVC assets to Vinnolit in Germany
- … And also buys Borealis thus taking 100% share in the Noretyl cracker
- Olin agrees to purchase Pioneer's chlor-alkali and bleach assets in the US
- Shin-Etsu applies for permits for VCM & chlor-alkali complex in Texas
- The Chinese government is planning a revision of export duties from July

**Caustic Soda**

On a global basis caustic soda appears to be much tighter. US players have announced a $50/short ton increase for Q3. Major production problems in West Europe have tightened the market considerably resulting in an increase of Euro40-50/ton being planned for Q3. Asian prices remain stable and the initial indications are that the Asian settlement with the Australian alumina buyers has been settled at $270/ton, up by $5 on H1 levels. Chinese authorities are planning to scrap the 13% export rebate on caustic soda from July 2007.

**Soda Ash**

US producers say they are continuing to operate near plant capacities and that they have a backlog of orders for June and July. There has been a price increase announced for 1 July of $15/short ton. West European producers also appear to be running at near capacity levels and demand remains strong. Demand in Asia is strong and supply is tighter due to a number of shutdowns. As with caustic soda, the industry is waiting to hear confirmation that the current 13% export duties will be removed next month.

**Chlorine**

The US domestic chlorine market is quite balanced with some producers still running to catch up with a backlog of orders. The housing market does continue to be a cause for concern but most other sectors appear to be doing well. Operating rates in West Europe have been impacted by various force majeure developments and it looks as if this situation could continue for some weeks. Demand for chlorine in Asia is good from most sectors, including vinyls where prices have continued to climb in recent weeks.

**Chlorine Derivatives**

The EDC markets in the US and West Europe remain quiet. Balances in Asia have tightened and prices are now increasing. US VCM prices have increased and there is some interest in shipments to Europe, as balances have become considerably tight there due to a number of production problems. Asian VCM prices have also increased as supplies are tighter. PVC prices in the US have increased despite some sectors remaining weaker. PVC balances are tighter in Europe and also in Asia where prices have increased again.

# PRICE MONITOR

## US DOMESTIC PRICES

| | | 21 March 2007 $/ST | 19 April 2007 $/ST | 16 May 2007 $/ST | 13 June 2007 $/ST | | 13 June 2007 $/ton |
|---|---|---|---|---|---|---|---|
| **Caustic Soda** | Regular Market, NE USA, bulk* | 340-370 | 360-380 | 360-380 | 360-380 | ex tank, diaphragm | 397-419 |
| | Regular Distributors, Gulf* | 300-320 | 320-340 | 320-340 | 320-340 | FOB | 353-375 |
| | Regular Spot Barge, Gulf* | 270-280 | 300-330 | 300-330 | 300-330 | FOB | 331-364 |
| **Soda Ash** | List | 170 | 170 | 170 | 170 | ex works | 187 |
| | Market | 120-130 | 120-130 | 120-130 | 120-130 | ex works | 132-143 |
| **Chlorine** | Liquid Contract (Chemicals) | 290-320 | 315-340 | 315-340 | 315-340 | DEL | 347-375 |
| | Liquid Spot | 260-280 | 275-310 | 275-310 | 275-310 | DEL | 303-342 |

## US EXPORT PRICES

| | | $/ton | $/ton | $/ton | $/ton | |
|---|---|---|---|---|---|---|
| **Caustic Soda** | Liquid Australia Alumina Use*§ | 255 | 255 | 255 | 255 | FOB |
| | Spot, Gulf* | 300-330 | 340-355 | 340-355 | 340-355 | FOB |
| **Soda Ash** | Spot, US West Coast, in bulk | 155 | 155 | 155 | 155 | FOB |
| **VCM** | Spot | 550-580 | 600-620 | 600-620 | 620-640 | FOB |

## WEST EUROPEAN PRICES

| | | €/ton | €/ton | €/ton | €/ton | | $/ton |
|---|---|---|---|---|---|---|---|
| **Caustic Soda** | Liquid Market, RTC* | 340-380 | 320-350 | 320-350 | 320-350 | DEL | 431-471 |
| | Liquid Spot Export* | 221-229 | 186-208 | 185-207 | 208-223 | FOB | 280-300 |
| | Solid Spot Export | 324-332 | 305-316 | 303-314 | 305-316 | FOB | 410-425 |
| | Pearls Spot Export, bagged | 340-351 | 320-335 | 317-332 | 319-334 | FOB | 430-450 |
| **Soda Ash** | Spot | 172-195 | 172-195 | 172-195 | 172-195 | FOB | 231-262 |
| **Chlorine** | Liquid (chemicals use) | 180-230 | 180-230 | 180-230 | 180-230 | DEL | 242-310 |
| **EDC** | Spot Export | 267-290 | 260-283 | 251-266 | 279-293 | FOB | 375-395 |
| **VCM** | Spot | 572-595 | 558-580 | 590-613 | 594-617 | CIF | 800-830 |

## ASIAN PRICES

| | | | | | | |
|---|---|---|---|---|---|---|
| **Caustic Soda** | Liquid Australia Alumina Use*§ ($/ton) | 265 | 265 | 265 | 265 | FOB Japan |
| | Liquid Spot Export* ($/ton) | 240-270 | 240-270 | 260-270 | 260-270 | FOB Northeast Asia |
| | Liquid Spot Export, China* ($/ton) | 240-260 | 245-265 | 260-275 | 270 | FOB |
| | Solid Spot Export, China ($/ton) | 320-330 | 330-350 | 335-370 | 340-350 | FOB |
| | Liquid Market East China* (Rmb/ton) | 1750-2220 | 2125-2435 | 2090-2440 | 1940-2125 | ex works, membrane 32% |
| | Liquid Market East China* (Rmb/ton) | 1765-2200 | 2130-2430 | 2070-2400 | 1830-2070 | ex works, diaphragm 30% |
| **Chlorine** | Liquid East China (Rmb/ton) | 800-1400 | 1500-1850 | 1200-1700 | 1000-1400 | ex works |
| **EDC** | Spot Export ($/ton) | 420-430 | 370-390 | 370-380 | 420-430 | CFR |
| **VCM** | Spot Export ($/ton) | 680-700 | 700-710 | 710-715 | 760 | CFR, East Asia |
| | Spot Export ($/ton) | 720-730 | 730-750 | 770-780 | 780-800 | CFR, Southeast Asia |

N.A. = Not Available ton = Metric Ton ST = Short Ton * = dry basis † = provisional § = Reported Settlement for H1 07
‡ = see text ¶ = notional Rmb/ton = incudes VAT at 17 %
Current one US dollar equivalent (7 June 2007)
€: 0.743 £: 0.505 (1/1.980) Yen: 121.4 NT$: 33.04 Won: 926.75 RMB Yuan: 7.65
Current one € equivalent (7 June 2007)
US$ 1.346 £: 0.680 (1/1.471) Yen: 163.4
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# CAUSTIC SODA AND CHLORINE

## North America

Energy prices have remained high. Political instability in Nigeria has continued to influence oil prices and an attack on a pipeline in the country last month did not help to ease the situation. Nigerian supply is important, as it has recently overtaken Saudi Arabia as the third largest supplier of crude oil to the US, after Canada and Mexico. At one point during May the price of crude oil rose above $70/bbl although it has now settled back down into the mid to high $60/bbl range. Natural gas prices also remain higher with the last noted futures prices recorded as $7.8-8.0mm/Btu.

US industry continues to watch the weather reports as there are at least five of the named storms this season that could have the potential to turn into serious hurricanes. Many companies have already made additional investments to make sites more secure.

US domestic chlorine demand has improved and supplies remain on the tighter side due to the various outages (both planned and unplanned). Some producers remain in 'catch-up' mode. There has been no movement in chlorine contract prices detected and spot activity has been thin. Chlorine Institute data for April showed that the effective operating rate was 95%.

Demand for HCl remains firm but supply has now started to ease as some derivatives production has resumed again and many burners are still running at higher rates.

Other chlorine derivatives are performing well and chlorine derivatives exports are strong. PVC demand remains reasonable and prices are increasing slowly. The housing market remains a concern although some sectors in the construction industry are performing reasonably well.

Caustic soda pricing appears to be quite stable at present with no real change this month. Spot shipments have however been very hard to find and so the price level is somewhat academic. Producers have already announced a further $50/short ton price increase for July based on the tighter conditions. The domestic market is somewhat balanced but the lack of imports from Europe should help to tighten the East Coast market and on the West Coast some Chinese import shipments could now be under threat due to planned changes to the Chinese export rebate.

**UNITED STATES LIQUID CAUSTIC SODA EXPORTS ***

| | *March 2007* | | *Jan-Mar 07* | *Jan-Mar 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| Canada | 33,218 | 279 | 69,850 | 80,565 |
| Mexico | 6,920 | 224 | 23,016 | 38,623 |
| Brazil | 46,251 | 300 | 117,535 | 61,150 |
| Chile | 8,616 | 332 | 26,528 | 10,509 |
| Colombia | 275 | 485 | 3,536 | 1,420 |
| Dominican Republic | - | - | 3,851 | 3,670 |
| Dutch Antilles | 2,064 | 293 | 2,064 | 1,500 |
| El Salvador | 595 | 287 | 595 | 1,474 |
| Guatemala | 2,154 | 317 | 5,950 | 3,113 |
| Haiti | 500 | 300 | 1,500 | - |
| Honduras | 600 | 300 | 4,135 | 2,675 |
| Jamaica | 21,036 | 348 | 127,622 | 98,731 |
| Nicaragua | 509 | 310 | 509 | 275 |
| Peru | - | - | 1,000 | 25 |
| Surinam | 10,607 | 160 | 46,622 | 65,677 |
| Trinidad | 650 | 472 | 3,263 | 837 |
| Venezuela | 11,000 | 226 | 22,741 | 21,280 |
| Belgium | 4,519 | 218 | 4,830 | 499 |
| Germany | 391 | 794 | 650 | 44 |
| Guinea | - | - | 8,500 | 5,228 |
| Others | 532 | 575 | 2,117 | 4,418 |
| Total | 150,437 | | 476,414 | 401,713 |

* as 100%
$/ton figures are calculated from customs data and may not reflect market prices

**UNITED STATES LIQUID CAUSTIC SODA IMPORTS ***

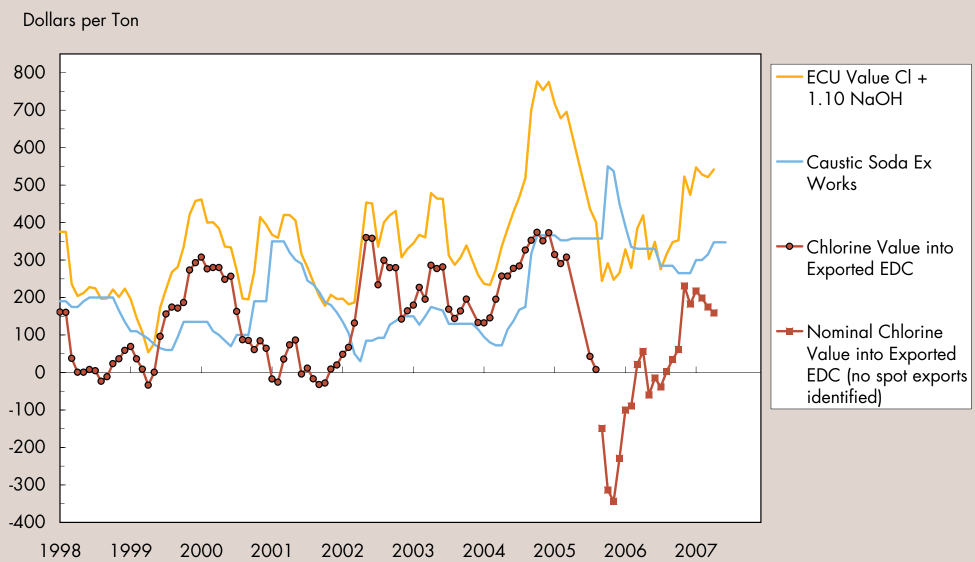
| | *March 2007* | | *Jan-Mar 07* | *Jan-Mar 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| Canada | 19,223 | 381 | 52,252 | 71,665 |
| Mexico | - | - | - | 10,270 |
| Venezuela | - | - | - | 2,860 |
| Belgium | - | - | 4,857 | 7,846 |
| France | - | - | - | 3,601 |
| Germany | 3,094 | 231 | 9,483 | 13,772 |
| Netherlands | 1,158 | 556 | 5,015 | 5,029 |
| Norway | 2,241 | 308 | 2,847 | 6,008 |
| Sweden | - | - | - | 1,746 |
| United Kingdom | - | - | 1 | 3,686 |
| Turkey | - | - | - | 2,303 |
| Indonesia | - | - | - | 4,155 |
| China | 1,508 | 720 | 10,225 | 24,875 |
| South Korea | 1,004 | 660 | 8,608 | 22,788 |
| Taiwan | 21,693 | 149 | 74,815 | 31,949 |
| Japan | 7,138 | 332 | 20,108 | 36,922 |
| Others | 24 | 945 | 71 | - |
| Total | 57,083 | | 188,282 | 249,475 |

* as 100%
$/ton figures are calculated from customs data and may not reflect market prices

The market is also conscious of the Shintech tonnage that will soon enter the market. However it should be remembered that the Dow closure in Canada and the changes to the OxyChem system in respect to KOH means that overall in the immediate future there is not that much product being added to the system. There is of course some talk of plans at Westlake and further plans at Shintech and maybe even at Formosa in the slightly longer term but these changes are not going to happen in the current timeframe. Add to this the fact that once the Olin/Pioneer deal goes through there will be one less seller in the market and this should continue to maintain a more disciplined feel to the market.

The jury is therefore out on whether the latest increase will be successful or not. Supply does appear to be tight and there are fewer imports likely in the short-term. Demand is good but whether the overall balance is tight enough to support this latest increase has yet to be seen.

**UNITED STATES - VALUE OF ECU**
**From Exported Caustic & Chlorine in Exported EDC**



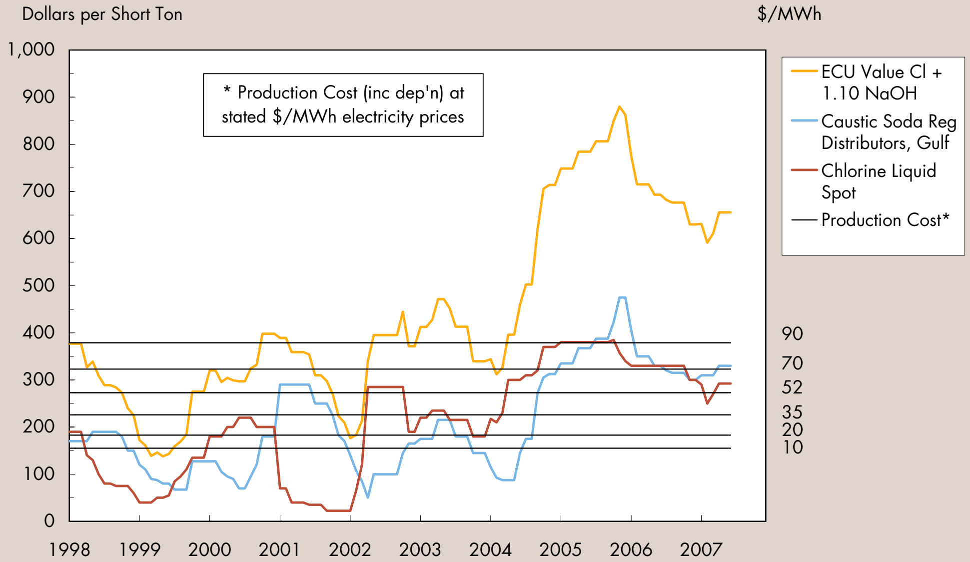

Source: Tecnon OrbiChem

Caustic soda trade data shows that to March, imports were running below 2006 levels. However this is perhaps not that surprising given that the US had been forced to import large volumes at the beginning of 2006 to cover the outages in the market caused by the hurricanes at the end of 2005. Imports from most destinations were down during the first quarter although imports from Taiwan were double.

Exports of caustic soda were reported as slightly up in the first three months of this year when compared to 2006. The shipments seen in the first three months totaled 476,414 tons, which is around 18.5% higher than in the same period in 2006.

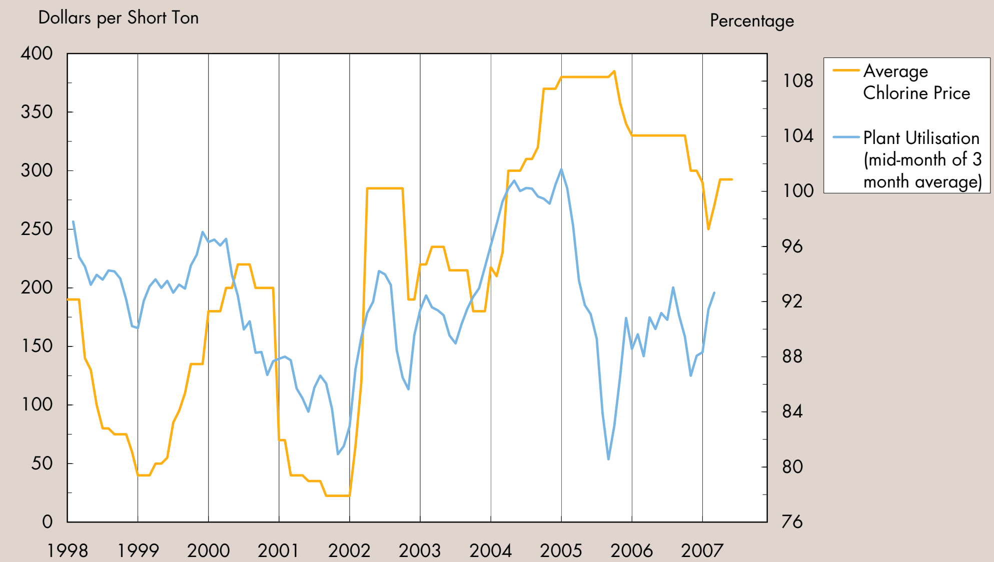
In company news, Shin-Etsu has reported that it has submitted applications with the Texas Commission of Environmental Quality for the construction and operation of a chlor-alkali and VCM complex in Texas. According to the press release, the company wants to secure long term VCM supply in the US for its PVC production.

**UNITED STATES - VALUE OF ECU**
**For Domestic Sales**




Source: Tecnon OrbiChem

**UNITED STATES - CHLORINE PRICE vs CHLORALKALI PLANT UTILISATION**

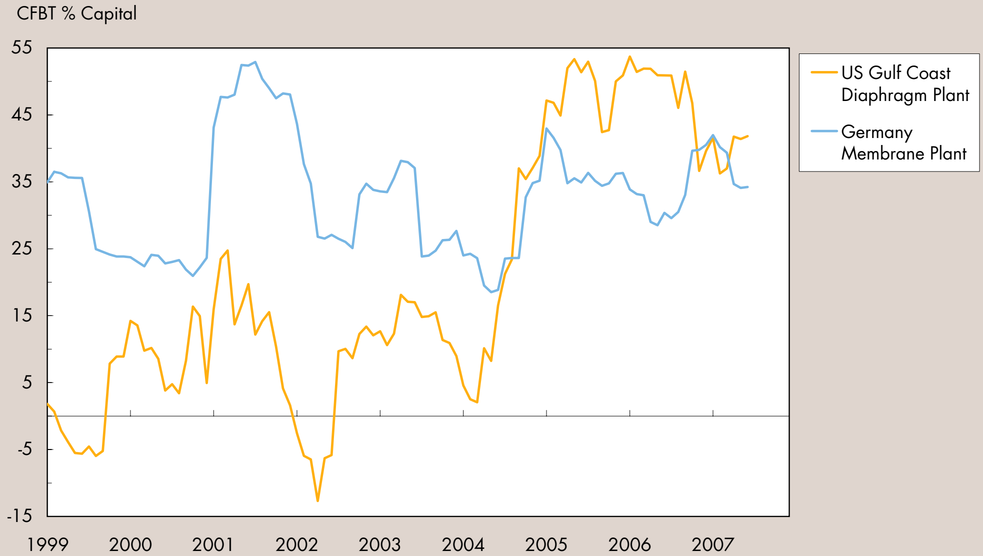



Source: Tecnon OrbiChem

The new VCM plant under consideration will have 825,000 tpa and the associated chlor-alkali plant will see 550,000 tpa caustic soda. Shin-Etsu, through its subsidiary Shintech is already constructing a similar complex in the US in Louisiana. That complex is being built in two stages with the first phase on track for completion by the end of this year. Some market sources believe that the second phase of the project in Louisiana is doubtful. The company currently sources most of its VCM requirements for its PVC capacity in Texas from Dow Chemical, which is described as 'a valued and reliable supplier'. This move by Shintech will be to protect its longer-term supply position of VCM. Dow Chemical has recently announced a large joint venture project with Saudi Aramco in Saudi Arabia and this could possibly have repercussions in the US market.

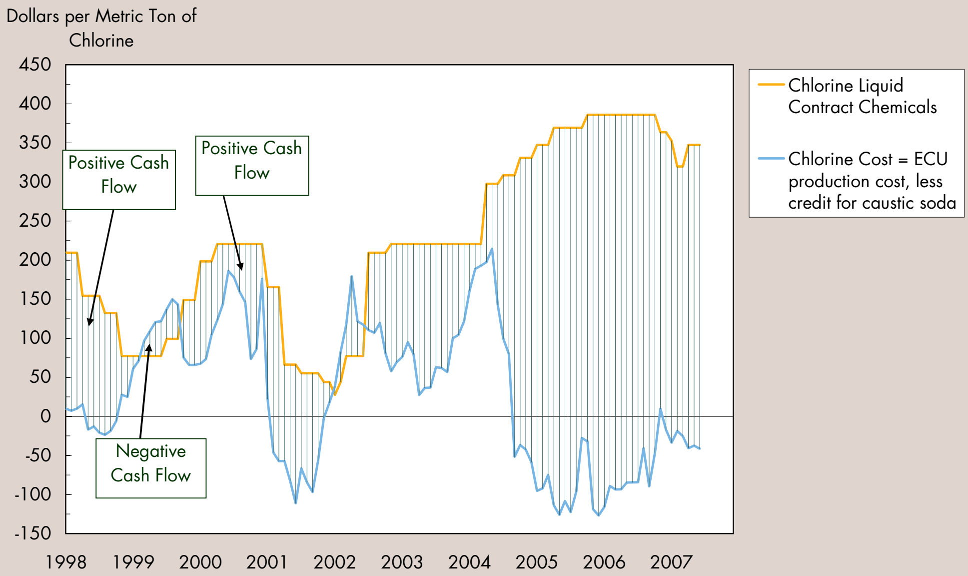
It has also been reported that Olin has agreed to buy the assets currently belonging to Pioneer, subject to the usual approvals. Pioneer has a number of assets in North America including the chlor-alkali plant at St Gabriel, which is in the process of being upgraded to membrane and expanding by 25%.

**PROFITABILITY of CHLORALKALI PRODUCTION**




Source: Tecnon OrbiChem

**BUSINESS CONDITIONS for an AVERAGE CHLOR-ALKALI PLANT on the US GULF**

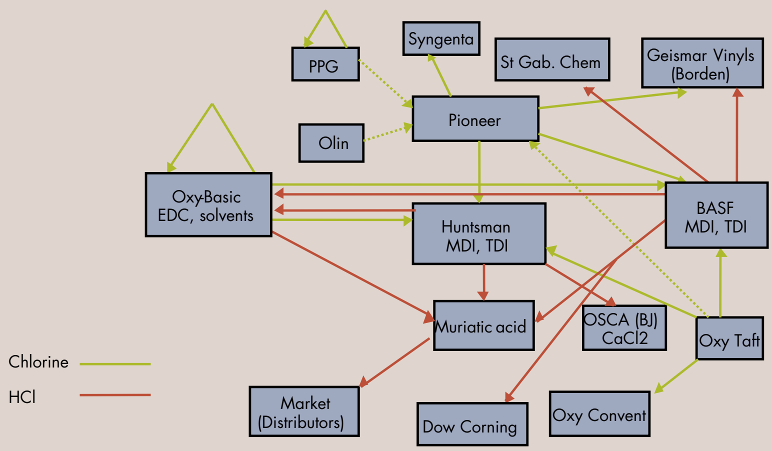



Source: Tecnon OrbiChem

This plant, located in the Geismar Louisiana complex, is strategically positioned with a pipeline to Gulf coast customers. We have included our snapshot view of the Geismar Louisiana complex that was used at one of our conferences earlier this year that demonstrates how vital the Pioneer site is to that regional supply demand balance in terms of both chlorine and HCl.

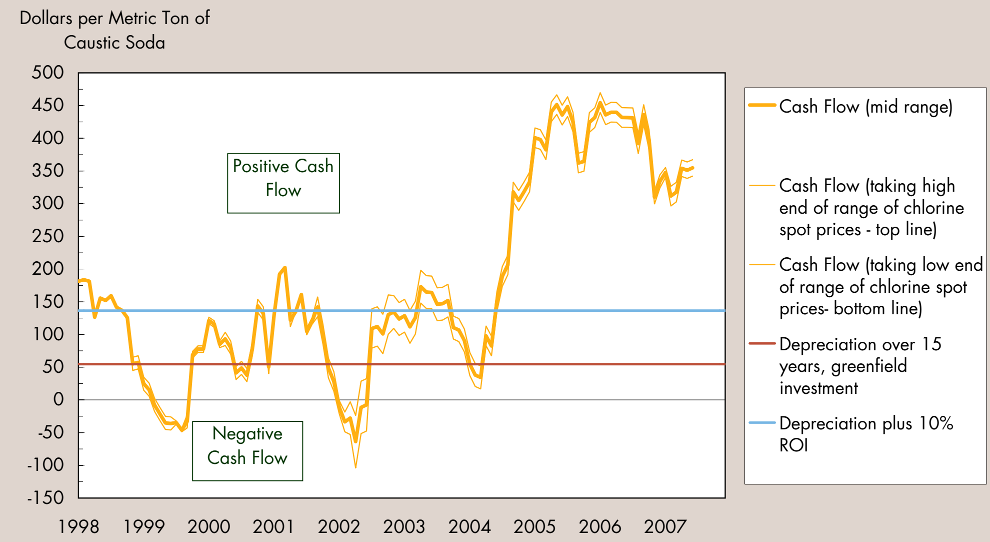
There are also three other sites owned by Pioneer that will be included in the deal. One is at Henderson in the West Coast of the US and the remaining two are in Canada at Becancour and Dalhousie. All sites have some advantages and will improve Olin's overall geographic coverage in the North American market. Pioneer also has five bleach plants in North America which opens up that market further for Olin. As a result of the deal Olin will move to the number three position in the US market and in the industrial bleach market will take over the top position. On a global basis the deal will move Olin up to fourth position, overtaking PPG, Solvay and Bayer.

## A 'SNAPSHOT' VIEW OF GEISMAR LOUISIANA



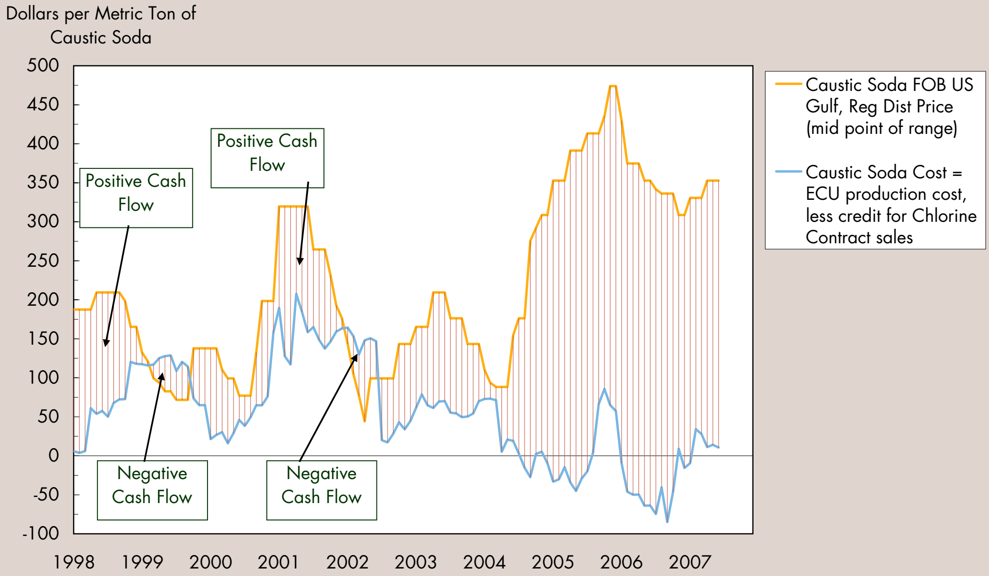

Source: Tecnon OrbiChem

## CASH FLOW ON DOMESTIC SALES GENERATED BY AN AVERAGE CHLOR-ALKALI PLANT ON THE US GULF



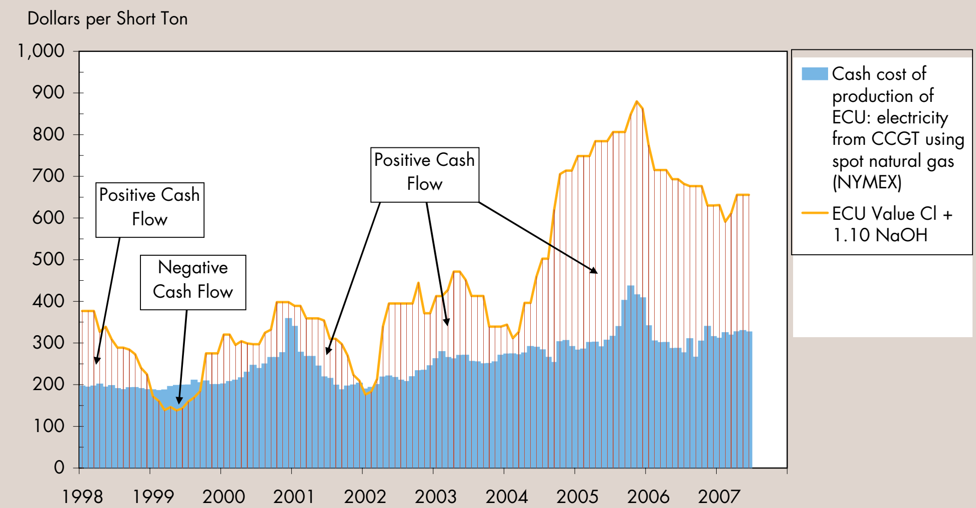

Source: Tecnon OrbiChem

**BUSINESS CONDITIONS for an AVERAGE CHLOR-ALKALI PLANT on the US GULF**




Source: Tecnon OrbiChem

**US ECU PRODUCTION COST vs ECU MARKET VALUE**
**US Gulf Conditions**




Source: Tecnon OrbiChem

## South America

The caustic soda market in Brazil continues to show an improvement. Higher US prices are having some impact and the local currency has strengthened and this has helped to support the higher selling prices. Some sellers remain a little disappointed that prices have not risen higher given that demand from most sectors remains positive and is particularly strong from the alumina and pulp & paper sectors.

Imports in the first four months of this year into Brazil totaled 211,000 tons. This is essentially the same level as last year. Problems at Santos port continue to have an impact on some shipments.

FRONT PAGE

PRICE MONITOR

CAUSTIC SODA & CHLORINE
North America
South America
Europe
Asia
China
Middle East
Alumina Outlook

REGULATIONS AND THE ENVIRONMENT

SODA ASH
North America
Europe
Asia

SALT NEWS

EDC

VCM

PVC

CONFERENCES/SEMINARS/STUDIES

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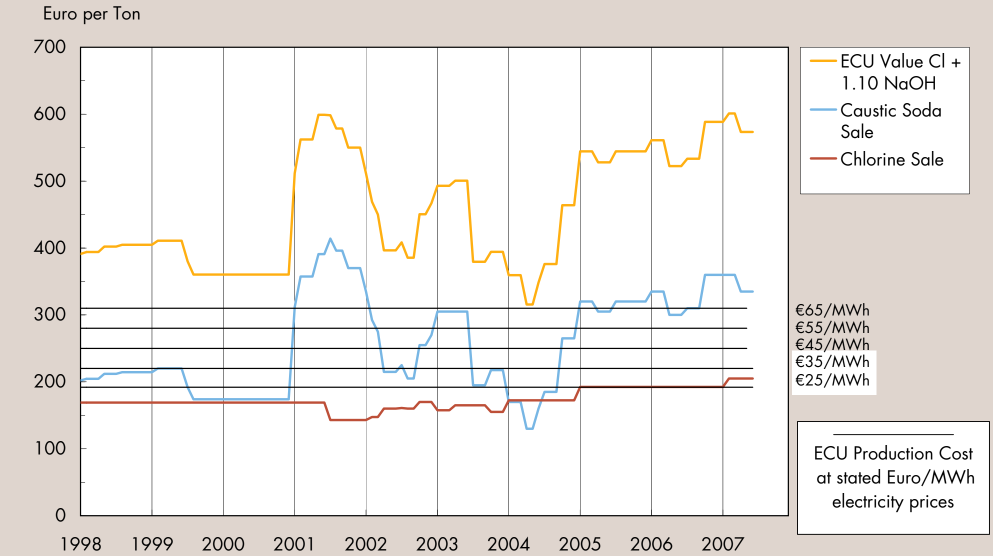
## Europe

There is a lot of activity in Europe at present. There is an ongoing price increase initiative for caustic soda for Q3 as a result of a rapidly changing balance and there have also been a number of significant developments in company news.

Last month saw a number of company announcements. Ineos Capital agreed to purchase the Norsk Hydro polymers assets and then sold its own E-PVC (PVC Paste) business to Vinnolit. It is also said to be interested in the Petkim assets (along with another 18 companies!).

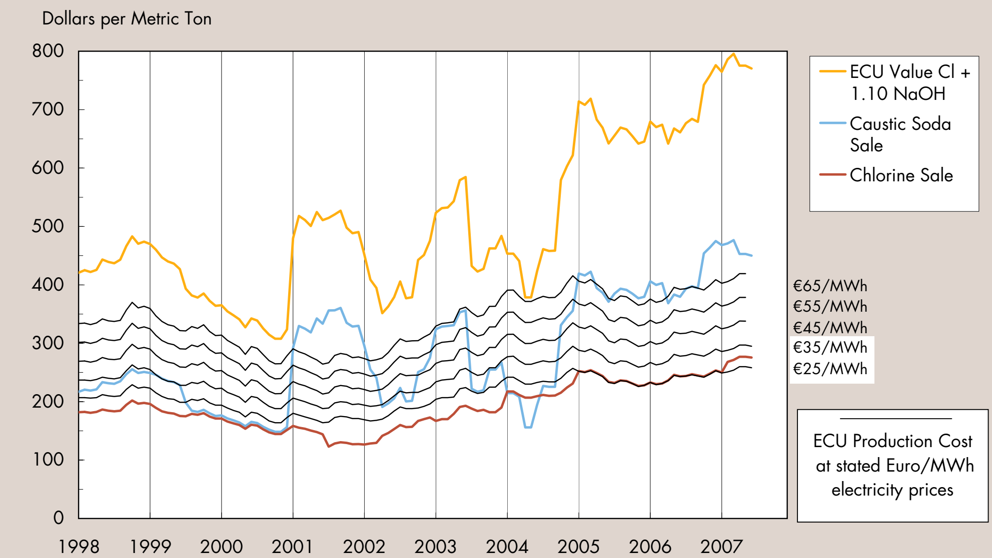
The purchase of the Norsk Hydro assets enhances Ineos position in the chlor-alkali, polymer and compounds businesses but it is perhaps the developments with the ethylene cracker that are the most interesting.

**WEST EUROPEAN - VALUE OF ECU**
**For Domestic Sales**




Source: Tecnon OrbiChem

**WEST EUROPEAN - VALUE OF ECU**
**For Domestic Sales**

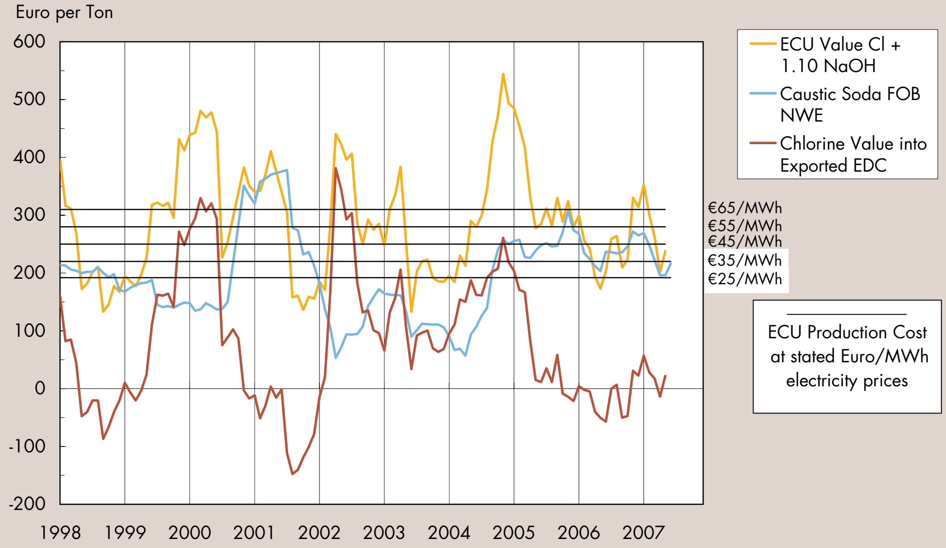



Source: Tecnon OrbiChem

Norsk Hydro currently owns 50% of the Noretyl cracker. The other 50% is currently owned by Borealis and within a few days of the Norsk announcement, Ineos confirmed that it will also buy Borealis and in doing will secure the 100% ownership of the cracker. Ethylene is a key raw material for the Ineos Group and this acquisition is clearly an important strategic development.

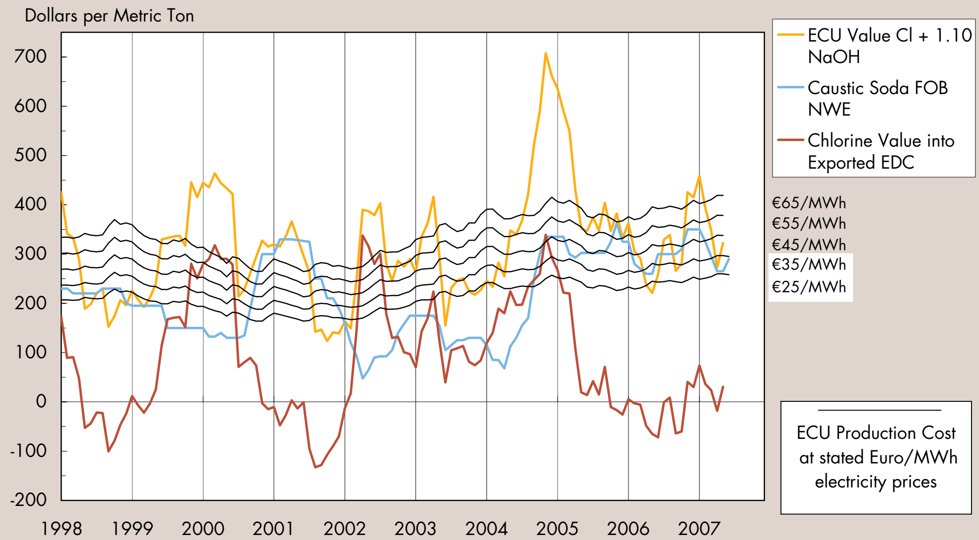
Although all the deals will take a few months to conclude, the chlor-alkali industry is already mulling over what the next steps might be. Questions are already being asked about the longer-term projects that have already been announced. Will these perhaps be re-examined now in light of these developments? Also what will happen to the various business interests that Norsk Hydro has in various joint ventures in Norway, Qatar and China and also the shareholding in CIRES in Portugal?

**WEST EUROPEAN - VALUE OF ECU**
**For Exported Caustic**
**& Chlorine in Exported EDC**




Source: Tecnon OrbiChem

**WEST EUROPEAN - VALUE OF ECU**
**For Exported Caustic**
**& Chlorine in Exported EDC**




Source: Tecnon OrbiChem

There are also questions about the longer-term supply arrangements in markets where Norsk Hydro currently sells via subsidiaries and if/when changes are made in these areas what will be the repercussions on other suppliers? It is clear that there is still a lot of work for the business development personnel at the companies involved and the industry will be watching closely.

Market balances in West Europe have been changing rapidly. A few weeks ago it appeared as though the usual situation was starting to develop for Q3. Chlorine demand was good and once the VCM outages were over it looked as though caustic soda would become more available and this would have led to some downward pressure on caustic soda prices. Indeed the April Euro Chlor data confirmed that rates had crept up to 86%. However a number of events in the market have led to a different scenario emerging. It is not yet clear what will happen for Q3 pricing but there are already a number of price increases announced for caustic soda.

So what has happened to make the market so very tight again? Well, firstly there were a number of delayed start-ups after various planned maintenance outages. This was not just with VCM but with other major derivatives too such as isocyanates and chloromethanes.

This was then followed by a force majeure situation at Shin-Etsu, which led to problems for Akzo Nobel. Caustic soda balances in the Netherlands were already on the tighter side due to problems earlier in the year when the Shell cracker operated intermittently. It has been confirmed that Akzo Nobel has been forced to put its customers on 25% allocation due to the severity of the situation.

Arkema had a fire reported at its methylene chloride plant at Lavera that brought down all the units on the site. It too is now said to be on order control. Dow Chemical has also announced a reduction in its current order allocation from 100% to 80% due to the ongoing problems at Stade and it is understood that a number of other major producers are also on some form of order control.

In the more southern part of the region, Syndial has had a shutdown and the balances in Italy have been tighter allowing some monthly price increases.

Caustic soda contract price increases have already been announced by two major producers for Q3 and others are expecting to announce shortly. The range of the increase is Euro40-50/ton for mainland European customers and £30/ton in the UK. Given the current tightness in the market this increase has some chance of success, as there is little prospect of relief from anywhere else at this current time.

## Asia

Many chlorine derivatives markets continue to perform well in Asia, particularly in China. TDI supply has tightened due to an explosion at Cangzhou Dahua and outages across the region continue to keep most derivatives in tighter supply. Derivatives prices are increasing and although most increases do have some element of improved demand in them there is also the tighter supply situation and also the rising energy and raw material costs to be taken into consideration.

**JAPANESE LIQUID CAUSTIC SODA EXPORTS ***

| | March 2007 | | Jan-Mar 07 | Jan-Mar 06 |
|---|---|---|---|---|
| | Tons | $/Ton | Tons | Tons |
| Canada | 5,359 | 118 | 10,359 | - |
| United States | 30,009 | 129 | 56,675 | 76,913 |
| Australia | 9,999 | 116 | 197,254 | 299,789 |
| Malaysia | 5,584 | 125 | 8,798 | 15 |
| New Zealand | 10,663 | 113 | 20,263 | 19,499 |
| Philippines | 5,280 | 139 | 5,307 | 24 |
| Singapore | 3,915 | 124 | 12,102 | 9 |
| China | 28 | 2,293 | 4,567 | 4,972 |
| Others | 92 | 2,331 | 277 | 266 |
| Total | 70,929 | | 315,602 | 401,487 |

* as 50%
$/ton figures are calculated from customs data and may not reflect market prices

**TAIWANESE LIQUID CAUSTIC SODA EXPORTS ***
**(1,000 Metric Tons)**

| *Month* | *2005* | *2006* | *2007* | *2006 $/ton* | *2007 $/ton* |
|---|---|---|---|---|---|
| Jan | 82.5 | 76.8 | 126.0 | 110 | 96 |
| Feb | 47.3 | 180.2 | 110.0 | 92 | 94 |
| Mar | 10.0 | 58.0 | - | 104 | - |
| Apr | 89.5 | 31.0 | - | 99 | - |
| May | 127.9 | 192.9 | - | 102 | - |
| Jun | 43.0 | 83.5 | - | 100 | - |
| Jul | 86.9 | 70.5 | - | 94 | - |
| Aug | 109.1 | 84.0 | - | 98 | - |
| Sep | 32.0 | 181.9 | - | 106 | - |
| Oct | 134.6 | - | - | 628 | - |
| Nov | 183.6 | 193.5 | - | 104 | - |
| Dec | 70.0 | 58.4 | - | 100 | - |
| Jan-Feb | 129.8 | 257.0 | 236.0 | 99 | 95 |
| % Change | 86.7 | 98.0 | (8.2) | (1.0) | (4.0) |
| Jan-Dec | 1,016.4 | 1,210.8 | | | |
| % Change | 42.9 | 19.1 | | | |

* as 50%
$/ton figures are calculated from customs data and may not reflect market prices

The vinyls market continues to improve. Prices for PVC, VCM and EDC are improving across the region.

Japanese production of caustic soda in April was slightly below the level in March (-2.4%) but was slightly higher than in April 2006. Production during April 2007 was recorded as 371,688 tons. Total caustic soda shipments (this includes domestic sales) improved in April to 295,014 tons and as a result stocks fell to 144,601 tons.

Japanese caustic soda exports during the first quarter of this year were running at around 21% lower than in the same period last year. This reflects the lower operations in the vinyls chain in Asia during this period.

There have been several local news reports suggesting that Thai Plastics & Chemicals and Vietnam Chemical (Vinachem) are planning a PVC and chlor-alkali joint-venture complex at Ba Ria-Vung Tau in Vietnam. The reports indicate that capacities under discussion are 345,000 tpa VCM, 300,000 tpa EDC and 250,000 tpa chlor-alkali. No other details are available at this stage.

## China

The liquid chlorine market in Hebei and Shandong provinces was on the tighter side earlier this month as demand was strong from the propylene oxide sector and there were several chlor-alkali shutdowns taking place. At one point, local prices reached Rmb1700-1800/ton. However the market in Hebei has not remained stable and prices are now fluctuating between Rmb1500-1700/ton. Production at the Hebei Cangzhou Dahua TDI plant is still closed as a result of an explosion in May. It is hoped that production at this plant will resume by August.

Overall demand of liquid chlorine in East China is now described as moderate. The new VCM plant in Jiangsu is consuming chlorine since its start up in May but this is countered with some turnarounds in other downstream derivatives. Prices in East China are now in the range Rmb1100-1400/ton, with the higher end of this range being seen in Jiangsu province.

PVC supply in the domestic Chinese market is said to be on the tighter side and demand is good. Exports have however now been suspended in expectation of the rebate policy changes.

**TAIWANESE LIQUID CAUSTIC SODA IMPORTS ***
**(1,000 Metric Tons)**

| *Month* | *2005* | *2006* | *2007* | *2006 $/ton* | *2007 $/ton* |
|---|---|---|---|---|---|
| Jan | 17.0 | 12.2 | 6.8 | 142 | 166 |
| Feb | - | 6.3 | 3.3 | 126 | 173 |
| Mar | 3.0 | 6.3 | - | 135 | - |
| Apr | 26.5 | 3.1 | - | 133 | - |
| May | 13.8 | 3.3 | - | 138 | - |
| Jun | 4.7 | 6.4 | - | 139 | - |
| Jul | 13.3 | 10.1 | - | 157 | - |
| Aug | 3.3 | 6.0 | - | 163 | - |
| Sep | - | 7.9 | - | 191 | - |
| Oct | - | 14.4 | - | 163 | - |
| Nov | 18.0 | 6.7 | - | 155 | - |
| Dec | - | 3.1 | - | 177 | - |
| Jan-Feb | 17.1 | 18.5 | 10.1 | 136 | 168 |
| % Change | 54.2 | 8.3 | (45.5) | (88.3) | 23.5 |
| Jan-Dec | 99.9 | 85.7 | | | |
| % Change | 17.4 | (14.2) | | | |

* as 50%
$/ton figures are calculated from customs data and may not reflect market prices

**TAIWANESE SOLID CAUSTIC SODA EXPORTS**
**(1,000 Metric Tons)**

| *Month* | *2005* | *2006* | *2007* | *2006 $/ton* | *2007 $/ton* |
|---|---|---|---|---|---|
| Jan | 2.4 | 2.2 | 2.6 | 304 | 345 |
| Feb | 1.2 | 1.6 | 1.7 | 285 | 337 |
| Mar | 1.5 | 2.0 | 2.3 | 301 | 345 |
| Apr | 1.4 | 1.7 | - | 278 | - |
| May | 2.7 | 2.2 | - | 277 | - |
| Jun | 2.3 | 1.8 | - | 280 | - |
| Jul | 1.6 | 2.4 | - | 292 | - |
| Aug | 2.0 | 0.9 | - | 311 | - |
| Sep | 1.9 | 0.9 | - | 328 | - |
| Oct | 2.1 | 1.9 | - | 331 | - |
| Nov | 2.0 | 2.0 | - | 333 | - |
| Dec | 2.0 | 1.5 | - | 340 | - |
| Jan-Mar | 5.0 | 5.7 | 6.6 | 298 | 343 |
| % Change | (67.3) | 13.9 | 14.4 | (9.7) | 15.1 |
| Jan-Dec | 23.1 | 21.1 | | | |
| % Change | (33.9) | (8.4) | | | |

$/ton figures are calculated from customs data and may not reflect market prices

The caustic soda market is currently very different between North China and East China. Demand from the textile and dyeing industries in East China has shrunk. Wuxi City has implemented measures to stop production at small chemical plants in order to tackle the water pollution problem in Tai Lake, which is causing a serious algae bloom. Prices in East China are constrained at the level of Rmb550-600/ton for 30% diaphragm caustic soda, and Rmb620-670/ton for 32% membrane caustic soda.

Demand for membrane caustic soda in North China is largely supported by the alumina industry. By the end of 2006, there was a total of 11,625 ktpa alumina capacity of the Bayer process and 2,700 ktpa of the sintering process located in the Shandong, Henan and Shanxi provinces of North China. This means around 1,105 ktpa of caustic soda would be needed in these regions. On the supply side, expansions of chlor-alkali plants are ongoing. Some producers in North China are beginning to worry about the supply/demand situation after expansions come on stream in Hebei, Shanxi and Henan. The new capacity being added totals 420 ktpa with most of this coming on stream during July and August. Prices in North China are now Rmb540-600/ton for 30% diaphragm caustic soda and Rmb620-660/ton for 32% membrane caustic soda.

FRONT PAGE

PRICE MONITOR

CAUSTIC SODA & CHLORINE
North America
South America
Europe
Asia
China
Middle East
Alumina Outlook

REGULATIONS AND THE ENVIRONMENT

SODA ASH
North America
Europe
Asia

SALT NEWS

EDC

VCM

PVC

CONFERENCES/SEMINARS/ STUDIES

ACCESS TECNON ORBICHEM ONLINE

The export market for caustic soda has mostly been suspended in June due to the expectation of the rebate policy changes. The rebate is currently 13% but this is likely to be removed altogether although final confirmation of this has yet to be given. Some solid shipments (99% flake) were transacted at the level of $330-340/ton fob for early June shipment. Latest quotations have increased by $50/ton but these are now too high for the buyer side. Liquid caustic soda exports on a contract basis have been seen at $270/ ton fob but there are currently no spot cargoes.

Solid caustic soda exports from China remained 9% above 2006 levels in the first four months of this year. Again the trade tables show the diverse destinations of these exports. In April almost 50 countries across all continents were targeted by the Chinese exporters with quantities ranging from just 41 tons up to 3,502 tons. Destinations for Chinese liquid caustic soda are more selective with the majority of the product remaining in Asia. However larger shipments are now regularly seen to Canada and the US. In the year to date comparison, liquid shipments were up by almost 65% on 2006 levels. It is not yet clear what impact the export rebate changes will have on the overall total exports that will come out of China this year. In the short-term the export volumes will certainly be affected but it is probable that over time there will some adaptation in the market.

**CHINESE LIQUID CAUSTIC SODA EXPORTS ***

| | *April 2007* | | *Jan-Apr 07* | *Jan-Apr 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| Canada | 33,684 | 243 | 95,837 | - |
| United States | 2,589 | 245 | 21,803 | 41,866 |
| Brazil | - | - | 9,356 | 6,271 |
| South Africa | - | - | 5,924 | - |
| Australia | 39,566 | 145 | 87,030 | 59,036 |
| India | - | - | 20,932 | 7,149 |
| Indonesia | - | - | - | 5,023 |
| Malaysia | - | - | 2,470 | 5,750 |
| New Zealand | - | - | - | 4,916 |
| Philippines | 2,013 | 240 | 4,645 | 8,994 |
| Singapore | 8 | 1,379 | 9,377 | 14,714 |
| Thailand | 2,341 | 239 | 4,909 | 9,125 |
| Hong Kong | 1,339 | 143 | 4,740 | 5,538 |
| South Korea | 9,081 | 185 | 23,220 | 12,550 |
| Taiwan | 3,100 | 237 | 12,532 | 9,116 |
| Others | 68 | 194 | 90 | 567 |
| Total | 93,789 | | 302,865 | 190,615 |

Tons are recorded in some cases 50%, in some cases 100%
$/ton figures are calculated from customs data and may not reflect market prices

**CHINESE LIQUID CAUSTIC SODA EXPORTS ***
**(1,000 Metric Tons)**

| *Month* | *2005* | *2006* | *2007* | *2006* | *2007* |
|---|---|---|---|---|---|
| | | | | *$/ton* | *$/ton* |
| Jan | 36.0 | 89.6 | 90.7 | 155 | 166 |
| Feb | 3.0 | 13.9 | 47.8 | 194 | 192 |
| Mar | 25.8 | 50.6 | 70.6 | 148 | 227 |
| Apr | 60.6 | 36.4 | 93.8 | 143 | 194 |
| May | 49.4 | 90.1 | - | 139 | - |
| Jun | 48.6 | 73.3 | - | 141 | - |
| Jul | 76.8 | 49.2 | - | 122 | - |
| Aug | 56.6 | 120.2 | - | 168 | - |
| Sep | 17.0 | 46.0 | - | 126 | - |
| Oct | 83.1 | 105.3 | - | 196 | - |
| Nov | 31.5 | 112.2 | - | 173 | - |
| Dec | 59.8 | 122.3 | - | 153 | - |
| Jan-Apr | 125.4 | 190.6 | 302.9 | 154 | 193 |
| % Change | 272.4 | 51.9 | 58.9 | (10.7) | 25.3 |
| Jan-Dec | 548.1 | 909.2 | | | |
| % Change | 280.2 | 65.9 | | | |

Tons are recorded in some cases 50%, in some cases 100%
$/ton figures are calculated from customs data and may not reflect market prices

In company news it has been reported that Hebei Tangshan Sanyou is to double its 100,000 tpa acetylene-based PVC and 100,000 tpa caustic soda capacities in July.

Henan Shenma is also to double its 200,000 tpa acetylene-based PVC and caustic soda capacities in July.

Shanxi Yushe plans to add 120,000 tpa acetylene-based PVC and caustic soda capacities to its existing 280,000 tpa capacities.

**China Major Chlor-Alkali/PVC Producers Shutdowns 2007**

| *Company* | *Capacity*(ktpa)* | | *Shutdown (days)* | | *Shutdown* |
|---|---|---|---|---|---|
| | *Na/Cl* | *PVC* | *Na/Cl* | *PVC* | *Period* |
| Henan Haohua Yuhang | 180 | 180 | 3 | 3 | mid-May |
| Ningxia Western | 100 | 120 | 5 | 5 | late May |
| Shandong Xinwen | 100 | 100 | 4 | 4 | late May |
| Hebei Tangshan Sanyou | 100 | 100 | 10 | 10 | late May |
| Sichuan Jinlu | 160 | 300 | 8 | 8 | early Jun |
| Hebei Huanghua | 30 | - | 3 | - | early Jun |
| Shandong Haijing | 120 | 160 | 25 | 25 | late Jun |

* Capacity that is to have shutdown, not necessarily the total capacity.

**CHINESE SOLID CAUSTIC SODA IMPORTS**

| | *April 2007* | | *Jan-Apr 07* | *Jan-Apr 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| Spain | 350 | 471 | 1,442 | 1,459 |
| United Kingdom | 146 | 432 | 718 | 402 |
| Poland | 528 | 418 | 1,878 | 962 |
| Thailand | 335 | 474 | 1,367 | 1,077 |
| Taiwan | 189 | 400 | 328 | 167 |
| Japan | 382 | 559 | 979 | 1,185 |
| Others | 165 | 567 | 640 | 601 |
| Total | 2,095 | | 7,352 | 5,853 |

$/ton figures are calculated from customs data and may not reflect market prices

**CHINESE SOLID CAUSTIC SODA EXPORTS (1,000 Metric Tons)**

| *Month* | *2005* | *2006* | *2007* | *2006 $/ton* | *2007 $/ton* |
|---|---|---|---|---|---|
| Jan | 15.9 | 27.7 | 34.2 | 277 | 299 |
| Feb | 25.5 | 40.9 | 42.9 | 269 | 306 |
| Mar | 26.8 | 42.3 | 47.4 | 263 | 311 |
| Apr | 22.0 | 34.2 | 33.9 | 265 | 318 |
| May | 30.6 | 36.8 | - | 256 | - |
| Jun | 22.2 | 38.0 | - | 261 | - |
| Jul | 26.3 | 35.7 | - | 265 | - |
| Aug | 18.9 | 38.0 | - | 259 | - |
| Sep | 32.0 | 37.3 | - | 267 | - |
| Oct | 24.6 | 33.7 | - | 275 | - |
| Nov | 23.9 | 31.0 | - | 294 | - |
| Dec | 37.5 | 26.2 | - | 298 | - |
| Jan-Apr | 90.3 | 145.1 | 158.3 | 268 | 309 |
| % Change | 30.9 | 60.8 | 9.1 | (8.4) | 15.3 |
| Jan-Dec | 306.3 | 421.9 | | | |
| % Change | 54.2 | 37.7 | | | |

$/ton figures are calculated from customs data and may not reflect market prices

## CHINESE SOLID CAUSTIC SODA EXPORTS

| | April 2007 | | Jan-Apr 07 | Jan-Apr 06 |
|---|---|---|---|---|
| | Tons | $/Ton | Tons | Tons |
| Canada | 250 | 359 | 799 | 1,094 |
| United States | 1,066 | 360 | 5,857 | 9,372 |
| Brazil | 625 | 325 | 2,991 | 7,939 |
| Chile | 375 | 331 | 1,099 | 598 |
| Colombia | 447 | 321 | 1,033 | 2,697 |
| Cuba | 155 | 366 | 180 | 451 |
| Peru | 900 | 328 | 2,075 | 5,118 |
| Denmark | 100 | 387 | 140 | 100 |
| Portugal | 126 | 345 | 256 | 20 |
| Kazakhstan | 982 | 263 | 4,582 | 3,475 |
| Kirgisia | 234 | 265 | 626 | 228 |
| Russia | 1,738 | 276 | 3,712 | 794 |
| Turkmenia | 645 | 269 | 1,099 | 236 |
| Uzbekistan | 468 | 279 | 4,766 | 6,890 |
| Angola | 125 | 320 | 125 | 125 |
| Djibouti | 211 | 340 | 1,147 | 795 |
| Egypt | 573 | 324 | 1,718 | 1,190 |
| Ghana | 696 | 359 | 1,918 | 320 |
| Iran | 1,025 | 343 | 1,121 | 815 |
| Ivory Coast | 150 | 334 | 150 | 403 |
| Kenya | 398 | 342 | 1,921 | 1,705 |
| Libya | 136 | 335 | 136 | 18 |
| Madagascar | 65 | 405 | 284 | 1,275 |
| Mauritius | 150 | 330 | 750 | 325 |
| Mozambique | 955 | 324 | 3,394 | 3,491 |
| Namibia | - | - | 1,300 | - |
| Nigeria | 2,965 | 329 | 10,154 | 16,619 |
| Oman | 169 | 306 | 243 | - |
| Senegal | 196 | 342 | 859 | 380 |
| South Africa | 1,242 | 360 | 2,547 | 1,845 |
| Sudan | 2,850 | 283 | 4,310 | 3,951 |
| Syria | 23 | 351 | 713 | 1,545 |
| Tanzania | 1,051 | 329 | 4,110 | 3,369 |
| Togo | 192 | 298 | 492 | 25 |
| UAE | 329 | 354 | 529 | 40 |
| Yemen | - | - | 1,300 | 330 |
| Zimbabwe | 131 | 349 | 131 | 141 |
| Australia | 273 | 409 | 543 | 279 |
| Bangladesh | 1,055 | 314 | 38,281 | 13,909 |
| India | 41 | 336 | 1,755 | 6,397 |
| Indonesia | 392 | 329 | 1,757 | 915 |
| Malaysia | 546 | 317 | 1,364 | 2,900 |
| Myanmar | 1,151 | 270 | 9,460 | 6,570 |
| Pakistan | - | - | 675 | 3,637 |
| Philippines | 808 | 347 | 2,723 | 3,012 |
| Sri Lanka | 1,026 | 326 | 3,176 | 1,256 |
| Thailand | 1,538 | 333 | 3,696 | 3,683 |
| Vietnam | 3,502 | 292 | 19,192 | 13,255 |
| Hong Kong | 226 | 350 | 489 | 456 |
| North Korea | 132 | 344 | 628 | 1,004 |
| South Korea | 565 | 335 | 1,441 | 2,131 |
| Japan | 236 | 319 | 236 | 20 |
| Others | 658 | 358 | 4,329 | 7,974 |
| Total | 33,892 | | 158,312 | 145,117 |

$/ton figures are calculated from customs data and may not reflect market prices

## CHINESE LIQUID CAUSTIC SODA IMPORTS *

| | April 2007 | | Jan-Apr 07 | Jan-Apr 06 |
|---|---|---|---|---|
| | Tons | $/Ton | Tons | Tons |
| China | 266 | 1,756 | 797 | 737 |
| Japan | 3,749 | 264 | 6,107 | 2,549 |
| Others | 144 | 1,584 | 600 | 562 |
| Total | 4,159 | | 7,504 | 3,848 |

**Middle East**

Lyondell has confirmed that the sale of its inorganic business to The National Titanium Dioxide Company Ltd (Cristal) was completed on 15 May. Cristal has been manufacturing TiO2 (using imported rutile ore) at its ultra-modern Yanbu Al-Sinaiyah plant in Saudi Arabia since 1991.

**Alumina Outlook**

The half-yearly caustic soda contracts are not yet completely settled. The US negotiation is far from over with sellers and buyers still understood to be at least $50/ton apart in their nominations. The Asian settlement was initially understood to be a little clearer although the recent developments with regard to the Chinese export rebates may yet have some influence on the overall outcome. A few deals were understood to have been concluded at $270/ton fob although some deals are still not yet concluded. This is $5/ton up from the H1 settlement.

Alumina prices appear to have remained stable for some months now. Chinese production continues at strong rates with the latest Q1 data showing a 62% increase on 2006 levels. Metallurgical grade alumina production in China during Q1 2007 was 4.19 million tons. Alumina production on a global basis continues to remain at high levels and new capacity is expected on stream soon in Australia. Global Q1 2007 production was reported as 13.28 million tons. This does not include China.

On a global basis alumina capacity is expected to reach 69.81 million tons by the end of 2009. At the end of December 2006, capacity was reported as 61.81 million tons.

In company news it has been reported that Alcan's Board of Directors unanimously recommended that its shareholders reject Alcoa's unsolicited offer to acquire Alcan as the offer failed to meet the company's best interests.

## REGULATIONS AND THE ENVIRONMENT

The new European legislative system, REACH, finally came into effect from 1 June 2007. The initial phase involves the pre-registration of the chemicals covered by the new legislation. This involves any producer, distributor or importer of products into the EU. All products must be pre-registered by 2009. Each product will then be evaluated and then authorised for use. Clearly some products, due to their hazardous nature, will be worked on first. The process however could take some time to work through, especially as the computer system was reported not to be online when the legislation came into effect. A few people have commented that the initial pre-registration phase was not too complicated.

**Jamaica Bauxite Institute**
**Bauxite/Alumina Statistics**
**Metric tons April 2007**

| | | *Production* | | | *Export* | |
|---|---|---|---|---|---|---|
| | *Alumina* | *Crude Bauxite* | *Total Bauxite* | *Alumina* | *Crude Bauxite* | *Total Bauxite* |
| Month | | | | | | |
| 2007 | 355,114 | 401,325 | 1,299,852 | 329,136 | 393,454 | 1,2222,352 |
| 2006 | 333,689 | 403,285 | 1,245,266 | 271,413 | 399,156 | 1,086,487 |
| % Change 2007/06 | 6.42 | -0.49 | 4.38 | 21.27 | -1.43 | 12.50 |
| 2005 | 347,710 | 236,994 | 1,084,195 | 444,854 | 277,541 | 1,360,510 |
| % Change 2005/04 | -4.03 | 70.17 | 14.86 | -38.99 | 43.82 | -20.14 |
| Year-to-Date | | | | | | |
| 2007 | 1,376,515 | 1,573,152 | 5,026,077 | 1,291,969 | 1,573,361 | 4,815,582 |
| 2006 | 1,349,500 | 1,528,766 | 4,917,462 | 1,246,555 | 1,502,007 | 4,634,890 |
| % Change 2007/06 | 2.00 | 2.90 | 2.21 | 3.64 | 4.75 | 3.90 |
| 2005 | 1,400,473 | 1,311,591 | 4,704,926 | 1,402,911 | 1,335,714 | 4,729,353 |
| % Change 2006/05 | -3.64 | 16.56 | 4.52 | -11.15 | 12.45 | -2.00 |

Note: Crude Bauxite = Bauxite mined for export Total Bauxite = Crude Bauxite + bauxite converted to alumina Source: JBI

# SODA ASH

## North America

US natural soda ash production is slightly ahead of 2006. Production of 880,000 tons in February and 962,000 tons in March brought the total for Q1 2007 to 2,706,000 tons, just 0.25% more than the comparable period of 2006. Producers say they are continuing to operate near plant capacities and some report orders will be backlogged in June and July. The tight supply situation has led producers to nominate a $15/short ton price increase effective 1 July 2007. The increase applies to all grades of bulk and packaged soda ash. Most producers did not raise the established list price, keeping that price at $170/short ton for bulk, dense soda ash fob Green River, Wyoming. General Chemical increased their list price to $185/short ton, fob Green River, for bulk, dense soda ash. The total of the announced price increase nominations since May of 2004 (when the present price escalation began) is $100/short ton.

Initial data for US soda ash exports in April was 419,897 tons valued at $62,046,000 fas or an average of $147.76/ton, the highest monthly average value reported so far in 2007. South America continues to be the primary destination of US soda ash exports accounting for 44.5% of all exports through April. The April report was unusual in that shipments to Brazilian consumers captured the spotlight eclipsing Mexico as the usual front runner. Brazilian consumers were sent 69,504 tons of soda ash in April, Mexico 62,207 tons. For the year-to-date through April, US soda ash sellers shipped 1,679,848 tons to 43 countries. Total customs value of the shipments was $241,840,000 fas or an average of $143.97/ton.

**UNITED STATES SODA ASH EXPORTS**

| | *March 2007* | | *Jan-Mar 07* | *Jan-Mar 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| Canada | 44,347 | 135 | 121,455 | 97,725 |
| Mexico | 72,964 | 148 | 201,252 | 179,340 |
| Argentina | 2 | 1,279 | 15,652 | - |
| Brazil | 31,364 | 137 | 137,171 | 92,452 |
| Chile | 37,702 | 140 | 73,847 | 66,862 |
| Colombia | - | - | 19,698 | 29,550 |
| Costa Rica | 5 | 545 | 6,309 | - |
| Dominican Republic | - | - | - | 6,054 |
| Ecuador | - | - | 3,000 | 8,000 |
| El Salvador | - | - | - | 10,000 |
| Guatemala | 2,500 | 177 | 8,091 | 5,950 |
| Panama | - | - | 2,000 | 2,000 |
| Peru | - | - | 8,098 | 10,700 |
| Venezuela | 24,783 | 146 | 84,433 | 62,162 |
| Belgium | - | - | 32,860 | 51,070 |
| France | - | - | 15,035 | 80 |
| Germany | 105 | 420 | 124 | 44 |
| Netherlands | 10,103 | 142 | 33,635 | 15,147 |
| Portugal | 9,353 | 105 | 9,353 | 15,500 |
| Spain | - | - | 34,710 | 30,381 |
| Saudi Arabia | 18,018 | 136 | 28,762 | 58,435 |
| South Africa | 6,992 | 140 | 20,044 | 35,923 |
| UAE | - | - | 6,267 | 23,043 |
| Australia | 14,006 | 141 | 26,206 | 9,464 |
| Indonesia | 55,158 | 141 | 109,970 | 70,326 |
| Malaysia | 10,000 | 157 | 25,269 | 12,010 |
| New Zealand | 5,971 | 162 | 5,971 | 15,032 |
| Philippines | 10,517 | 133 | 10,517 | 10,215 |
| Thailand | 27,844 | 146 | 38,315 | 48,203 |
| Vietnam | 3,500 | 145 | 3,500 | - |
| China | 3 | 1,059 | 17,949 | - |
| South Korea | 13,003 | 153 | 37,978 | 44,632 |
| Taiwan | 18,794 | 157 | 73,435 | 57,850 |
| Japan | 17,000 | 115 | 48,829 | 65,700 |
| Others | 39 | 335 | 213 | 868 |
| Total | 434,073 | | 1,259,948 | 1,134,718 |

$/ton figures are calculated from customs data and may not reflect market prices

Compared to the corresponding period of 2006, volume was up 8.74%, value was up 6.61% and average value was down $2.88/ton. Market watchers foresee that the international soda ash price will rise perhaps as much as $20/ton as the Chinese government revises the rebate of 13% on exported soda ash. WTO guidelines and communications from the US requesting its demise have highlighted the Chinese rebate programme as a government subsidy to soda ash exporters.

Rising domestic natural gas prices have made necessary the continuation of the energy surcharge programmes instituted long ago by US soda ash producers. Presently, natural gas is around $8.0/mmBtu on the New York Mercantile Exchange translating to a surcharge of $4.0-4.5/short ton of soda ash shipped.

The US Census Bureau has announced Q1 sodium bicarbonate production of 138,556 tons, level with Q1 2006. The industry grew just 0.5% in 2006.

## Europe

Once again there appears to be limited change in the European market. Supply remains tight and most producers appear to be running flat out. The concern of course is that continued high operations might eventually cause problems in the system somewhere.

In company news it has been confirmed that Brunner Mond plans to invest £10 million constructing a new 50,000 tpa sodium bicarbonate plant at its site in Northwich in the UK. The plant should be on stream in the first half of 2009. The investment is needed for its growing flue gas treatment business. Once the new plant comes on stream, Brunner Mond will have a total of 180,000 tpa capacity across its sites at Northwich and at Delfzijl in the Netherlands.

## Asia

There has been talk in China that soda ash will be one of the products that will see its export rebates removed. The rebate is currently 13% and the market is expecting this rebate to disappear completely. This is just one of the controls that the government is trying to introduce in order to stop the flow of products out of the country in an attempt to ease the energy situation. Soda ash and caustic soda are energy intensive and exports of both products have grown substantially in recent years.

Supply of soda ash in China is currently tight due to several shutdowns. Prices are currently Rmb1520-1560/ton for light soda ash and Rmb1650-1710/ton for dense soda ash in East China. Recent export volumes have shrunk due to the expectation of the export rebate changes. Year to date exports to April were slightly below levels seen in 2006. Total shipments reported were 555,367 tons, over 5% below the level seen in the same period last year.

**CHINESE SODA ASH EXPORTS (1,000 Metric Tons)**

| Month | 2005 | 2006 | 2007 | 2006 $/ton | 2007 $/ton |
|---|---|---|---|---|---|
| Jan | 104.1 | 126.6 | 145.9 | 163 | 158 |
| Feb | 92.5 | 158.3 | 124.1 | 161 | 159 |
| Mar | 151.2 | 151.8 | 178.7 | 162 | 159 |
| Apr | 149.7 | 150.3 | 106.7 | 158 | 159 |
| May | 212.3 | 154.4 | - | 153 | - |
| Jun | 151.1 | 141.1 | - | 152 | - |
| Jul | 161.2 | 151.0 | - | 155 | - |
| Aug | 147.7 | 167.7 | - | 157 | - |
| Sep | 151.4 | 185.9 | - | 157 | - |
| Oct | 139.2 | 126.6 | - | 158 | - |
| Nov | 162.5 | 152.7 | - | 159 | - |
| Dec | 152.1 | 143.2 | - | 158 | - |
| Jan-Apr | 497.4 | 587.0 | 555.4 | 161 | 159 |
| % Change | 7.0 | 18.0 | (5.4) | (1.1) | (1.2) |
| Jan-Dec | 1,774.8 | 1,809.6 | | | |
| % Change | 24.1 | 2.0 | | | |

$/ton figures are calculated from customs data and may not reflect market prices

**CHINESE SODA ASH EXPORTS**

| | *April 2007* | | *Jan-Apr 07* | *Jan-Apr 06* |
|---|---|---|---|---|
| | *Tons* | *$/Ton* | *Tons* | *Tons* |
| United States | - | - | 3 | 4,000 |
| Brazil | - | - | 1,008 | 80 |
| Dominican Republic | - | - | 2,221 | 1,250 |
| Ecuador | 35 | 167 | 255 | 2,585 |
| El Salvador | - | - | 660 | 1,400 |
| Guatemala | 250 | 166 | 750 | 2,523 |
| Honduras | - | - | 800 | 1,000 |
| Puerto Rico | 500 | 160 | 500 | 535 |
| Uzbekistan | 60 | 163 | 541 | 5,072 |
| Mauritius | 189 | 166 | 1,113 | 544 |
| Namibia | 306 | 164 | 1,806 | - |
| Nigeria | 935 | 168 | 12,140 | 12,125 |
| South Africa | - | - | 407 | 28,810 |
| Sudan | 220 | 167 | 650 | 242 |
| Tanzania | - | - | 128 | 3,000 |
| Yemen | - | - | 1,680 | 1,197 |
| Bangladesh | 103 | 175 | 16,642 | 12,148 |
| India | 600 | 162 | 1,095 | 9,619 |
| Indonesia | 21,557 | 154 | 132,425 | 114,571 |
| Malaysia | 3,702 | 156 | 12,628 | 12,728 |
| Myanmar | 456 | 145 | 4,372 | 240 |
| Philippines | 6,566 | 157 | 35,365 | 21,262 |
| Singapore | 185 | 171 | 1,826 | 3,297 |
| Sri Lanka | 21 | 165 | 772 | 2,280 |
| Thailand | 7,952 | 154 | 49,546 | 66,204 |
| Vietnam | 18,530 | 158 | 67,101 | 39,238 |
| Hong Kong | 360 | 167 | 1,279 | 1,152 |
| North Korea | 1,607 | 169 | 6,808 | 5,401 |
| South Korea | 25,531 | 164 | 149,859 | 156,261 |
| Taiwan | 4,710 | 159 | 12,551 | 35,798 |
| Japan | 12,115 | 163 | 34,221 | 37,556 |
| Others | 259 | 215 | 4,215 | 4,864 |
| Total | 106,749 | | 555,367 | 586,982 |

## SALT NEWS

In China, demand for salt from the chlor-alkali and soda ash industries has been stable. Shandong province, which is a large supplier of solar salt, is currently offering salt at the low price of Rmb100/ton to local users. Prices in East China have remained stable at Rmb220-250/ton.

## EDC

April's US ethylene contract price settled at 43.5 c/lb, up 2.5 c/lb from March and a further 1 c/lb was achieved in May. A further increase for June is on the table and many believe this will be achieved as demand is good and stocks are on the low side. There have been no traced EDC spot shipments from the US. This is not surprising given the balance in the US domestic chlorine market at present and with suppliers in the Middle East now fully operational again after their various outages. EDC prices in Asia are now rising again however and this might provide an opportunity for some shipments.

Planned and unplanned outages, which led to some force majeure situations in West Europe, have meant that ethylene prices have risen. Initial June contracts appear to have settled at Euro925/ton which is up Euro40/ton from the previous month. The EDC market is quiet with most activity restricted to contractual volumes. Current prices for June are said to be in the range $375-395/ton fob.

Spot ethylene prices in Northeast Asia moved up in May but buyers are now holding off to see what happens when the new cracker in Taiwan gets up to full rates. In the next few weeks however there are outages across Asia, in particular in South Korea which should help balance supply in the short term at least. June prices for EDC settled higher than in May at around $420-430/ton cfr. Initial offers for July arrivals suggest that prices might soon reach $440/ton. The increase is attributed to a tighter supply/demand balance and increased ethylene costs.

## VCM

Prices for VCM spot shipments from the US have increased again into June with the latest range now quoted as $620-640/ton fob. The tightness in Europe has stimulated some interest and some sellers have indicated that prices could in fact be higher by the end of the month.

In West Europe, the problems at Shin-Etsu in the Netherlands started on 21 May and are likely to continue for a number of weeks. The company declared force majeure on VCM and of course its own PVC production was impacted too. The Arkema plant at Lavera has also been closed due to a fire at its third VCM furnace on the site on 24 May. As yet there is no word on how long these plants will be out. There are also other planned outages elsewhere and all these events have had a considerable tightening effect on VCM supplies.

Asian prices of VCM continue to move upwards. This is based on the tighter supplies as a result of the outage season and also due to improving PVC prices. In Northeast Asia, June offers started at $780/ton cfr, up $65/ton on May levels but the market appears to have settled slightly below this at $760/ton cfr, up $45/ton. There is new capacity expected on stream in China at SP Chemicals and this may help to ease the current tightness in the market. Prices in Southeast Asia remain at a slight premium to those seen elsewhere in Asia.

## PVC

Some PVC sectors in the US remain positive. The pipe market is now described as good and the siding market appears reasonable. Overall however the market is probably slower for this time of year and this is mainly attributed to the still weaker housing market. That said, however, there has been another price increase nominated for June of 2 c/lb and strong exports should continue to support this increase.

Supplies appear to be tighter in Europe. Planned outages at a number of producers and the problems at Shin-Etsu, which has also impacted production at CIRES, have meant stocks are quite low across the system. Producers are therefore looking for a price increase for June of Euro60/ton although at this stage it is not yet confirmed if this has been successful or not. Given the tightness in PVC stocks, the problems with VCM supply and the higher ethylene prices, producers will be keen to see this increase pushed through.

The main talk in the industry this month has been the announcement of the purchase of the Norsk Hydro vinyls and chlor-alkali assets by Ineos for around Euro670 million and the separate sale of Ineos' PVC paste business to Vinnolit. What is interesting is that the Norsk Hydro assets include PVC paste assets and so there has been some industry talk at to what might happen to these once Ineos takes over. All of the deals are subject to the usual approvals.

As mentioned, Vinnolit has confirmed that it plans to purchase the E-PVC (Emulsion PVC) assets that are currently owned by Ineos ChlorVinyls. The deal involves the E-PVC production facilities at Hillhouse in the UK and the German plant at Schkopau. Under the terms of the deal, Vinnolit has also agreed to take the entire production output of the Ineos Paste PVC plant at Porto Torres in Italy. The value of the deal has not been disclosed although in its statement regarding the sale, Ineos states that the E-PVC business has an annual turnover of approximately Euro150 million. Ineos ChlorVinyls will retain its VCM and Suspension PVC (S-PVC) operations in the UK, Germany and Italy.

Elsewhere, the sale of Petkim is said to have generated a lot of interest. At one point it was reported that 22 companies had put in bids but of those it appears that only 18 may have met the tender requirements. Turkey is of course an important market in terms of PVC and a share in Petkim would be considered an important strategic development. All bids for the 51% share were originally to have been declared by 15 June but this has just been put back until 25 June. There have been a number of attempts in the past to privatise Petkim but this latest round seems to have the most chance of success. Petkim holds around 30% of the domestic market with the remaining demand satisfied with imports from over 40 origins. It is possible that the future owners would be keen to see an expansion of the local production assets. Given the current activity by Ineos in the acquisition market it was of no surprise to hear that Ineos was one of those reported to have put in a bid for the Petkim shares.

In India, it has been reported that Finolex has delayed the re-start of its PVC plant after its maintenance outage and this is contributing to the current tightness in the Indian market. Demand is good although the monsoon season this month is likely to have some impact. Latest quotes for shipments to India have been heard as high as $990/cfr.

Elsewhere in Asia, there have also been price increase nominations. June appears to have settled at around $940-960/ton cfr in Northeast Asia, about $30/ton up from May. Prices in Southeast Asia are slightly lower with the exception of India.

Earlier offers for July started above $1000/ton but some buyers, particularly distributors are now waiting. This $1000/ton threshold has always been a difficult bridge for sellers to cross and always makes buyers adopt a 'wait and see' approach so the next few weeks will probably result in the usual standoff in the market. Indeed, this week it appears that the current offers have reduced slightly to $970-980/ton. These higher prices are based on the tighter supply situation and also the expected Chinese export rebate changes.

In the domestic market in China, PVC supply is still seen as tight overall and demand is good. Calcium carbide supply is tight and operating rates of acetylene-based PVC are constrained. PVC prices have been increasing in line with the increases in calcium carbide prices. Prices in East China and South China are now Rmb7800-7900/ton for acetylene-based PVC and Rmb8000-8300/ton for ethylene-based PVC. Prices in North and Middle China are generally Rmb100/ton lower than in East China.

Several highways in South China have recently started to charge according to the weight of vehicles. This has increased the costs of logistics to Guangdong from other provinces. PVC is therefore now tighter in Guangdong. However demand is currently constrained due to power shortages and therefore a further price increase is thought unlikely.

Shanxi province has announced measures to control calcium carbide capacity. A list of 47 calcium carbide plants with a combined capacity of 350,000 tpa has been published and these plants will be pulled down by July this year. By 2009, 58% of the total capacity of the Shanxi province with old technology will be stopped. These measures are in response to the state policy on high energy consuming, high polluting and resource-intensive industries.

Although there has been no formal announcement yet by the Chinese government, most market players expect that the government will adjust the export rebates of PVC from 1 July 2007. The PVC export rebate is likely to reduce from 11% to 5%.

The PVC export market has therefore been suspended this month due to the expectation of these changes in the rebate policy. Some recent small export shipments have been seen with price levels of $930-940/ton fob for acetylene-based PVC and $960-970/ton for ethylene-based PVC.

In company news it has been reported that Hebei Baoshuo could face bankruptcy due to the bankruptcy of its major shareholder, Baoshuo Group. Cangzhou Chemical, who has warrant relation with Baoshuo Chemical, is now also facing possible bankruptcy due to the bankruptcy application given by its debtor.

## ASIAN CHLOR-ALKALI CONFERENCE

This is a final reminder that the Asian Chlor-alkali Conference will be held on 21-22 June 2007 in Shanghai, China. Please check our website, www.orbichem.com for further details.

### CHLOR-ALKALI BUSINESS SEMINAR

Our next seminar is being held on 9-12 October 2007 in France. The seminars are designed to prepare delegates for the global and increasingly transparent chlor-alkali business and are aimed at new recruits into the chlor-alkali and derivatives business as well as at organisations with new businesses to manage. Places are limited to ensure a good level of attention to individual needs and understanding. Please see our website, www.orbichem.com for further details.

## MONOCHLOROACETIC ACID WORLD STUDY 2005-2015

Since our last MCAA study, published in 2005, there have been some important structural changes to the industry. Arkema has ceased production in France as part of an overall chlorine restructuring, in the Netherlands Akzo Nobel has changed the location and the capacity of its largest global production unit, and German producer CABB has new owners. In the US, Niacet had expanded its capacity to produce, and new capacity is being constructed in Russia. In our latest study, due to be published in May 2007, there will be a full review of global markets, by sector and by geography for 2005-2006. Forecasts for markets will be included for 2007-2015. There will also be sections on manufacturing techniques and a manufacturing cost review (including chlorine) and sensitivities by process. As usual, relevant trade flows and capacity charts by producer will be included, along with key producer reviews. Order forms can be found via our website.

## HCl-to-CHORINE STUDY

Coinciding with the mid-2006 announcements that Bayer will build 215 ktpa HCl-to-chlorine electrolysis technology as a part of its massive investments in isocyanates and polycarbonate manufacture in China, and that Mitsubishi Chemical will use Sumitomo direct oxidation technology to convert HCl to chlorine as part of its new melt-process polycarbonate manufacture in Japan, Tecnon OrbiChem announces a new and timely report.

Companies making chlorine derivatives often have hydrogen chloride as an unwanted by-product. This may have to be disposed of as muriatic acid, with considerable loss of value compared to the chlorine input. Conversion of the hydrogen chloride back to chlorine is an option which is examined in our new study: "HCl-to-Chlorine: Markets, Technologies and Economics". Chemical and electrolytic methods have been available for years, but both have received dramatic improvements in efficiencies recently, through new catalysts in the case of chemical routes and through oxygen depletion cathodes in the case of electrolytic recovery. The study compares the economics of the different routes and the advantages they offer. All companies, which have by-product hydrogen chloride and a need to improve their chlorine position, could benefit from this new study from Tecnon OrbiChem. Please see our website www.orbichem.com for further details.

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Tecnon OrbiChem

Editor Janet Wright
China & Taiwan Xu Peng

Tecnon OrbiChem Ltd
12 Calico House,
Plantation Wharf, York Place
London SW11 3TN UK

Tel: +44 20 7924 3955
Fax: +44 20 7978 5307
Email: janet@orbichem.com
Web: www.orbichem.com