

Americas: Chemicals: Commodity

Equity Research

Key takeaways on chlor-alkali cycle from PPG's conference call

What's Changed

On Friday 2/25/11, we hosted a conference call with PPG management to discuss the dynamics of the chlor-alkali market. Key takeaways were: 1) low domestic natural gas prices will continue providing US chlor-alkali producers a cost advantage over global competitors; 2) higher export volumes for PVC resins are driving demand for chlorine and offsetting weakness in the domestic construction market; 3) end market demand for caustic (specifically from general industrial use) remains robust and further price increases are likely. PPG management was also confident that incremental capacity additions from Shintech and Formosa will be offset by capacity withdrawals from existing players, and additional industry capacity will be tolerable.

Implications

Friday's conference call reinforces our constructive view of the chlor-alkali cycle. We believe that further demand improvement, including the potential for a rebound in heavily depressed domestic volumes, will drive up operating rates providing significant earnings tailwind for US based chlor-alkali levered companies including PPG (CL-Buy, \$88.38), DOW (Buy, \$37.16) and WLK (Neutral, \$47.81). Additionally, an eventual recovery in the US housing market could provide further meaningful upside for these stocks.

Key risks

Spikes in US natural gas prices, announcements of new global capacity additions.

Companies levered to the chlor-alkali up-cycle

Company	Chlor -Alkali		Chlorine Capacity US (Mt)	
	% of sales	% of EBIT	Company	% of US
PPG	11%	16%	1,611	13%
DOW	6%	7%	3,541	28%
WLK	30%	0%	250	2%

Goldman Sachs Research estimates

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US producers benefit from improving industry fundamentals

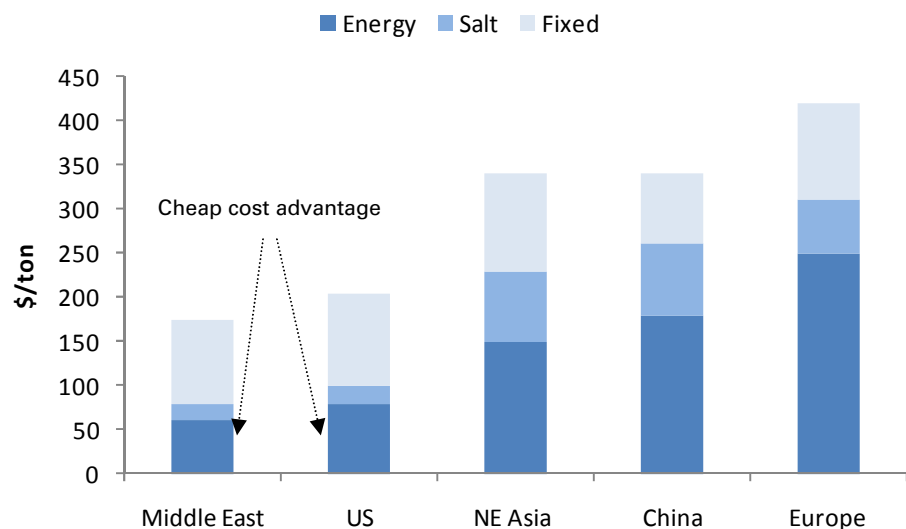
On Friday, 02/25/11, we hosted a conference call with PPG senior management to discuss the dynamics of the chlor-alkali market. In attendance were Michael McGarry (Senior Vice President, Commodity Chemicals), Robert Dellinger (Chief Financial Officer) and Vince Morales (VP, IR). The conference call focused on the key drivers for the chlor-alkali market and strong growth potential for the business. We believe further demand improvement will drive up currently depressed industry-wide operating rates, providing a meaningful earnings tailwind for US based chlor-alkali companies, including PPG (CL-Buy), DOW (Buy) and WLK (Neutral). Key takeaways from the conference call include:

1) Cheap natural gas is a game changer

Since chlor-alkali is a commodity chemical, raw material cost is the key driver of competitive advantage. One of the single biggest costs to chlor-alkali is energy (power generation). Cheap domestic natural gas prices have made US producers using natural gas for power generation among the most cost competitive in the world – well below more expensive oil and coal based Asian and European competitors.

Exhibit 1: Global Chlor-Alkali production cost

Cheap natural gas gives US producers an advantage in an energy intensive process



Source: Company data and Goldman Sachs research estimates

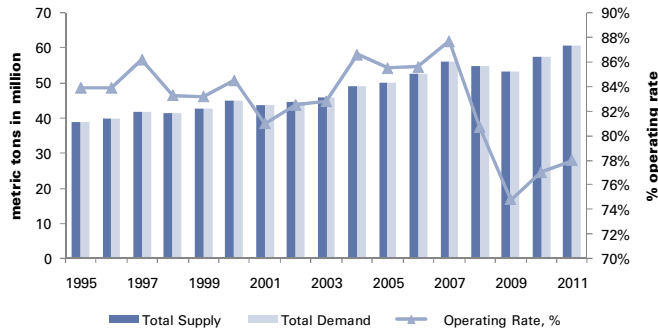
As shown in exhibit 1, cheap natural gas has significantly lowered the energy cost of the chlor-alkali process for US producers and has moved them down the cost curve with only the Middle East currently holding a cost advantage over it. However, since most of the Middle Eastern production is for export purposes, it is appropriate to add freight cost (~\$170/ton) to the production cost, which would put US producers at par with the Middle East if not ahead.

Lower production costs have allowed US based producers to operate at significantly higher operating rates than the overall industry by exporting to regions which lie higher on the cost curve. As shown in exhibits 2 and 3 below, while global operating rates are still below 80%, US chlor-alkali producers are running at operating rates close to 90%, despite a depressed domestic construction market, which allows them to generate profits at the

expense of Asian and European competitors. PPG management and industry sources (CMAI & Chemical Data) remain bullish on the export prospects for PVC (Poly Vinyl Chloride), EDC (Ethylene Dichloride) and VCM (Vinyl Chloride Monomer) as long as the US can sustain its cheap natural gas advantage.

Exhibit 2: Global chlor-alkali operating rates

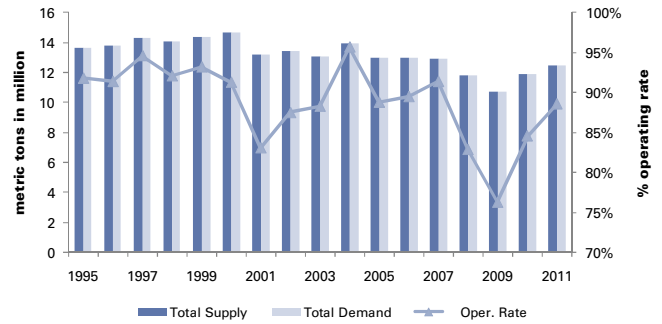
Global rates still below 80%



Source: CMAI and Goldman Sachs Research

Exhibit 3: US chlor-alkali operating rates

US operating rates are significantly above global rates (85%+)



Source: CMAI and Goldman Sachs Research

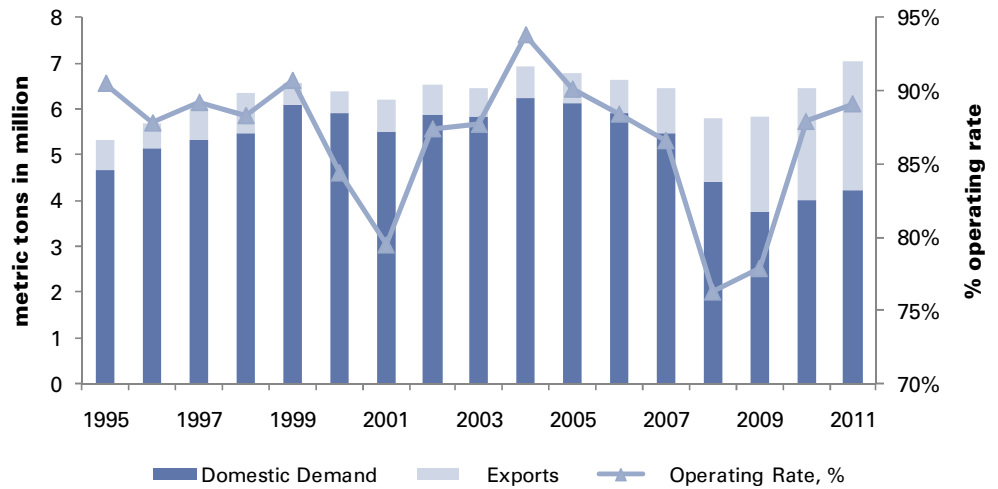
2) PVC exports driving higher demand for chlorine

PVC makes up the largest end market for chlorine (43% of the US end market demand) and continues to be the prime driver of US chlorine demand. Cheap natural gas provides a dual benefit when it comes to the PVC manufacturing process. Not only does it lower the energy cost of the chlor-alkali process, but it also gives US producers cheap ethylene. In the VCM production process, ethylene makes up nearly 63% of total cash cost with chlorine accounting for only 24%. Natural gas based ethylene holds a 15 cents/lb cost advantage over naphtha based ethylene. North America’s preferred cost position for ethylene and PVC gives it the competitive advantage to allow it to export to higher cost regions such as Latin America.

While CMAI data indicates that exports accounted for nearly 38% of total US PVC production during 2010, PPG management indicated that exports made up as much as 49% of total US production in December when domestic demand slipped due to typical seasonal factors. As shown in Exhibit 4, despite the continued slump in domestic PVC demand, which is heavily dependant on the construction industry, US based PVC manufacturers have been able to maintain healthy operating rates (85%+) due to strong export demand. In fact, PVC exports currently account for nearly 13% of total US Chlorine production.

Exhibit 4: US PVC demand (domestic + export) and operating rates

Exports supporting higher operating rates, offsetting weak domestic demand



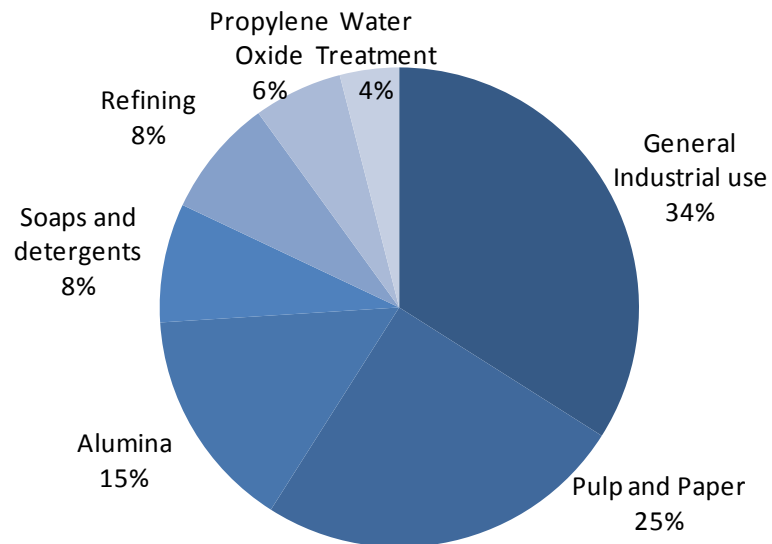
Source: CMAI and Goldman Sachs Research

3) Robust end market demand for caustic

While chlorine demand is primarily driven by the construction sector, caustic has more diverse end market uses and is more levered to the manufacturing sector with industrial activity acting as the best barometer for caustic demand. The caustic business is showing a V-shaped recovery from the depths of recent recession as major end markets have recovered to pre-recession levels.

Exhibit 5: End markets for caustic

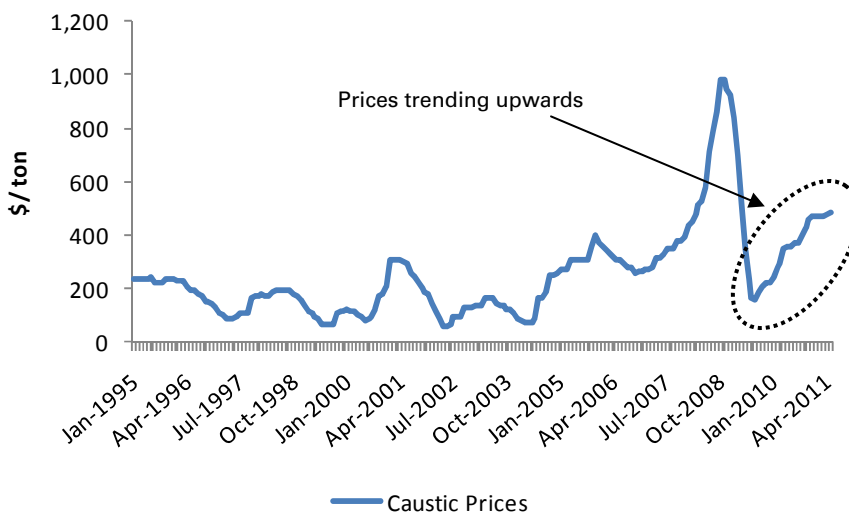
General industrial use, paper and pulp, and alumina driving strong demand recovery



Source: Company data and Goldman Sachs research estimates

Caustic is a byproduct of the chlor-alkali process and with significant capacity rationalization for chlorine (-13% between 2000-2009), the supply of caustic contracted. With the strong recovery in caustic end markets (particularly in general industrial use, paper & pulp, and alumina) significant tightening occurred in S/D balances. Caustic prices started moving up in the early part of 2010 and the second half of the year saw prices increase by over \$100/ton. In fact, PPG recently announced another \$40/ton price hike. Management also indicated that, based on strong industry fundamentals, further price hikes cannot be ruled out.

Exhibit 6: US Caustic Prices
Demand recovery driving up prices after historic slump



Source: CMAI and Goldman Sachs research estimate

Implications for covered companies

PPG

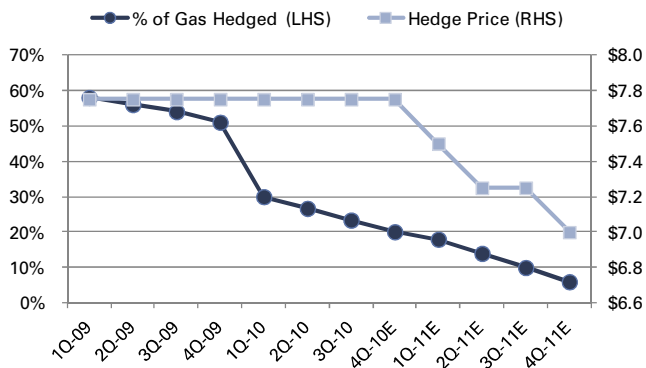
PPG’s chlor-alkali assets have the capacity to produce 1.6 million tons of chlorine (13% of the US market) utilizing primarily diaphragm technology. Diaphragm is the more desirable of the two methods because it does not create the same environmental liabilities as the older mercury method. Along with Olin (Not Rated) and Oxy, PPG is one the biggest player in the US merchant chlorine market. We expect PPG’s Commodity Chemicals segment to generate nearly \$1.5 bn in sales and \$300 mn in EBIT in 2011. PPG has an advantaged cost position not only as a North American producer with access to cheap natural gas, but also within North America due to its technological edge as well as some down-stream integration. We believe strength in the chlor-alkali cycle will make a meaningful contribution to PPG earnings and cash flow growth in 2011.

Due to natural gas hedges at materially higher prices rolling off, PPG has one of the biggest 2011 natural gas tailwinds in our coverage. We estimate that in 2010 25% of PPG’s natural gas costs were hedged at an average of \$7.75, and so PPG’s effective natural gas costs averaged approximately \$5.50/MMBtu despite spot gas prices that were much lower. Looking forward to 2011, we estimate that only 12% of natural gas costs will be hedged at an average price of \$7.25. For 2012, we estimate that hedges will fall to 3% at an average

price of \$7.00. Given that a \$1/MMBtu change in gas prices reduces PPG’s operating expense by \$60 mn-\$70 mn, we estimate cost savings of \$78 mn in 2011 and a further \$4 mn in 2012 from gas hedges rolling off. These cost savings would translate into \$0.34/\$0.36 per share (after-tax) in 2011/2012.

Exhibit 7: PPG natural gas hedges (% of mix & price)

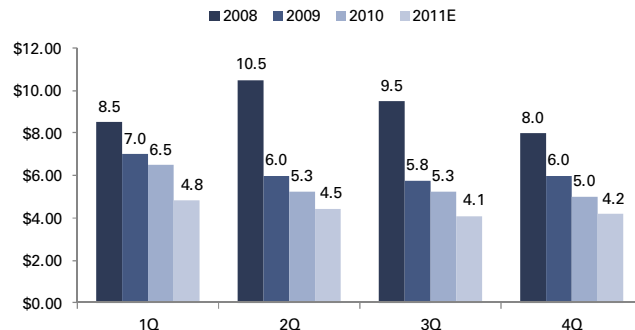
PPG benefits as legacy hedges at high prices roll off



Source: Company data and Goldman Sachs Research estimates.

Exhibit 8: PPG’s effective natural gas costs (\$/MMBtu)

Natural gas costs headed much lower in 2011



Source: Company data and Goldman Sachs Research estimates.

PPG currently trades at 13.8X our 2011 EPS estimate of \$6.30 vs. a 10-year average (which included a higher component of commodity earnings) of 15X. Our 12-month price target of \$104 is based upon a P/E multiple of 16.5X our 2011 EPS estimate of \$6.30, which is \$0.37 or 6% above the current consensus estimate. We continue to believe that consensus estimates will be revised upwards and the valuation disparity will erode as PPG delivers record EPS results in 2011 and investors discover there is far more to the PPG story than painting walls and cars. Key risks include a global economic slowdown and rising feedstock costs.

DOW

With a nameplate capacity of 3.5 million tons, Dow Chemicals is the biggest chorine producer in the US. However, most of this production is for internal consumption and DOW is not a major player in the merchant chlorine market. Higher VCM and caustic prices should provide an earnings tailwinds for DOW to supplement the four other drivers to our Buy rating: 1) exposure to its US ethylene assets; 2) leverage to global economic growth; 3) consensus EPS estimates that are too low, in our view; and 4) synergies from the Rohm & Haas acquisition.

We are maintaining our price target of \$42 based on SOTP analysis which reflects a blended multiple of 7.4X our 2011 EBITDA estimate. Key risks include raw material price spikes and unplanned outages.

WLK

With 250k tons of capacity WLK makes up only 2% of US chlorine capacity. The company uses all the chlorine it produces for PVC manufacturing and does not sell in the merchant market. In fact, WLK is a net purchaser of chlorine. The company plans to bring online an additional 250k of ECU (electrochemical unit) capacity in the second half of 2013 to achieve full vertical integration of its chlorine needs. In our opinion, this will be the key to achieving profitably in the Vinyl business. We are maintaining our price target of \$52 based

on SOTP analysis which reflects a blended multiple of 6.0x our 2011 EBITDA estimate. Upside risks include recovery in construction markets. Downside risks include increases in feedstock costs.

Rating and pricing information

Dow Chemical Company (B/A, \$37.16), PPG Industries, Inc. (B/A, \$88.38) and Westlake Chemical Corp. (N/A, \$47.81).

Reg AC

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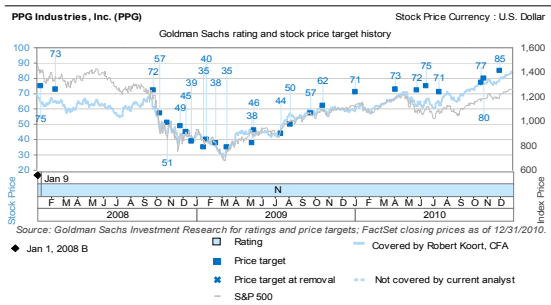
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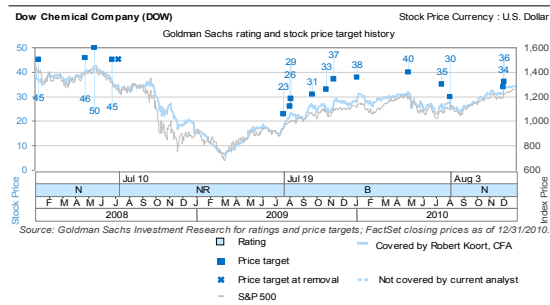
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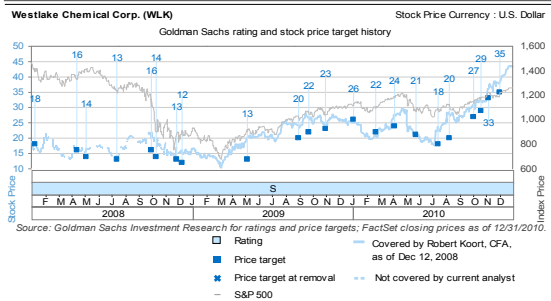
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