

February 28, 2008

Chemicals

**Kevin W. McCarthy, CFA**

212.847.5370  
kmccarthy@bofasecurities.com

**Vital Aelion, Ph.D.**

212.933.3240  
vital.aelion@bofasecurities.com

**B. Christian Massey, CPA, CFA**

212.847.6359  
bernard.c.massey@bofasecurities.com

**Top Picks**

Ticker	Rating	Price	Target
CE	B	\$40.60	\$50.00
PPG	B	\$65.18	\$87.00

**Least Favorites**

Ticker	Rating	Price	Target
NONE			

**Chlor-Alkali Corner**

**Stars Aligning for Attractive Margins in 1H08**

- ▶ **Conclusion:** We remain cautious on deeper cyclical commodity chemical stocks but, within that realm, chlor-alkali exposure is starting to look more attractive to us relative to say ethylene/PE. Three developments support the case for healthier chlor-alkali profitability: (1) Olin’s declaration of *force majeure* on 2/21; (2) Dow’s announced a net capacity reduction at Freeport, TX on 1/29; and (3) Dow’s renewal of a contract to supply Shintech with VCM makes it less likely that Shintech will proceed with plans to expand chlor-alkali capacity in Texas. With flat domestic supply in 2008 and positive demand, electrochemical unit (ECU) margins should remain attractive if natural gas behaves.
- ▶ **We expect ECU values to rise in 1H08 with attractive margins.** Curtailment of chlorine production due to sluggish demand has tightened the supply of co-product caustic soda with positive implications for pricing and margins. 1Q caustic prices are up ~\$50/ton vs. 4Q07 to \$450+/ton (benchmark levels higher) and a record \$410/dmt (\$373/ton) for alumina producers in 1H08. In chlorine, OXY recently led a proposed hike of \$35-50/ton. Weak chlorine demand remains a barrier to implementation, but producers can now point to cost escalation with natural gas at \$9/MMBtu (+20% YTD). On balance, we believe ECU values will increase in 1Q with modest margin expansion as well in 1H08. We project 2008 margins will increase 9% over 2007, followed by a decline next year.
- ▶ **Impact to stocks:** 1H08 is tracking a bit better than expected, although we are wary of rising natural gas where each \$1/MMBtu translates to ~\$25/ton of cost. Among chlor-alkali players, we view PPG (PPG, \$65.18, Buy, Target \$87) as most attractive given ongoing portfolio transformation. A “slow fade” scenario for ECU margins is consistent with our long-term forecasts for PPG, Dow (DOW, \$39.17, Neutral, Target \$44), Westlake (WLK, \$17.78, Neutral, Target \$21) and Georgia Gulf (GGC, \$6.91, Neutral, Target \$8). Overall, we rate the sector as market weight. Celanese (CE, \$40.60, Buy, Target: \$50) is a top pick along with PPG.
- ▶ **Valuation:** The chemicals sector’s median multiple is 13.8x 2008E EPS vs. 14.2x for the S&P500, which we view as fair.
- ▶ **Sector View:** Market Weight.
- ▶ **PORTFOLIO MANAGERS’ SUMMARY: Page 2.**

Figure 1: ECU Values and Margins, 1Q04-1Q08E

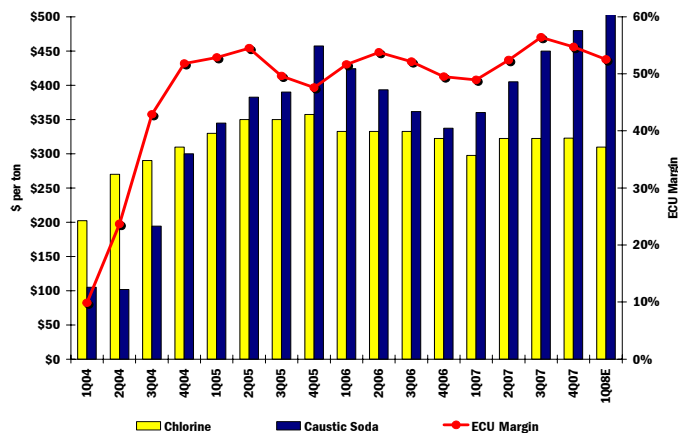
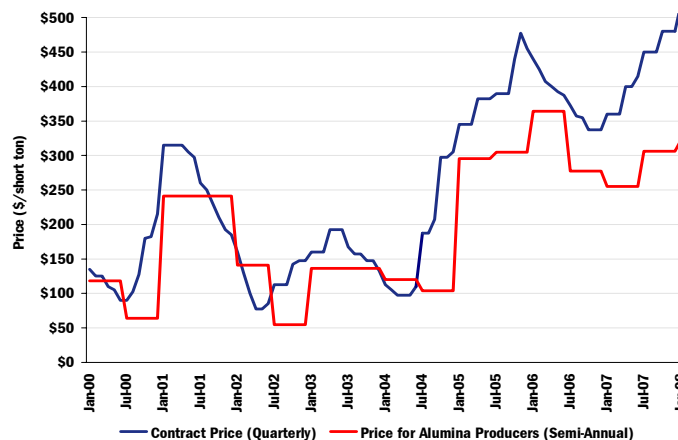


Figure 2: Caustic Soda Prices, 1Q00-1Q08E



Source: CMAI, Banc of America Securities LLC estimates

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## Portfolio Managers' Summary

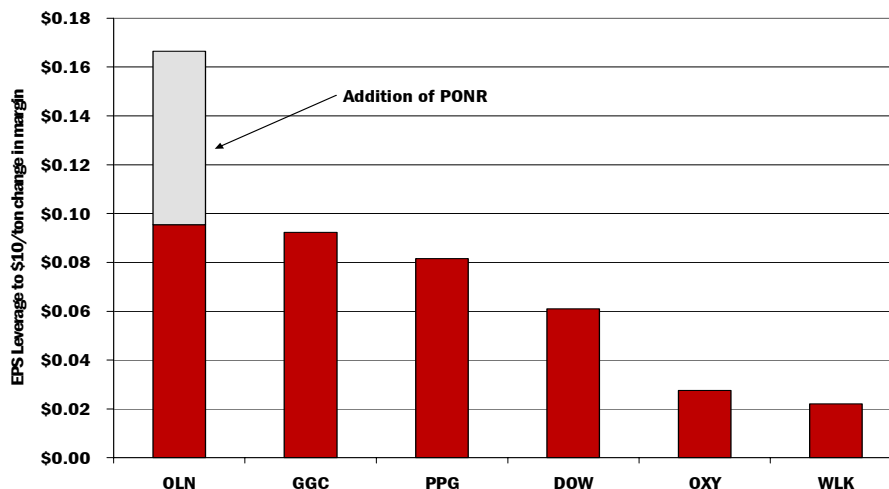
### Stocks We Discuss In This Report

Ticker	Price	Rating	Target
DOW	\$39.17	Neutral	\$44
PPG	\$65.18	Buy	\$87
WLK	\$17.78	Neutral	\$21
GGC	\$6.91	Neutral	\$8

- ▶ **Our 12-month thesis on the sector.** We rate the chemicals sector as market weight. Our recommendations reflect a balanced approach to cyclicity. Picks include three specialty names (ALB, ARG and ROH) and three hybrids (CE, FMC and PPG). We are more cautious on deeply cyclical commodity names.
- ▶ **Our call today in a nutshell.** Three developments support the case for healthier chlor-alkali profitability: (1) Olin's declaration of *force majeure* on 2/21; (2) Dow's announced net capacity reduction at Freeport, TX on 1/29; and (3) Dow's renewal of a contract to supply Shintech with VCM which makes it less likely that Shintech will go through with plans to expand chlor-alkali capacity at Chocolate Bayou, TX in 2011 (+4% of N.A. capacity). So far, 1H08 is tracking a bit better than expected, although we have one eye on rising natural gas where each \$1/MMBtu translates to \$~25/ton in incremental cost.
- ▶ **Risks to our call.** We see the greatest risk to the chemicals sector as sluggish U.S. demand given elevated energy and pressure in housing/autos.

Figure 3

**Selected U.S. Caustic Soda Producers**  
**EPS Leverage to a \$10/ton Increase in Margin**  
(\$ per share)



Note: Olin leverage shown as adjusted for the acquisition of Pioneer (PONR)  
Source: Company reports, Banc of America Securities LLC estimates

## Chlor-Alkali Update

**Chlor-alkali exposure is starting to look more attractive to us near-term.** In Figure 3 we depict EPS leverage of major chlor-alkali producers. We remain cautious on deeper cyclical commodity chemical stocks but, within that realm, chlor-alkali exposure is starting to look more appealing to us relative to ethylene/PE (please see our report of 2/25 for our analysis of the ethylene cycle). Three developments support the case for healthier chlor-alkali profitability: (1) Olin's declaration of *force majeure* on 2/21; (2) Dow's announced net capacity reduction at Freeport, TX on 1/29; and (3)

Dow's renewal of a contract to supply Shintech with VCM which makes it less likely that Shintech will go through with plans to expand chlor-alkali capacity at Chocolate Bayou, TX in 2011 (550,000 short tons or 4% of 2008E N.A. capacity). Please see Table 1 for the N.A. caustic soda supply outlook. With flat domestic supply in 2008 and positive demand, electrochemical unit (ECU) margins should remain attractive, especially if natural gas behaves since \$1/MMBtu translates to \$~25/ton of incremental cost.

Table 1

**U.S. and Canada Caustic Soda Market**  
**Incremental Production Capacity, 2006-2011E**  
(thousand short tons)

Company	Location	2006	2007	2008E	2009E	2010E	2011E	Total
Shintech (Phases I & II)	Iberville parish, LA			303	212	30		545
Dow Chemical	Fort Saskatchewan, Canada	(91)	(454)					(545)
Dow Chemical	Freeport, TX						(495)	(495)
Oxy (KOH Conversion)	Taft, LA			(250)				(250)
Bayer	Baytown, TX							0
Equa-Chlor	Longview, WA	43	43					85
Canexus	North Vancouver, Canada				47			47
Pioneer	St. Gabriel, LA				54			54
<b>Total</b>		<b>(48)</b>	<b>(411)</b>	<b>53</b>	<b>313</b>	<b>30</b>	<b>(495)</b>	<b>(559)</b>
U.S. and Canada								
Production Capacity		15,366	14,955	15,007	15,320	15,350	14,855	
Net Capacity Increase %		-0.3%	-2.7%	0.4%	2.1%	0.2%	-3.2%	-0.6%

Note: Bayer expansion has been shelved indefinitely  
Source: Banc of America Securities LLC estimates, CMAI

**Dow will remove 3.3% of N.A. chlor-alkali capacity in 2011.**

**Dow's plans at Freeport, TX are good news for chlor-alkali producers.** Dow announced on 1/29 its intention to build a state-of-the-art membrane chlor-alkali production facility in Freeport, TX, expected to come online in 2011. The company will retire aged diaphragm-based chlor-alkali assets resulting in a net reduction of 450,000 short tons chlorine/year (3.3% of N.A. industry capacity). Industry sources indicate that Dow will spend \$900 million to build 2.25 million short tons chlorine/yr, which we estimate is about half the cost of an equivalent "greenfield facility". Net industry capacity reduction of 450KT or 3.3% by 2011 bodes well for competitors OLN, GGC, PPG and WLK.

**Shintech will probably scrap plans to build new chlor-alkali capacity in 2011.**

**Renewal of Dow VCM supply agreement with Shintech is bullish for chlor-alkali.** The newly renegotiated VCM supply contract will likely lead Shintech to scrap/delay plans to build a 550,000 short ton chlorine/yr facility in Chocolate Bayou, TX, previously expected to come online in 2011. We believe that Shintech intended to build the Chocolate Bayou plant to displace a portion of the VCM contract with Dow, which appears to no longer be necessary. Our current projection of caustic, excluding the 2011 Shintech expansion, is summarized on Table 1. We are incrementally positive regarding the caustic market, given that essentially flat supply and moderate demand growth (2-3%/year) will likely sustain peak-like ECU margins through 2011.

**Operating rates remain healthy.**

**The cyclical trajectory of chlor-alkali remains moderate.** We view the U.S. market as balanced with *effective* operating rates of 92.6% in 1Q08 vs. the seasonally softer (but not so soft) 4Q07 at 91.7% and seasonally stronger 3Q07 at 96.8%. Persistent weakness in residential construction has resulted in lower demand for polyvinyl chloride (PVC) resin and its upstream precursor, chlorine. However, other end-use

markets for chlorine are in better shape and, in counter-balancing fashion, diminished supply of caustic soda, chlorine's co-product, has tightened that market allowing producers to raise prices. Market sources suggest that average U.S. caustic prices have increased \$50-80/ton, and perhaps less on the west coast due to competition from Asian imports.

**We expect ECU values to rise in 1H08 with attractive margins.** Curtailment of chlorine production due to sluggish demand has tightened the supply of co-product caustic soda with positive implications for pricing and margins. 1Q caustic prices are up ~\$50/ton vs. 4Q07 to \$450+/ton (benchmark levels higher) and a record \$410/dmt (\$373/ton) for alumina producers in 1H08. In chlorine, OXY recently led a proposed hike of \$35-50/ton. Weak chlorine demand remains a barrier to implementation, but producers can now point to cost escalation with natural gas at \$9/MMBtu (+20% YTD). On balance, we believe ECU values will increase in 1Q with modest margin expansion as well in 1H08. The price of natural gas, the key input cost for chlor-alkali, has increased 20% YTD to \$9.02/MMBtu. Anticipated chlor-alkali price increases suggest that ECU margin, a key measure of chlor-alkali profitability, will trend flat-to-up in 1H08 vs. 4Q07 (ECU = 1.0x chlorine + 1.1x caustic). We project 2008 margins will increase 9% over 2007, followed by a decline next year.

### Caustic Soda

**Olin declared *force majeure* on caustic soda on February 21.** The *force majeure* was declared as a result of (1) significant, unexpected operational interruptions, including plant shutdowns and (2) limited chlorine demand which restricts ability to produce caustic soda. Olin currently expects to supply its customers with approximately 70% of their typical contract volumes. Industry sources indicate that this *force majeure* should be short lived. Chlor-alkali producers had already proposed 2Q price increases ranging between \$50-\$80/short ton prior to the Olin announcement and we believe that most producers are currently asking for an \$80/short ton increase for 2Q. Olin's total chlor-alkali capacity accounts for 12% of N.A. industry capacity.

**Caustic soda appears tighter than previously thought in 1Q.** Market sources indicate that a number of producers issued a TVA (temporary voluntary allowance) of \$25/ton on the previously implemented \$75/ton increase to various accounts. Accordingly, sources are posting a revised price range of \$445-475/ton.

**Previously, caustic soda price for alumina set a new record in 1H08.** Caustic soda sold to alumina producers (10% of N.A. production) settled mid-January at a record \$410/dmt (\$373/short ton) for 1H08. This result was even better than our projection of \$385-390/dmt as outlined in our note of 12/11/07. The six-month contract settled \$75/dmt higher than 2H07 and \$10/dmt higher than the previous record established in 1H06. Far East chlor-alkali producers and Australian alumina manufacturers previously settled at \$300/dmt for 1H08, a \$30/dmt increase over 2H07.

### Chlorine

**We continue to expect price pressure.** The seasonal slowdown in demand has been exacerbated by ongoing weakness in the housing sector, hitting demand for chlorine especially hard in 4Q. Relatively stable chlorine pricing has been a good indicator that producers have shown discipline and cut production, including planned and unplanned outages, commensurate with poor demand. Looking ahead, overall weakness in housing/construction and slower growth in macroeconomic metrics is the basis for our forecast of a declining trend in chlorine pricing starting in 1Q08. We note that natural gas, a key input that accounts for 70% of variable cost, has increased 20% YTD to around \$9/mmBtu. Each \$1/mmBtu in gas translates to ~\$25/ton in incremental cost

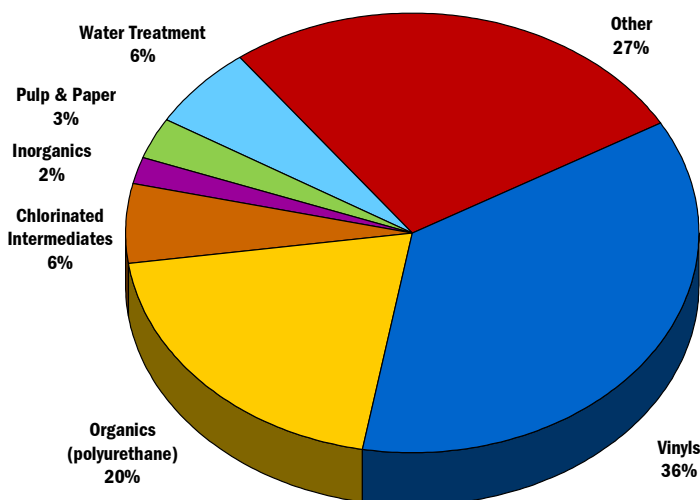
**There has been no price increase since 1Q07.**

per electrochemical unit (ECU = 1.0x chlorine + 1.1x caustic). Current avg. spot price is \$225-240/short ton vs. 1Q contract of \$280-300/short ton. The good news for producers is that very little new supply is being added in N.A. (see Table 1). Demand is projected to be slightly negative (-0.2%) in 2008. Long-term chlorine demand depends greatly on vinyls and urethanes, which account for 56% of global chlorine demand as shown in Figure 4.

**Prices could rise in 2Q, depending on natural gas levels.** Industry sources indicate that OxyChem announced a chlorine price increase of \$35/short ton to its pipeline accounts and \$50/short ton to its railcar accounts effective 2/21/08, or as contract terms allow. Prospects for a successful hike appeared poor at the time, but this is beginning to look like a wise insurance policy of sorts. Although demand remains weak, natural gas prices around \$9/mmBtu make for a more compelling argument for implementation.

Figure 4

**Chlorine  
Global Demand By End-Use, 2008E**



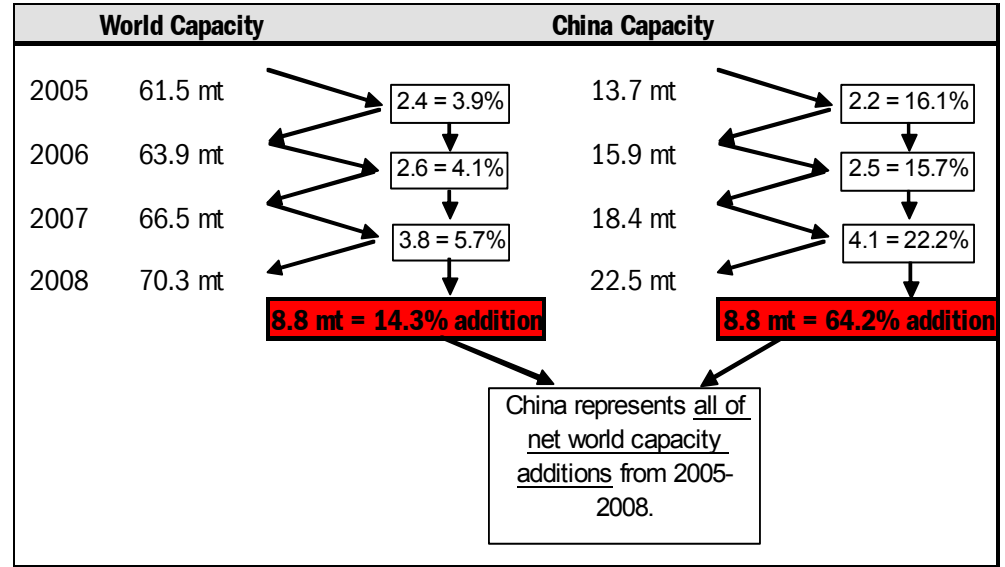
Source: CMAI

**On a global basis, China accounts nearly all of the incremental supply.** Global capacity additions are depicted in Figure 5. We expect China to account for roughly all of the world's net capacity additions over the next 3 years. Increased foreign capacity could have an impact on international trade balances and, ultimately, U.S. caustic soda prices, particularly in coastal markets that are more vulnerable to import pressure.

**We expect China to account for almost all of global net supply additions.**

Figure 5

**Global Chlor-Alkali Market  
Planned Net Capacity Additions, 2005-2008E**  
(thousand metric tons)



Source: Company reports, Banc of America Securities LLC estimates

**Commodity Chemicals**  
**Quarterly Price and Margin Trends, 2006 – 2009E**

(¢/lb, unless otherwise noted)

**Prices**

(Cents per Pound Unless Otherwise Noted)

<b>Building Blocks</b>	<b>2006</b>	<b>1Q07</b>	<b>2Q07</b>	<b>3Q07</b>	<b>4Q07</b>	<b>2007</b>	<b>1Q08E</b>	<b>2Q08E</b>	<b>3Q08E</b>	<b>4Q08E</b>	<b>2008E</b>	<b>1Q09E</b>	<b>2Q09E</b>	<b>3Q09E</b>	<b>4Q09E</b>	<b>2009E</b>
Ethylene	48.1	40.0	44.7	50.2	60.2	48.8	60.0	57.5	54.2	55.0	56.7	54.3	49.8	49.5	52.3	51.5
Propylene (Polymer Grade)	47.3	44.6	51.4	52.3	59.3	51.9	60.8	61.2	56.7	53.3	58.0	51.2	50.2	48.8	48.5	49.7
Styrene	64.8	64.8	71.3	68.1	68.8	68.2	70.4	72.0	67.3	67.3	69.3	67.3	67.3	64.3	65.0	66.0
Benzene (cents / gallon)	326.3	353.0	394.7	355.0	344.0	361.7	354.7	384.3	358.3	354.0	362.8	344.7	360.3	328.0	321.3	338.6
Ethylene Glycol (MEG)	41.1	40.8	43.7	45.7	65.0	48.8	63.5	54.2	48.9	43.3	52.5	39.9	38.4	36.5	35.9	37.7
Chlorine (\$ / short ton)	330.0	297.5	322.5	322.5	322.5	316.3	307.8	303.0	290.0	270.0	292.7	250.0	240.0	230.0	220.0	235.0
Caustic (\$ / short ton)	379.2	360.0	405.0	450.0	485.8	425.2	535.0	535.0	515.0	490.0	518.8	460.0	435.0	410.0	360.0	416.3
ECU (\$ / ECU short ton)	747.1	693.5	768.0	817.5	856.9	784.0	896.3	891.5	856.5	809.0	863.3	756.0	718.5	681.0	616.0	692.9
<b>Resins</b>																
High-Density Polyethylene (HDPE)	71.4	64.0	69.7	76.0	83.3	73.3	88.0	83.3	78.3	77.0	81.7	76.7	74.3	71.0	73.0	73.8
Low-Density Polyethylene (LDPE)	74.4	67.0	72.7	79.0	86.3	76.3	91.0	86.3	81.3	80.0	84.7	80.7	78.3	75.0	77.0	77.8
Linear Low-Density Polyethylene (LLDPE)	66.4	59.0	64.7	71.0	78.3	68.3	83.0	78.3	73.3	72.0	76.7	72.7	70.3	67.0	69.0	69.8
Polyethylene (Weighted Average)	70.4	63.0	68.7	75.0	82.4	72.3	87.0	82.4	77.4	76.0	80.7	76.2	73.9	70.6	72.6	73.3
Polypropylene (PP)	70.3	69.7	76.3	77.7	84.7	77.1	86.5	86.3	81.0	76.3	82.5	73.0	70.8	67.8	66.5	69.5
Polystyrene (PS)	90.2	94.6	100.3	99.0	100.8	98.7	102.9	104.0	99.7	99.7	101.6	99.7	99.3	96.3	97.0	98.1
Polyethylene Terephthalate (PET)	79.8	77.3	82.3	82.0	87.0	82.2	88.2	86.0	82.9	80.7	84.4	77.9	77.8	75.0	74.3	76.3
Polyvinyl Chloride (PVC)	44.3	37.3	42.7	45.3	50.7	44.0	52.0	49.7	45.7	46.3	48.4	47.3	44.7	42.0	43.7	44.4

**Cash Margins**

(Cents per Pound Unless Otherwise Noted)

<b>Building Blocks</b>	<b>2006</b>	<b>1Q07</b>	<b>2Q07</b>	<b>3Q07</b>	<b>4Q07</b>	<b>2007</b>	<b>1Q08E</b>	<b>2Q08E</b>	<b>3Q08E</b>	<b>4Q08E</b>	<b>2008E</b>	<b>1Q09E</b>	<b>2Q09E</b>	<b>3Q09E</b>	<b>4Q09E</b>	<b>2009E</b>
Ethylene (Ethane)	17.5	12.1	11.3	12.9	13.2	12.4	12.7	13.6	12.4	8.9	11.9	10.4	11.3	10.7	10.3	10.7
Ethylene (Propane)	18.0	10.7	11.3	10.2	7.7	10.0	11.6	13.2	11.2	6.8	10.7	8.2	9.9	8.7	7.8	8.7
Ethylene (Naphtha)	16.3	9.4	8.1	9.5	5.0	8.0	8.0	12.4	9.9	5.5	8.9	7.6	8.3	6.5	5.4	6.9
Ethylene (Weighted Average)	17.0	11.1	10.8	11.4	9.7	10.8	11.2	13.1	11.6	7.8	10.9	9.3	10.2	9.3	8.7	9.4
Styrene	11.7	11.1	11.6	11.6	10.7	11.2	10.4	10.1	9.9	9.5	10.0	9.7	9.7	10.3	10.2	10.0
ECU (\$ / ECU short ton)	387.2	339.6	402.6	461.1	471.6	418.7	480.1	485.2	461.7	397.3	456.1	328.5	297.7	268.5	187.0	270.4
<b>Resins</b>																
High-Density Polyethylene (HDPE)	6.1	5.5	5.8	5.3	3.6	5.1	6.1	5.0	5.4	3.0	4.9	2.0	4.8	2.1	0.6	2.4
Low-Density Polyethylene (LDPE)	4.6	4.1	4.2	3.9	2.0	3.5	4.5	3.4	4.0	1.5	3.3	1.0	3.9	1.3	-0.4	1.4
Linear Low-Density Polyethylene (LLDPE)	2.0	1.3	1.1	1.2	-0.1	0.9	2.2	0.7	1.2	-1.0	0.8	-1.2	1.2	-1.3	-2.5	-0.9
Polyethylene (Weighted Average)	4.5	3.9	3.9	3.7	2.1	3.4	4.5	3.3	3.8	1.4	3.3	0.8	3.4	0.9	-0.6	1.1
Polypropylene (PP)	5.9	7.1	6.4	6.9	6.8	6.8	7.2	6.4	5.9	4.6	6.0	2.8	1.8	0.4	-0.8	1.0
Polystyrene (PS)	23.3	28.5	26.2	28.0	28.8	27.9	29.1	28.4	28.3	28.3	28.5	28.2	28.3	28.3	28.3	28.3
Polyethylene Terephthalate (PET)	-0.2	-0.2	-0.6	-0.4	-1.8	-0.8	-1.6	-2.4	-2.4	-2.5	-2.2	-3.0	-2.7	-2.7	-3.0	-2.9
Polyvinyl Chloride (PVC)	10.3	7.2	7.7	7.5	6.5	7.2	8.4	7.8	7.1	6.0	7.3	5.2	4.8	3.1	1.4	3.6
Integrated Ethylene/PE Margin	21.5	15.0	14.8	15.1	11.8	14.2	15.7	16.4	15.4	9.2	14.2	10.1	13.6	10.2	8.1	10.5

Source: CMAI, Banc of America Securities LLC estimates

**Commodity Chemicals**  
**Monthly Price and Margin Trends, 3Q07 - 3Q08E**

(¢/lb, unless otherwise noted)

	3Q07	Oct	Nov	Dec	4Q07	Jan	Feb	Mar	1Q08E	Apr	May	Jun	2Q08E	Jul	Aug	Sep	3Q08E
<b>Prices</b>																	
<b>Building Blocks</b>																	
Ethylene	50.2	57.5	61.5	61.5	60.2	61.5	59.5	59.0	60.0	58.5	57.5	56.5	57.5	54.5	54.5	53.5	54.2
Propylene	52.3	54.3	61.5	62.0	59.3	62.5	59.5	60.5	60.8	61.5	61.0	61.0	61.2	59.0	56.0	55.0	56.7
Styrene	68.1	68.5	69.0	68.8	68.8	69.3	70.5	71.3	70.4	73.0	73.0	70.0	70.9	67.0	67.0	68.0	70.9
Benzene (cents / gallon)	355.0	349.0	348.0	335.0	344.0	345.0	354.0	365.0	354.7	380.0	398.0	375.0	384.3	361.0	353.0	361.0	358.3
Ethylene Glycol (MEG)	45.7	59.5	63.3	72.1	65.0	72.1	66.2	52.2	63.5	55.3	55.5	51.9	54.2	48.7	50.1	47.8	48.9
Chlorine (\$ / short ton)	322.5	322.5	322.5	322.5	322.5	307.5	308.0	308.0	307.8	303.0	303.0	303.0	308.0	290.0	290.0	290.0	307.9
Caustic (\$ / short ton)	450.0	480.0	480.0	497.5	485.8	535.0	535.0	535.0	535.0	535.0	535.0	535.0	535.0	515.0	515.0	515.0	535.0
ECU (\$ / ECU short ton)	817.5	850.5	850.5	869.8	856.9	896.0	896.5	896.5	896.3	891.5	891.5	891.5	896.5	856.5	856.5	856.5	896.4
<b>Resins</b>																	
High-Density Polyethylene (HDPE)	76.0	80.0	85.0	85.0	83.3	88.0	88.0	88.0	88.0	86.0	83.0	81.0	83.3	79.0	79.0	77.0	78.3
Low-Density Polyethylene (LDPE)	79.0	83.0	88.0	88.0	86.3	91.0	91.0	91.0	91.0	89.0	86.0	84.0	86.3	82.0	82.0	80.0	81.3
Linear Low-Density Polyethylene (LLDPE)	71.0	75.0	80.0	80.0	78.3	83.0	83.0	83.0	83.0	81.0	78.0	76.0	78.3	74.0	74.0	72.0	73.3
Polypropylene (PP)	77.7	80.0	87.0	87.0	84.7	88.0	85.5	86.0	86.5	87.0	86.0	86.0	86.3	83.5	80.5	79.0	81.0
Polystyrene (PS)	99.0	99.5	101.5	101.5	100.8	101.5	103.2	104.0	102.9	105.0	105.0	102.0	104.0	100.0	99.0	100.0	99.7
Polyethylene Terephthalate (PET)	82.0	84.0	87.0	90.0	87.0	90.0	88.5	86.0	88.2	85.8	86.3	86.0	86.0	82.8	83.3	82.8	82.9
Polyvinyl Chloride (PVC)	45.3	48.0	52.0	52.0	50.7	52.0	52.0	52.0	52.0	52.0	49.0	48.0	49.7	46.0	45.0	46.0	45.7
<b>Cash Margins</b>																	
<b>Building Blocks</b>																	
Ethylene (Wtd Avg.)	11.4	9.4	10.1	9.8	9.7	9.6	11.8	12.2	11.2	12.3	13.0	13.9	13.1	12.9	12.0	10.1	11.6
Styrene	11.6	10.6	10.1	11.4	10.7	10.7	10.3	10.3	10.4	10.7	9.7	9.8	10.1	9.1	10.0	10.4	9.9
ECU	461.1	475.0	459.7	480.2	471.6	483.7	474.6	481.9	480.1	477.6	487.6	490.4	478.3	459.9	460.8	464.4	481.0
<b>Resins</b>																	
High-Density Polyethylene (HDPE)	5.3	2.2	4.1	4.6	3.6	5.3	6.3	6.7	6.1	5.5	4.6	4.9	5.0	5.7	6.0	4.5	5.4
Low-Density Polyethylene (LDPE)	3.9	0.7	2.4	3.0	2.0	3.7	4.6	5.1	4.5	3.9	3.0	3.4	3.4	4.3	4.6	3.1	4.0
Linear Low-Density Polyethylene (LLDPE)	1.2	-1.5	0.2	0.8	-0.1	1.5	2.5	2.7	2.2	1.3	0.2	0.6	0.7	1.5	1.8	0.4	1.2
Polypropylene (PP)	6.9	7.2	6.8	6.3	6.8	6.7	7.6	7.2	7.2	6.7	6.3	6.3	6.4	5.9	5.9	6.0	5.9
Polystyrene (PS)	28.0	27.9	29.2	29.5	28.8	29.1	29.3	29.0	29.1	29.0	28.1	28.2	28.4	28.3	28.3	28.4	28.3
Polyethylene Terephthalate (PET)	-0.4	-1.9	-2.0	-1.6	-1.8	-1.9	-2.0	-1.0	-1.6	-2.8	-2.3	-2.2	-2.4	-2.8	-2.2	-2.1	-2.4
Polyvinyl Chloride (PVC)	7.5	6.0	6.4	7.0	6.5	8.2	8.3	8.6	8.4	8.2	7.4	7.7	7.8	7.2	6.7	7.5	7.1
Integrated ethylene/PE Margin	15.1	10.1	12.6	12.8	11.8	13.3	16.5	17.2	15.7	16.2	15.9	17.2	16.4	16.9	16.3	13.0	15.4

Source: CMAI, Banc of America Securities LLC estimates

# Chlorine (Cl<sub>2</sub>)

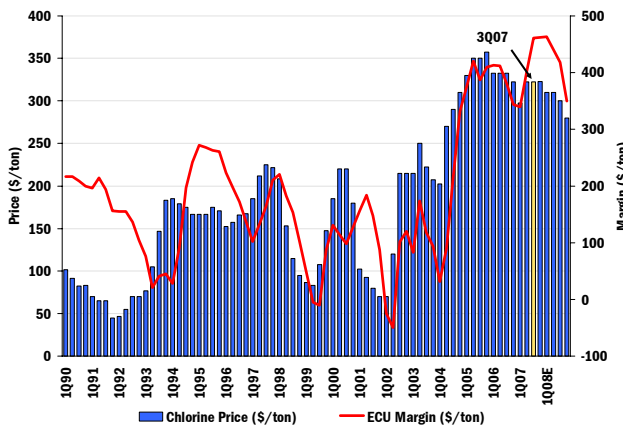
## Overview

Chlorine and caustic soda are produced as co-products and are manufactured by electrolytic decomposition of sodium chloride solutions (brines). A major use of chlorine is the manufacture of ethylene dichloride (EDC), which is used to make VCM and, ultimately, PVC resin. PVC consumption is heavily tied to the construction industry. Chlorine is also used in propylene oxide and phosgene, which is used in the manufacture of dyes, pharmaceuticals and herbicides. Chlorine consumption is expected to grow at around 1% in 2007. We forecast U.S. demand of about 13 million short tons in 2007. Chlorine itself is a regional business so there is little trade. Most capacity additions will occur in Asia to meet its growing demand for PVC.

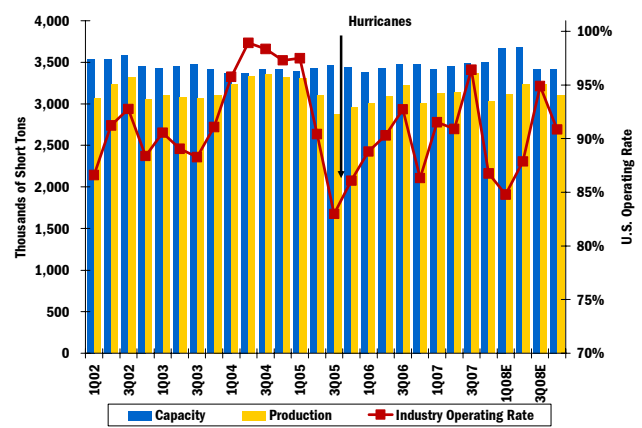
## Leading Global Producers, 2008E

		Capacity (000 MT)	Percent	
1	Dow Chemical	U.S.	6,436	10.1%
2	Occidental Chemical	U.S.	3,301	5.2%
3	Formosa	U.S.	2,225	3.5%
4	Olin	U.S.	1,766	2.8%
5	Solvay SA	Belgium	1,755	2.7%
Sub-total			15,484	24.3%
Other			48,361	75.8%
Total			63,845	100.0%

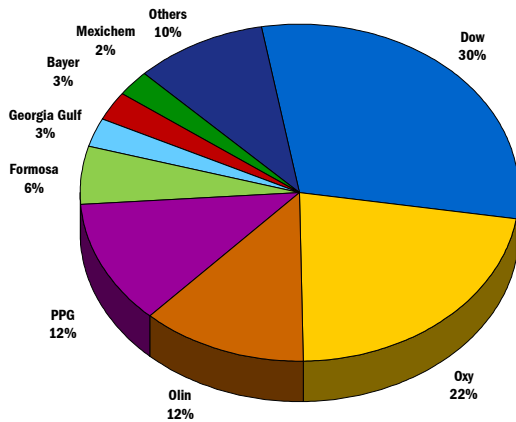
Chlorine Price and ECU Margin, 1990-2008E



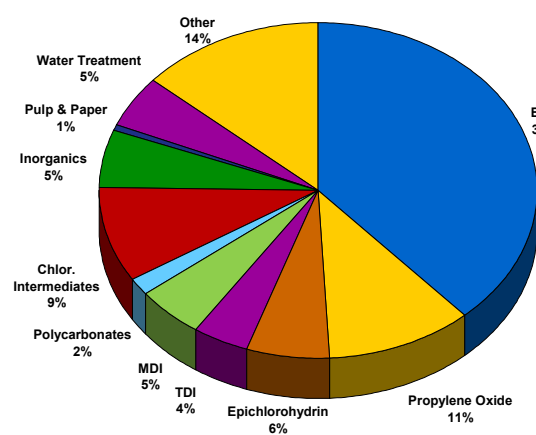
Chlorine Industry Capacity Utilization, 2002-2008E



Chlorine Market Share, 2008E



Chlorine Demand, 2008E



Note: Price & margin shown graphically is for North America Domestic Market at Contract Prices, capacity utilization is for U.S.  
Source: CMAI, SRI, Banc of America Securities LLC estimates

## Caustic Soda (NaOH)

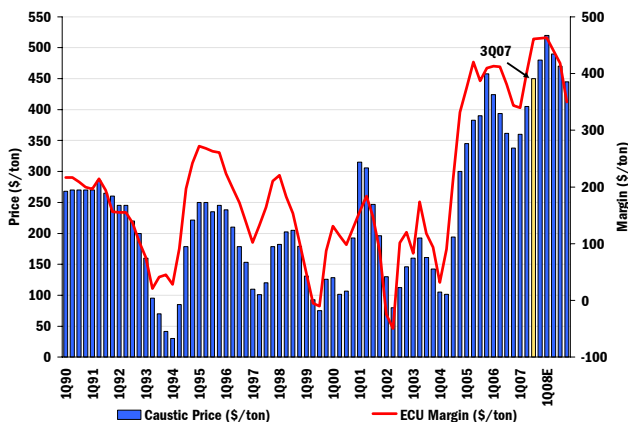
### Overview

Caustic Soda (or sodium hydroxide) is one of the most important inorganic chemical commodities. It is co-produced with chlorine by electrolytic decomposition of brines. Caustic is sold on the merchant market for a variety of uses. Caustic, used as a strong base, competes with soda ash and lime. Consumption can be divided into three categories: direction applications (e.g. pulp and paper, soap and detergents, aluminum oxide), organic chemicals (e.g. propylene oxide, polycarbonates) and inorganic chemicals (e.g. sodium and calcium hypochlorite). Organic chemicals represent 27%, Inorganic chemicals 25% and direct applications 48% of total demand. We forecast U.S. demand of over 14 Million MT in 2007 with growth flat through 2008.

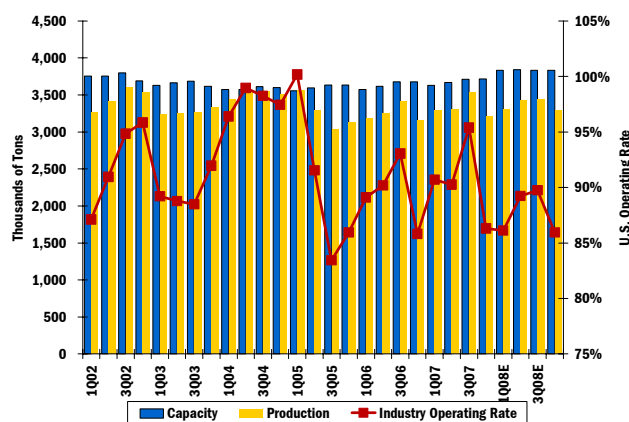
### Leading Global Producers, 2008E

		Capacity (000 MT)	Percent	
1	Dow Chemical	U.S.	7,080	10.5%
2	Occidental Chemical	U.S.	3,432	5.1%
3	Formosa	U.S.	2,448	3.6%
4	Olin	U.S.	1,942	2.9%
5	Solvay SA	Belgium	1,930	2.9%
Sub-total			16,832	24.9%
Other			50,871	75.1%
Total			67,703	100.0%

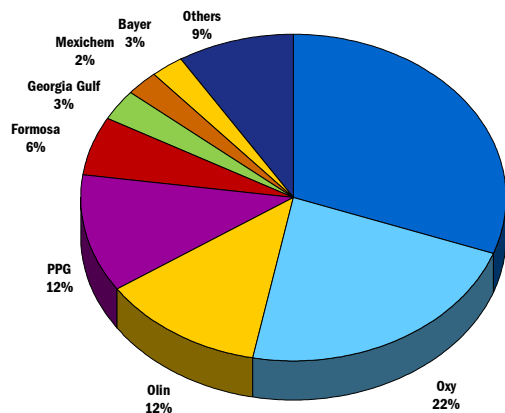
Caustic Price and ECU Margin, 1990-2008E



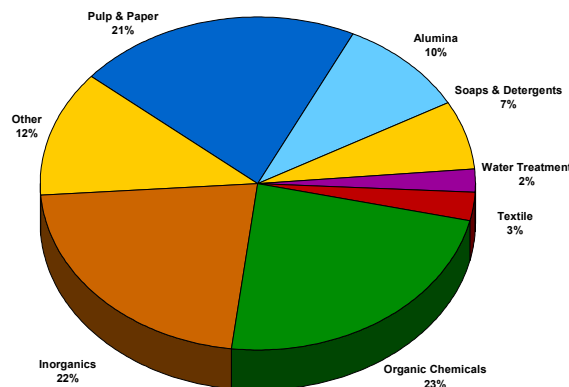
Caustic Soda Industry Capacity Utilization, 2002-2008E



Caustic Soda Market Share, 2008E



Caustic Soda Demand, 2008E



Note: Price & margin shown graphically is for North America Domestic Market at Contract Prices, capacity utilization is for U.S.  
Source: CMAI, SRI, Banc of America Securities LLC estimates

**Chemicals Sector  
Valuation Matrix**

TKR	Price	Rating	Analyst	Target Price	Return Target	market Cap. (Bil.)	Div. Yield	2007 EPS	2008E EPS	2009E EPS	Normalized EPS	LT Growth Rate	2007 P/E	2008E P/E	2009E P/E	Normalized P/E	2007 EV/EBITDA	2008E EV/EBITDA	Normalized EV/EBITDA	S&P500?	Vol	
DuPont	\$47.61	Neutral	KM	\$49	6%	44.0	3.4%	3.27	3.45	3.75	3.18	9%	14.6	13.8	12.7	15.0	8.4	8.2	8.4	Yes	L	
Monsanto Company	\$119.27	Neutral	KM	\$116	-2%	65.8	0.6%	2.06	2.95	3.52	2.06	20%	57.9	40.4	33.9	57.9	32.0	23.0	32.0	Yes	M	
Praxair	\$84.23	Neutral	KM	\$88	6%	27.4	1.4%	3.62	4.10	4.70	3.62	11%	23.3	20.5	17.9	23.3	11.0	12.3	11.0	Yes	L	
Air Products & Chemicals	\$95.78	Neutral	KM	\$95	1%	21.4	1.6%	4.51	5.02	5.46	4.51	10%	21.2	19.1	17.5	21.2	9.3	8.3	9.3	Yes	L	
Rohm and Haas	\$55.41	Buy	KM	\$65	20%	11.7	2.7%	3.41	3.90	4.25	3.60	10%	16.2	14.2	13.0	15.4	9.4	8.7	9.4	Yes	M	
Argas	\$50.07	Buy	KM	\$59	19%	4.2	0.7%	2.46	3.02	3.44	2.46	11%	20.4	16.6	14.6	20.4	9.0	8.0	9.0	No	M	
Albemarle Corporation	\$39.81	Buy	KM	\$47	19%	3.9	1.2%	2.40	2.80	3.10	1.89	10%	16.6	14.2	12.8	21.0	10.0	8.8	10.0	No	M	
RPM International	\$22.03	Neutral	KM	\$23	8%	2.8	3.2%	1.68	1.79	1.91	1.68	10%	13.1	12.3	11.5	13.1	8.5	8.1	8.5	No	M	
<b>Average, Specialties</b>					<b>10%</b>	<b>22.7</b>	<b>1.9%</b>					<b>11%</b>	<b>22.9x</b>	<b>18.8x</b>	<b>16.8x</b>	<b>23.4x</b>	<b>2.0</b>	<b>12.4x</b>	<b>10.5x</b>	<b>12.4x</b>		
<b>Median, Specialties</b>					<b>7%</b>	<b>16.5</b>	<b>1.5%</b>					<b>10%</b>	<b>18.5x</b>	<b>15.4x</b>	<b>13.8x</b>	<b>20.7x</b>	<b>2.0</b>	<b>9.3x</b>	<b>8.5x</b>	<b>9.3x</b>		
<b>Average, Specialties, ex Monsanto</b>					<b>11%</b>	<b>16.5</b>	<b>2.0%</b>					<b>10%</b>	<b>17.9x</b>	<b>15.8x</b>	<b>14.3x</b>	<b>18.5x</b>	<b>1.8</b>	<b>9.6x</b>	<b>8.7x</b>	<b>9.6x</b>		
<b>Median, Specialties ex Monsanto</b>					<b>8%</b>	<b>11.7</b>	<b>1.6%</b>					<b>10%</b>	<b>16.6x</b>	<b>14.2x</b>	<b>13.0x</b>	<b>20.4x</b>	<b>1.9</b>	<b>9.3x</b>	<b>8.3x</b>	<b>9.3x</b>		
Dow Chemical	\$39.17	Neutral	KM	\$44	17%	37.9	4.3%	3.75	3.45	2.85	3.75	7%	10.4	11.4	13.7	10.4	5.8	6.6	6.1	Yes	M	
PPG Industries	\$65.18	Buy	KM	\$67	37%	10.8	3.2%	5.15	5.45	6.20	5.15	9%	12.7	12.0	10.5	12.7	1.4	7.8	7.7	7.1	Yes	L
Eastman Chemical	\$67.47	Neutral	KM	\$71	8%	5.7	2.6%	5.06	5.15	5.30	3.81	7%	13.3	13.1	12.7	17.7	2.5	7.0	6.8	6.2	Yes	L
Chinese Corporation	\$40.60	Buy	KM	\$50	24%	7.0	0.4%	3.43	3.75	3.70	2.94	7%	11.8	10.8	11.0	16.0	2.3	7.2	7.0	8.8	No	H
RMC Corporation	\$59.18	Buy	KM	\$60	2%	4.6	0.7%	3.09	3.90	4.35	2.65	8%	19.2	15.2	13.6	22.3	2.8	9.7	8.3	10.1	No	M
<b>Average, Hybrids</b>					<b>17%</b>	<b>13.2</b>	<b>2.2%</b>					<b>8%</b>	<b>13.5x</b>	<b>12.5x</b>	<b>12.3x</b>	<b>15.8x</b>	<b>2.1</b>	<b>7.5x</b>	<b>7.3x</b>	<b>7.7x</b>		
<b>Median, Hybrids</b>					<b>17%</b>	<b>7.0</b>	<b>2.6%</b>					<b>7%</b>	<b>12.7x</b>	<b>12.0x</b>	<b>12.7x</b>	<b>16.0x</b>	<b>2.3</b>	<b>7.2x</b>	<b>7.0x</b>	<b>7.1x</b>		
Nova Chemicals	\$31.96	Neutral	KM	\$36	14%	2.7	1.1%	3.87	3.80	3.00	2.49	6%	8.3	8.4	10.7	12.9	2.1	5.1	5.2	6.7	No	H
Westlake Chemicals	\$17.78	Neutral	KM	\$21	19%	1.2	1.1%	1.70	1.40	1.35	2.46	7%	10.5	12.7	13.2	7.2	1.0	2.7	5.5	3.9	No	H
Georgia Gulf	\$6.91	Neutral	KM	\$8	20%	0.2	4.6%	-1.20	-0.30	0.80	1.85	6%	NM	NM	8.6	3.7	0.6	3.8	6.3	3.3	No	H
<b>Average, Commodity Petrochemicals</b>					<b>18%</b>	<b>1.4</b>	<b>2.3%</b>					<b>6%</b>	<b>9.4x</b>	<b>10.6x</b>	<b>10.8x</b>	<b>7.9x</b>	<b>1.3</b>	<b>3.9x</b>	<b>5.6x</b>	<b>4.6x</b>		
<b>Median, Commodity Petrochemicals</b>					<b>19%</b>	<b>1.2</b>	<b>1.1%</b>					<b>6%</b>	<b>9.4x</b>	<b>10.6x</b>	<b>10.7x</b>	<b>7.2x</b>	<b>1.0</b>	<b>3.8x</b>	<b>5.5x</b>	<b>3.9x</b>		
<b>Average, Unifense</b>					<b>14%</b>	<b>15.7</b>	<b>2.1%</b>					<b>9.3%</b>	<b>18.0x</b>	<b>15.6x</b>	<b>14.3x</b>	<b>18.1x</b>	<b>1.9</b>	<b>9.3x</b>	<b>8.6x</b>	<b>9.4x</b>		
<b>Median, Unifense</b>					<b>15%</b>	<b>6.3</b>	<b>1.5%</b>					<b>9.0%</b>	<b>14.6x</b>	<b>13.8x</b>	<b>12.9x</b>	<b>15.7x</b>	<b>2.0</b>	<b>8.4x</b>	<b>8.0x</b>	<b>8.7x</b>		

Notes:  
All estimates are shown on a calendar year basis. MON fiscal year ends in August, APD fiscal year ends in September, ARG fiscal year ends in March, and RPM and MOS fiscal year ends in May  
Stocks are priced as of the close of trading for February 27, 2008  
Normalized data reflect trough to peak average  
Volatility ratings: L=Low; M=Medium; H=High; E=Extreme

**Companies Also Mentioned in this Report:** (OXY, \$78.70, N/R, M. Schmitz)  
Source: Banc of America Securities LLC estimates

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The rating system is based on a stock's forward -12-month expected total return (price appreciation *plus* dividend yield). The prospective rates of return that help define the Buy, Neutral and Sell ranges are subject to change from time to time, corresponding with changes in prospective rates of return on competing investments. The specific volatility levels that divide our stocks into low, medium, high, and extreme ranges are subject to change from time to time, corresponding with changes in the volatility of benchmark indexes and the companies that comprise them.

<b>Volatility</b>		<b>Ratings</b>		
		<b>Buy</b>	<b>Neutral</b>	<b>Sell</b>
Low	0%-25%	11%+	10.9%-0.1%	0% or worse
Medium	25%-35%	15%+	14.9%-(2.9)%	(3)% or worse
High	35%-55%	20%+	19.9%-(6.9)%	(7)% or worse
Extreme	55%+	32%+	31.9%-(14.9)%	(15)% or worse

Source for volatility: Bloomberg.

**Rating Distribution\*****Global Coverage**

<b>Coverage Universe</b>	<b>Companies</b>	<b>Pct.</b>	<b>Investment Banking Clients</b>	<b>Companies</b>	<b>Pct.**</b>
Buy	343	46	Buy	191	56
Hold	369	50	Hold	224	61
Sell	28	4	Sell	16	57

**Diversified Industries Sector**

<b>Coverage Universe</b>	<b>Companies</b>	<b>Pct.</b>	<b>Investment Banking Clients</b>	<b>Companies</b>	<b>Pct.**</b>
Buy	51	47	Buy	32	63
Hold	56	52	Hold	36	64
Sell	1	1	Sell	0	0

\* For the purposes of this Rating Distribution, "Hold" is equivalent to our "Neutral" rating.

\*\* Percentage of companies in each rating group that are investment banking clients.

As of 02/01/2008.

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BAS (United States)  
Banc of America Securities LLC

9 West 57th Street  
New York, New York 10019  
Tel. Contact: 888.583.8900

600 Montgomery Street  
San Francisco, California 94111  
Tel. Contact: 800.227.4786

214 North Tryon Street  
Charlotte, North Carolina 28255  
Tel. Contact: 800.432.1000

BASL (United Kingdom)  
Banc of America Securities Limited

5 Canada Square  
London E14 5AQ, United Kingdom  
Tel. Contact: +44.20.7174.4000

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BASAL (Hong Kong)  
Banc of America Securities Asia Limited

42nd Floor, Two International Finance Centre  
8 Finance Street, Central Hong Kong  
Tel. Contact: +852.2847.5222

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