

# product focus

## HDPE/LLDPE

### Prices

U.S.: LLDPE, 102-105 cts/lb, del;  
HDPE, 97-99 cts/lb, del, domestic;  
LLDPE, \$1,690-\$1,700/m.t. fob;  
HDPE, \$1,580-\$1,610/m.t. fob, export  
EUROPE: LLDPE, €1,445-€1,465/m.t. del;  
HDPE €1,325-€1,345/m.t. del; domestic

### Outlook

U.S. demand for linear low-density polyethylene (LLDPE) grew by 0.5% last year, while demand for high-density PE (HDPE) declined by 0.5%, says David Anderson, director/Global PE Consulting at Townsend Polymers. However, exports from the U.S. were "quite good" for HDPE and LLDPE, driven by strong demand in China and Central/South America, Anderson says. HDPE demand grew just over 9% in the Africa/Mideast and Asia/Pacific regions, excluding China, last year, and Chinese demand grew just over 7%. LLDPE demand grew by 11.5% in the Africa/Mideast region and just under 10% in Asia/Pacific. Tight supply for low-density PE (LDPE) drove double-digit demand growth of LLDPE in Central and South America, he says.

However, low-cost Mideast producers are forecast to bring 11,800,000 m.t. of HDPE and LLDPE capacity online by January 1, 2013, Anderson says. As a result, North America's combined net trade of HDPE and LLDPE is projected to be negative 1,766,000 m.t. in 2012, down from a positive net 1,639,000 m.t. in 2007, he says. Capacity utilization in North America is expected to drop from 97% to 87% over the same period.

However, the outlook for North American HDPE and LLDPE producers could change if the Mideast projects experience further delays like those caused by engineer shortages and joint venture shuffling in Iran, Anderson says. Another factor is the affect small changes in Chinese demand can have on global consumption volumes. "If China's annual demand growth rate changes by just 1% from the current 6% forecast, capacity utilization globally increase by 3-4%," he says.

Only Nova Chemicals has announced capacity expansions in North America, based on its cost-advantaged feedstock position in Canada. The company announced plans in January to invest \$80 million to modernize and expand its PE production at two sites in Ontario. Plans include modernization and expansion of LDPE and HDPE production at Mooretown and debottlenecking of HDPE and LLDPE

### GLOBAL HDPE CONSUMPTION

2007 total: 29 million m.t.



### GLOBAL LLDPE CONSUMPTION



1) Excluding China. Source: SRI Consulting (Menlo Park).

production at Nova's St. Clair River site at Corunna, ON. The projects will come online during 2008 and 2009, and will add up to 250 million lbs/year of new PE capacity in stages over the next two years, Nova says (*CW, Jan. 7/14, p. 13*).

### Technology

HDPE is produced in slurry, solution, or gas-phase reactors using traditional Ziegler-Natta and chromium catalysts, or metallocene and other single-site catalysts. Some processes can swing between LLDPE and HDPE production.

### Producers

(in thousands of m.t./year)

	HDPE	LLDPE
<b>NORTH AMERICA</b>		
<b>U.S.</b>		
Chevron Phillips Chemical	2,273	-
Chevron Phillips/Ineos	320	-
Dow Chemical	2,347	-
Equistar Chemicals	1,567	318
ExxonMobil	-	1,947
FlintHills Resources	-	160
Formosa Plastics	-	750*/399
Ineos	-	1,110*

Paxon Polymer	-	912*
Total Petrochemicals	-	402*
Westlake	-	464*

<b>Canada</b>		
Dow Chemical	1,280	-
Imperial Oil	-	425
Nova Chemicals	-	450*/1,005
Petromont <sup>1</sup>	-	280*

<b>Mexico</b>	320	300*
---------------	-----	------

### SOUTH AMERICA

<b>Argentina</b>	270	290*
------------------	-----	------

<b>Brazil</b>	740	400*/1,002*
---------------	-----	-------------

<b>Venezuela</b>	100	210
------------------	-----	-----

### EUROPE

<b>Belgium</b>	1,399	-
----------------	-------	---

<b>Germany</b>	1,385	423*/280
----------------	-------	----------

<b>Italy</b>	570	405
--------------	-----	-----

<b>The Netherlands</b>	280	760*
------------------------	-----	------

<b>Spain</b>	252	200*/365
--------------	-----	----------

<b>Sweden</b>	235	250*
---------------	-----	------

<b>Eastern Europe</b>	808	1,238*
-----------------------	-----	--------

<b>Others</b>	130	320*/1,453*
---------------	-----	-------------

### AFRICA/MIDEAST

<b>Algeria</b>	130	-
----------------	-----	---

<b>Azerbaijan</b>	120	-
-------------------	-----	---

<b>Egypt</b>	-	225*
--------------	---	------

<b>Iran</b>	1,065	700*
-------------	-------	------

<b>Kuwait</b>	-	820*
---------------	---	------

<b>Libya</b>	80	80
--------------	----	----

<b>Nigeria</b>	-	270*
----------------	---	------

<b>Qatar</b>	-	454*
--------------	---	------

<b>Saudi Arabia</b>	1,695	2,130*
---------------------	-------	--------

<b>South Africa</b>	200	150
---------------------	-----	-----

<b>Turkey</b>	96	0
---------------	----	---

<b>Ukraine</b>	-	60*
----------------	---	-----

<b>United Arab Emirates</b>	-	580*
-----------------------------	---	------

### ASIA/PACIFIC

<b>Australia</b>	90	240*
------------------	----	------

<b>China</b>	1,497	1,920*/1,645
--------------	-------	--------------

<b>India</b>	988	740*/160
--------------	-----	----------

<b>Indonesia</b>	100	440*/200
------------------	-----	----------

<b>Japan</b>	1,070	919*/321
--------------	-------	----------

<b>Malaysia</b>	100	450*
-----------------	-----	------

<b>North Korea</b>	140	-
--------------------	-----	---

<b>Philippines</b>	-	451*
--------------------	---	------

<b>Singapore</b>	390	450*
------------------	-----	------

<b>South Korea</b>	1,699	495*/860
--------------------	-------	----------

<b>Taiwan</b>	560	424*
---------------	-----	------

<b>Thailand</b>	1,212	120*/300
-----------------	-------	----------

\*Swing capacity. 1) Shuttered April 30, 2008. Source: SRI Consulting (Menlo Park, CA).

# cw price report

## COMMENTARY

Ethane prices fell 10 cts/gal in the U.S., dipping below the dollar mark, and propane fell 14 cts/lb. Butane lost 8 cts/gal. U.S. spot ethylene dropped another 3 cts/lb last week. Demand is falling, as buyers hold off to see how far prices will fall, sources say. Ethylene contract settlements fell short of producer expectations due to the sharp decline in feedstock costs and tumbling spot prices. Contracts settled 5 cts/lb higher for June and 4 cts/lb higher for July, market sources say. Producers had nominated 15 cts/lb for July to recoup negative margins for naphtha crackers.

Spot propylene in the U.S. was offered 3 cts/lb lower. Some initial contracts were agreed to at a rollover for August. Some buyers are insisting on a decrease, but a split settlement would be unlikely at this point, sources say. Producers nominated 10 cts/lb for August, but better margins for cracking propane and butane are improving available supply, sources say.

Butadiene contracts settled 12 cts/lb higher for August, sources say.

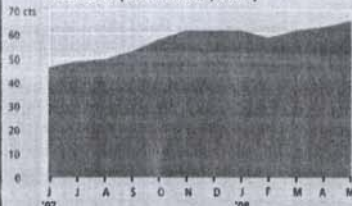
August benzene contracts on the U.S. Gulf Coast were settled higher by 29 cts/gal, a new record monthly price. Sellers managed to lock in that level just before spot prices fell 23 cts/gal in early August. Mixed xylenes sellers were not quite so lucky, as the August contract was settled at a decrease of 40 cts/gal. Spot prices had already been declining. August settlements were also reported in Europe. Benzene was agreed to at an increase of €60/m.t., while a split settlement was seen for styrene with most prices increasing €80/m.t.

August ethylene glycol contracts settled €10/m.t. higher in Europe.

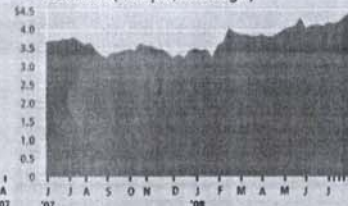
July's caustic soda contract in the U.S. increased \$50/ton, as weak demand for chlorine has restricted operating rates and four major producers are on allocations below 100%. Producers began implementing a \$160-\$165/ton price increase on August contracts, and another round of caustic soda prices increases was announced last week. Two producers have said they will increase caustic soda prices by \$130/ton effective immediately or as contracts allow, while another producer announced prices at \$115/ton, market sources say. The market is expected to get even tighter in the fourth quarter, as the seasonal uptick in chlorine demand ends.

	U.S.		EUROPE	
	SPOT	CONTRACT	SPOT	CONTRACT
ETHANE	98-99 cts/gal fob ▼			
NAPHTHA	250-251 cts/gal fob		\$915-920/m.t. cif ▼	
PROPANE	157-158 cts/gal fob ▼			
BUTANE	190-291 cts/gal fob ▼			
ETHYLENE	45-46 cts/lb del ▼	74.5 cts/lb del July ▲	€1,200-1,220/m.t. cif ▼	€1,227/m.t. del Q3
<b>PROPYLENE</b>				
chemical-grade	78-79 cts/lb del ▼	83.5 cts/lb del July	€870-880/m.t. cif ▼	
polymer-grade	80-81 cts/lb del ▼	85 cts/lb del July	€970-980/m.t. cif ▼	€1,015/m.t. cif Q3
BUTADIENE	105-110 cts/lb fob	110 cts/lb del August ▲	\$2,800-3,000/m.t. fob	€1,260/m.t. del Q3
BENZENE	412-417 cts/gal fob ▼	445 cts/gal fob July	\$1,180-1,190/m.t. fob ▼	€900/m.t. fob Aug ▲
TOLUENE	335-340 cts/gal fob ▼		\$960-970/m.t. cif ▼	
MIXED XYLENES	355-360 cts/gal fob ▼	370 cts/gal fob Aug ▼	\$1,190-1,200/m.t. cif ▼	
STYRENE	80-81 cts/lb fob ▼	80 cts/lb fob July ▲	\$1,600-1,620/m.t. fob ▼	€1,260-1,280 m.t. del Aug ▲
METHANOL	130-135 cts/gal fob	155; 158 cts/gal fob Aug	€260-270/m.t. fob	€295/m.t. fob Q3
MTBE			\$1,045-1,055/m.t. fob ▼	

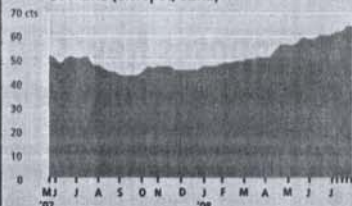
ETHYLENE (U.S. contracts; cts/lb)



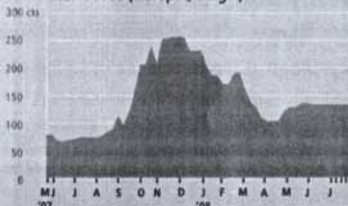
BENZENE (U.S. spot; dollars/gal)



STYRENE (U.S. spot; cts/lb)



METHANOL (U.S. spot; cts/gal)



	U.S.		EUROPE	
	SPOT	CONTRACT	SPOT	CONTRACT
PARA-XYLENE	\$1,340-1,350/m.t. fob	79.75 cts/lb del July ▲	\$1,380-1,390/m.t. fob	€1,085/m.t. del July
ORTHO-XYLENE	58-60 cts/lb fob	64.5 cts/lb fob July ▲	\$1,330-1,350/m.t. fob	€960/m.t. del July ▲
<b>ETHYLENE GLYCOL</b>				
antifreeze	60-62 cts/lb fob			
fiber-grade		68 cts/lb del July	€820-840/m.t. cif	€950/m.t. del Aug ▲
ACRYLONITRILE	\$2,050-2,070/m.t. fob ▲	93 cts/lb del July	\$2,070-2,090/m.t. cif	€1,720-1,760/m.t. del Q3 ▲
EDC	\$18-19 cts/lb ▲		€240-250/m.t. fob	
<b>INORGANICS</b>				
CHLORINE	\$130-170/ton fob	\$240-260/ton fob Q3		€190-230/m.t. del Q1
CAUSTIC SODA	\$780-790/ton fob ▲	\$780-790/ton fob July ▲	\$620-640/m.t. fob ▲	€440-490/m.t. del July
SODA ASH		\$125-155/ton fob 2008		€180-220/m.t. del. 2007

1) Nitration-grade. CW Price Report is compiled the Wednesday prior to publication through consultation with producers, consumers, and traders. Prices are quoted fob (free-on-board), cif (cost, insurance & freight), c&f (cost & freight), or ftreeq (freight equalized). References are NWE (Northwest Europe) port for Europe and USG (U.S. Gulf) port for the U.S., and reflect recent large-volume transactions.