

## 1. News Summary (3 page)

2017년 9월 13일

News	
WTI comment	OPEC 생산감소에 상승...WTI 0.3%↑
Headline	시노펙, 공급 부족으로 동중국 부타디엔 오퍼 가격 인상
News 1.	Chevron Phillips Sweeny 크래커, 하비(Harvey) 이후 재가동 시작
News 2.	-
News 3.	-
News 4.	-

Conclusion	
	아시아 역내 부타디엔 공급 부족 사태는 당분간 지속될 전망 하비(Harvey)의 영향은 단기적 효과로 일단락되어 가고 있음
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## 2. Prices Summary (4~7 page)

Daily	Unit	Price	1D	1W	1M	3M	12M
<b>Refinery</b>			%	%	%	%	%
WTI	\$/bbl	48.2	0.3	(0.9)	1.4	3.8	7.4
Dubai	\$/bbl	52.2	(1.9)	2.3	5.9	10.3	19.4
Gasoline	\$/bbl	70.2	(0.3)	(0.4)	5.5	16.0	20.4
Diesel	\$/bbl	67.2	(0.9)	0.7	7.6	15.9	22.9
Complex margin	\$/bbl	10.0	0.7	(0.7)	0.8	3.0	3.1
1M lagging	\$/bbl	10.6	(0.7)	(0.3)	(1.8)	5.9	2.9
<b>Petrochemical</b>			%	%	%	%	%
Naphtha	\$/t	501	0.0	2.9	6.0	18.9	22.0
Butadiene	\$/t	1,470	0.0	8.1	61.5	69.9	27.8
HDPE	\$/t	1,190	0.0	0.8	6.3	9.2	4.4
MEG	\$/t	949	1.1	(1.1)	9.3	20.1	47.1
PX	\$/t	828	(0.1)	0.3	0.8	6.9	5.1
SM	\$/t	1,346	(2.0)	(5.3)	16.5	21.3	32.0
<b>Commodity</b>			%	%	%	%	%
Natural Gas	\$/mmbtu	3.00	1.7	1.0	1.2	0.0	(2.2)
Natural rubber	\$/t	1,650	(1.2)	1.2	9.3	19.6	29.9
Cotton	C/lbs	70.7	(4.1)	(6.0)	4.5	(5.1)	5.2

\*참고: 정제마진의 변동률은 %가 아닌 \$/bbl임

Weekly	Update	Unit	Price	1W	1M	3M	12M
<b>Petrochemical</b>				%	%	%	%
Ethylene	09/11	\$/t	1,225	2.9	8.9	43.3	12.9
Propylene	09/11	\$/t	870	8.7	12.3	20.0	10.1
Benzene	09/11	\$/t	823	0.6	6.5	7.9	23.7
Toluene	09/11	\$/t	685	3.8	4.6	5.4	7.5
Xylene	09/11	\$/t	635	0.0	0.0	1.6	4.1
PP	09/11	\$/t	1,148	1.8	4.6	9.5	14.2
PVC	09/11	\$/t	945	1.1	8.6	7.4	9.9
ABS	09/11	\$/t	2,030	1.0	9.7	23.8	45.5
SBR	09/11	\$/t	1,790	5.9	18.5	19.3	29.7
SM	09/11	\$/t	1,440	6.3	23.1	26.9	36.5
BPA	09/11	\$/t	1,888	(5.3)	18.9	32.2	26.0
Caustic	09/11	\$/t	477	1.3	1.0	9.0	49.1
2-EH	09/11	\$/t	990	0.0	3.1	5.3	26.9
Caprolactam	09/11	\$/t	1,720	(1.1)	(4.4)	7.5	22.0
<b>Solar</b>				%	%	%	%
Polysilicon	09/06	\$/kg	16.7	3.1	7.5	18.8	16.9
Module	09/06	\$/W	0.32	0.0	(1.2)	(3.0)	(24.5)

## 3. Global Peers Summary (8~9 page)

	Unit	Price	1D	1W	1M	3M	12M
<b>E&amp;P</b>			%	%	%	%	%
ExxonMobil	USD	79.5	0.3	3.0	1.6	(4.1)	(8.9)
Shell	EUR	2,136	(0.4)	0.2	0.0	0.2	15.0
Petrochina	CNY	8.03	(0.6)	(0.6)	0.8	5.1	9.8
Gazprom	RUB	122.0	0.8	5.2	4.3	1.2	(12.2)
Petrobras	BRL	14.9	(0.8)	3.2	14.8	15.3	6.6
<b>Refinery</b>							
Phillips66	USD	85.7	0.6	3.0	2.7	6.9	8.7
Valero	USD	70.2	0.6	3.4	6.1	6.5	25.6
JX	JPY	539.1	0.2	0.3	4.4	9.8	34.7
Neste Oil	EUR	36.5	0.7	1.1	4.9	5.9	(1.4)

	Unit	Price	1D	1W	1M	3M	12M
<b>Petrochemical</b>			%	%	%	%	%
BASF	EUR	85.9	0.4	4.4	7.5	(0.3)	19.6
DowDuPont	USD	68.5	2.5	5.4	8.3	7.0	29.5
SABIC	SAR	100.7	0.8	1.8	2.6	1.7	19.6
Formosa Pla.	TWD	95.8	(0.1)	0.5	4.1	7.3	25.1
Shin-Etsu	JPY	9,810	0.3	2.6	2.8	(1.9)	39.2
<b>Renewable</b>							
Wacker	EUR	112.8	0.5	2.3	12.0	20.4	45.3
First Solar	USD	47.48	0.7	(0.8)	(0.1)	30.4	26.9
GCL-Poly	HKD	0.89	0.0	1.1	2.3	14.1	(21.9)
Tesla Motors	USD	362.8	(0.3)	3.8	1.4	1.0	82.9

## 4. Coverage Summary

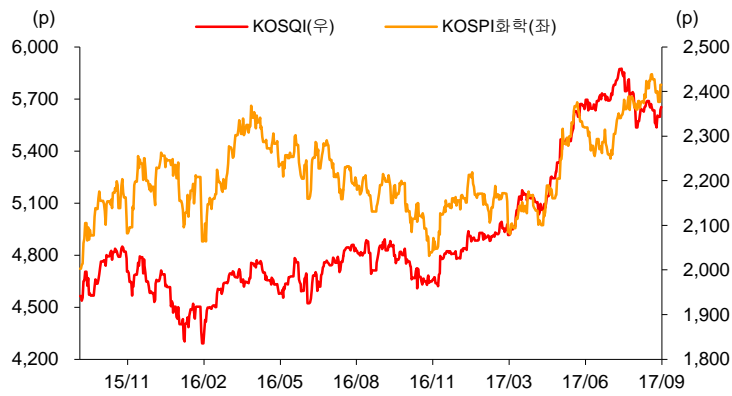
	09/12	1D	1W	1M	3M	6M	12M
KOSPI	2,365	0.3	1.7	2.0	(0.3)	11.7	16.1
KOSPI화학	5,783	0.0	0.8	2.5	6.0	15.7	12.4
LG화학	390,000	(0.5)	6.6	14.9	38.8	45.0	56.9
롯데케미칼	415,000	(0.4)	0.9	9.8	20.8	14.8	52.6
한화케미칼	37,050	0.0	8.0	9.9	28.4	53.1	51.8
금호석유화학	80,200	(1.1)	1.8	9.9	5.4	7.4	20.8
KCC	376,000	(0.9)	(2.0)	(5.3)	(6.4)	8.7	(6.2)
OCI	101,500	(1.9)	2.3	13.4	10.4	21.6	23.8
SKC	39,900	0.1	11.5	7.4	16.0	32.6	46.4
국도화학	50,900	1.6	0.2	(8.0)	(5.2)	4.0	(11.0)
SK이노베이션	191,500	0.3	2.4	11.3	19.7	21.6	26.0
S-Oil	122,500	(1.2)	0.8	6.1	27.9	32.1	64.4
GS	67,400	(0.4)	1.0	(7.2)	(2.0)	24.8	31.4
SK가스	106,000	0.5	(1.9)	(7.4)	(17.5)	(2.3)	3.9
포스코대우	21,050	(0.5)	0.2	(8.1)	(10.2)	(9.7)	(11.0)
LG상사	28,750	0.2	1.1	(2.2)	(10.7)	(6.2)	(20.0)
한국전력	41,050	0.2	(3.1)	(6.4)	(4.2)	(4.1)	(31.2)
한국가스공사	43,700	1.6	(0.8)	(10.4)	(11.7)	(7.7)	(0.9)

투자의견	TP	%	P/E	P/B
			* 추정치는 12M fwd 기준임	
			* 모든 coverage 업체의 실적은 연결기준임	
매수	330,000	(15.4)	15.52	2.09
매수	410,000	(1.2)	8.57	1.51
매수	33,000	(10.9)	8.84	1.10
매수	100,000	24.7	15.25	1.52
매수	450,000	19.7	21.38	0.61
매수	100,000	(1.5)	20.54	0.79
매수	40,000	0.3	15.04	1.06
매수	70,000	37.5	8.54	0.62
매수	180,000	(6.0)	8.61	1.04
매수	100,000	(18.4)	16.45	2.39
매수	80,000	18.7	5.60	0.99
매수	150,000	41.5	6.43	0.77
매수	27,000	28.3	7.31	0.87
매수	42,000	46.1	8.89	0.93
매수	60,000	46.2	7.09	0.32
매수	60,000	37.3	7.42	0.52

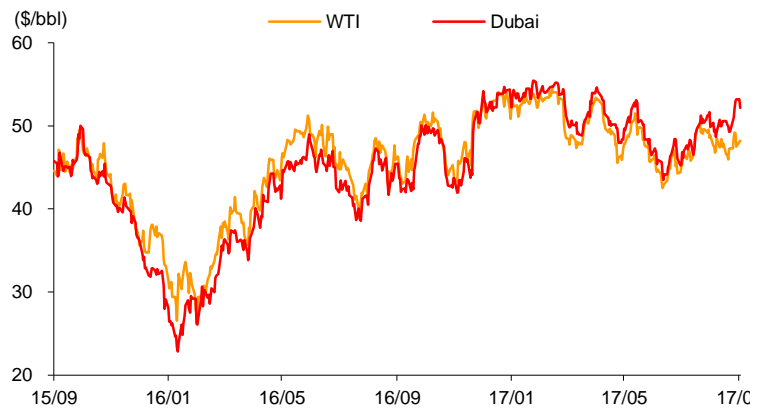
· 작성자(손지우)는 본 조사분석자료에 게재된 내용들이 본인의 의견을 정확하게 반영하고 있으며, 외부의 부당한 압력이나 간섭없이 신의성실하게 작성되었음을 확인합니다.  
· 본 보고서에 언급된 종목의 경우 당사 조사분석담당자는 본인의 담당종목을 보유하고 있지 않습니다.  
· 본 보고서는 기관투자자 또는 제 3자에게 사전 제공된 사실이 없습니다.  
· 당사는 본 보고서의 발간시점에 해당종목을 1% 이상 보유하고 있지 않습니다.

## Key Chart

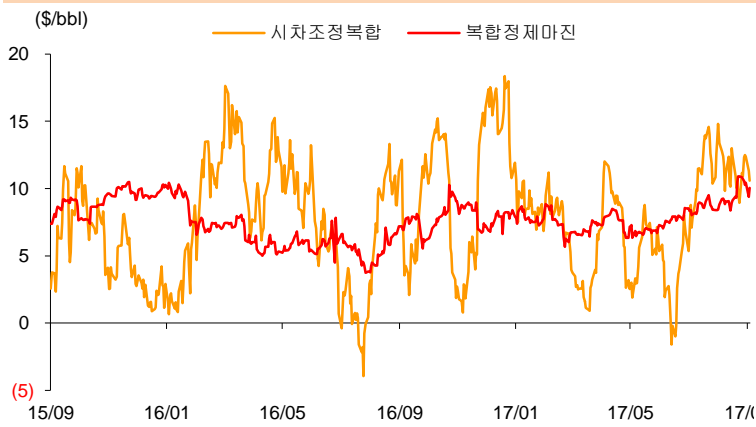
**KOSPI/KOSPI화학**



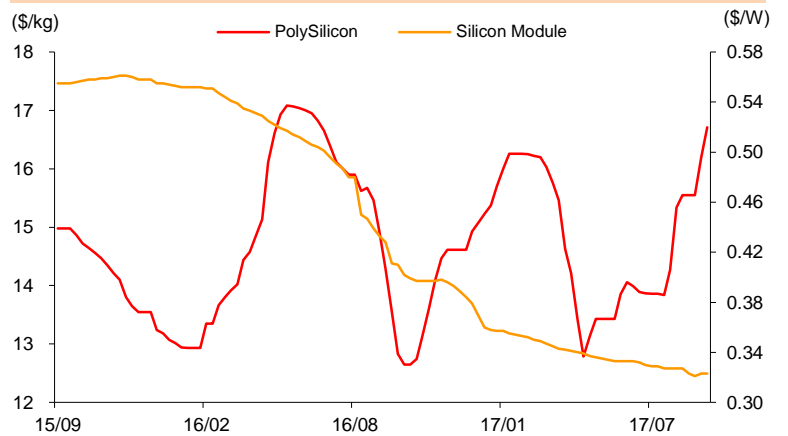
**WTI/Dubai**



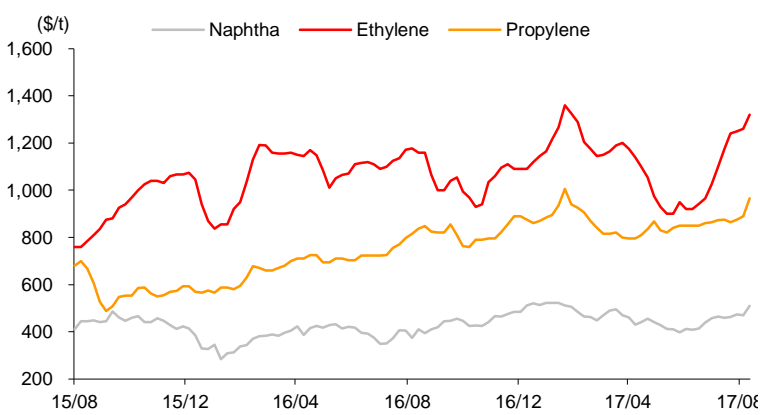
**Complex & 1M lagging margin**



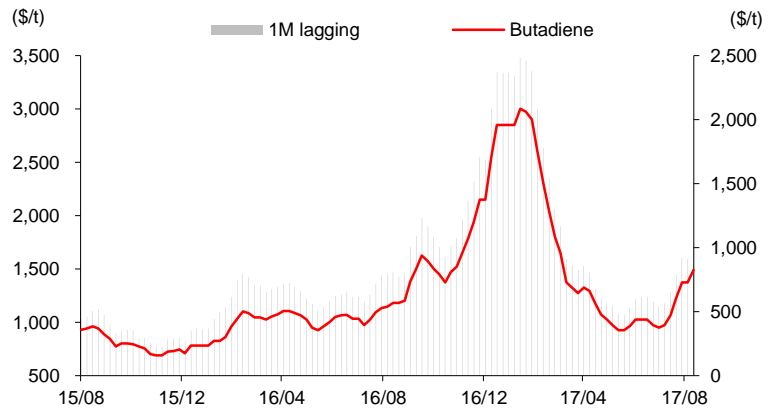
**Polysilicon & Module prices**



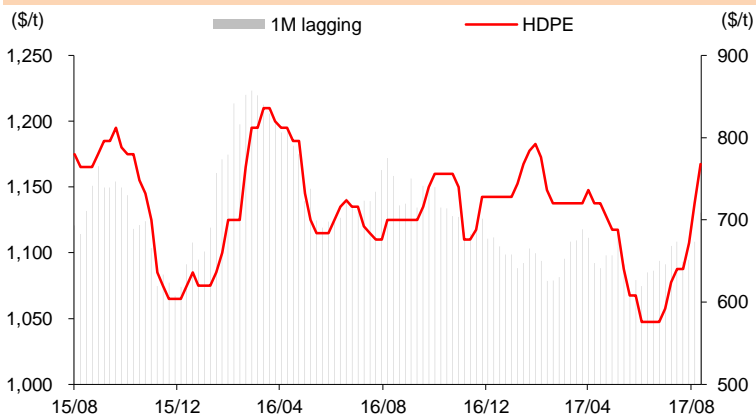
**Naphtha/Ethylene/Propylene prices**



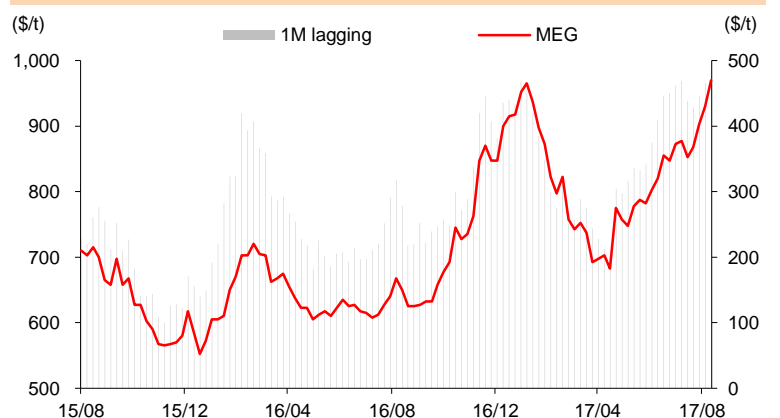
**Butadiene price & 1M lagging naphtha spread**



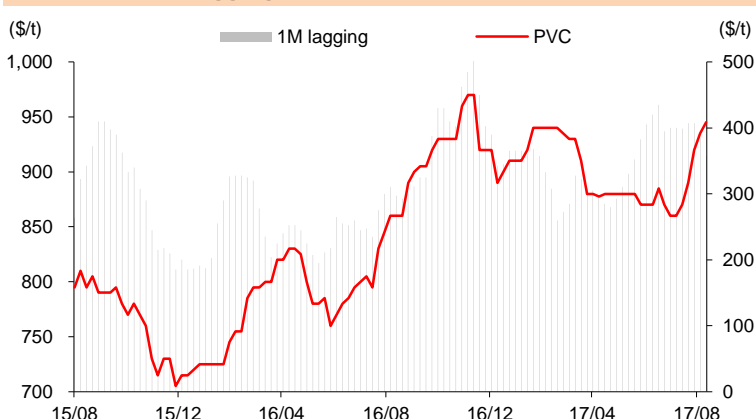
**HDPE price & 1M lagging naphtha spread**



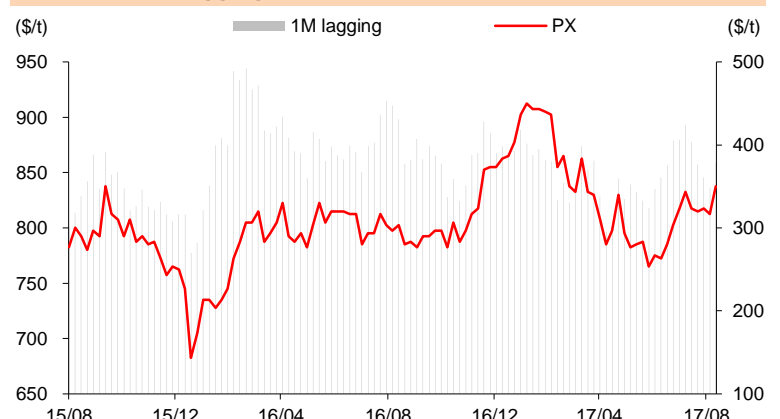
**MEG price & 1M lagging naphtha spread**



**PVC price & 1M lagging naphtha spread**



**PX price & 1M lagging naphtha spread**



자료: Bloomberg, Ciscem, Petronet, Platts, Pvsights, SK증권  
참고: 상기 데이터는 일괄적으로 과거 2년치 적용

## News Comment

### Headline (출처: Platts)

**제목** 시노펙, 공급 부족으로 동중국 부타디엔 오퍼 가격 인상

**결론** 아시아 역내 부타디엔 공급 부족 사태는 당분간 지속될 전망

**세부**

- 1) 시노펙은 동중국 부타디엔 오퍼 가격을 1,566\$/mt으로 4.3% 인상함
- 2) 화요일 부타디엔 스팟 가격은 CFR China 1,520\$/mt 수준 기록함
- 3) 대만 Formosa Petchem의 제3 NCC 정기보수 돌입으로 공급 부족해짐
- 4) 롯데도 11월 계획되었던 BD 추출기 정기보수를 9월로 당겨 진행함
- 5) 아시아 역내 부타디엔 공급 부족 사태는 당분간 지속될 전망

### Issue 1 (출처: Platts)

**제목** Chevron Phillips Sweeny 크래커, 하비(Harvey) 이후 재가동 시작

**결론** 하비(Harvey)의 영향은 단기적 효과로 일단락되어 가고 있음

**세부**

- 1) 2주 전 하비(Harvey) 영향으로 Sweeny 사이트의 크래커 셧다운됨
- 2) Sweeny에는 3개의 스팀 크래커인 에틸렌 유닛 22, 24, 33이 있음
- 3) 현재 66.8만톤/년 capa 보유한 에틸렌 유닛 24만 조기 재가동 돌입함
- 4) 25만톤/년 capa의 유닛 22와 102.5만톤/년 capa의 유닛 33은 미정임
- 5) 하비(Harvey)의 영향은 단기적 효과로 일단락되어 가고 있음

### Issue 3

**제목**

**결론**

**세부**

- 1)
- 2)
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- 5)

### Issue 5

**제목**

**결론**

**세부**

- 1)
- 2)
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- 5)

### WTI Comment (출처: 연합뉴스)

**제목** OPEC 생산감소에 상승...WTI 0.3%↑

**상승** OPEC 회원국들의 지난달 생산량은 3,276만b/d로 MoM 약 8만b 감소

**요인**

**하락**

**요인**

### Issue 2

**제목**

**결론**

**세부**

- 1)
- 2)
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### Issue 4

**제목**

**결론**

**세부**

- 1)
- 2)
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### Issue 6

**제목**

**결론**

**세부**

- 1)
- 2)
- 3)
- 4)
- 5)

## Commodity Price Data

Daily Price		Today	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.	
F/X	USD/EUR	0.836	0.837	0.839	0.846	0.893	0.937	0.890	0.951	0.901	0.904	0.903	
	Change, %		(0.1)	(0.4)	(1.2)	(6.4)	(10.8)	(6.1)	(12.1)	(7.3)	(7.5)	(7.5)	
	USD/JPY	110.2	109.4	108.8	109.2	110.0	114.8	101.9	117.0	121.1	108.8	111.9	
	Change, %		0.7	1.2	0.9	0.2	(4.0)	8.2	(5.8)	(9.0)	1.3	(1.5)	
	USD/KRW	1,128.9	1,131.9	1,131.0	1,143.7	1,127.3	1,157.4	1,113.4	1,205.8	1,131.2	1,160.5	1,139.2	
	Change, %		(0.3)	(0.2)	(1.3)	0.1	(2.5)	1.4	(6.4)	(0.2)	(2.7)	(0.9)	
	Agriculture	Corn	340.0	345.5	344.3	360.8	377.3	358.0	329.3	352.0	376.8	358.5	364.6
		Change, %		(1.6)	(1.2)	(5.8)	(9.9)	(5.0)	3.3	(3.4)	(9.8)	(5.2)	(6.7)
Soybean		944.3	954.8	960.5	935.5	931.3	996.3	984.5	996.5	945.4	987.5	975.7	
Change, %			(1.1)	(1.7)	0.9	1.4	(5.2)	(4.1)	(5.2)	(0.1)	(4.4)	(3.2)	
	Wheat	419.5	412.3	430.5	439.3	434.0	422.8	383.3	408.0	508.1	436.4	439.6	
	Change, %		1.8	(2.6)	(4.5)	(3.3)	(0.8)	9.5	2.8	(17.4)	(3.9)	(4.6)	
	Rice	12.7	12.4	12.5	12.5	11.3	9.5	9.5	9.4	11.1	10.3	10.7	
	Change, %		2.4	1.6	1.6	12.3	34.1	33.6	35.7	14.8	22.7	18.9	
	Oats	235.5	235.5	218.5	264.0	249.8	269.8	162.0	228.5	250.2	196.3	252.0	
	Change, %		0.0	7.8	(10.8)	(5.7)	(12.7)	45.4	3.1	(5.9)	20.0	(6.6)	
	MYR/mt	Palm Oil	2,830.0	2,803.0	2,740.0	2,683.0	2,680.0	2,990.0	2,898.0	3,218.0	2,190.3	2,653.8	2,852.3
		Change, %		1.0	3.3	5.5	5.6	(5.4)	(2.3)	(12.1)	29.2	6.6	(0.8)
Cocoa		1,999.0	1,973.0	1,974.0	1,990.0	2,059.0	1,967.0	2,830.0	2,126.0	3,091.6	2,854.0	1,993.9	
Change, %			1.3	1.3	0.5	(2.9)	1.6	(29.4)	(6.0)	(35.3)	(30.0)	0.3	
	Cotton	70.7	73.7	75.3	69.2	75.1	77.3	67.0	70.7	63.3	65.6	74.5	
	Change, %		(4.1)	(6.0)	2.1	(5.9)	(8.5)	5.6	0.1	11.8	7.8	(5.1)	
	Sugar	14.0	14.3	14.0	13.2	14.0	18.2	20.2	19.5	13.1	18.2	16.4	
	Change, %		(1.9)	(0.1)	6.2	0.0	(23.1)	(30.7)	(28.1)	6.7	(22.8)	(14.5)	
	Coffee	133.8	130.6	126.5	140.3	127.6	139.7	149.7	137.1	132.6	136.1	135.9	
	Change, %		2.5	5.8	(4.6)	4.9	(4.2)	(10.6)	(2.4)	0.9	(1.7)	(1.5)	
	Energy	WTI	48.2	48.1	48.7	48.8	46.1	48.5	46.3	53.7	48.8	43.4	49.4
		Change, %		0.3	(0.9)	(1.2)	4.7	(0.5)	4.2	(10.2)	(1.2)	11.2	(2.3)
Brent		54.3	53.8	53.4	52.1	48.3	51.4	48.3	56.8	53.7	45.1	52.3	
Change, %			0.8	1.7	4.2	12.4	5.6	12.3	(4.5)	1.1	20.4	3.8	
	Natural Gas	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.7	2.6	2.6	3.1	
	Change, %		1.7	1.0	0.6	(0.8)	(0.2)	3.0	(19.4)	14.1	17.6	(2.0)	
	Ethanol	1.6	1.5	1.6	1.6	1.5	1.5	1.5	1.6	1.5	1.5	1.5	
	Change, %		0.4	(1.0)	(1.6)	1.0	2.0	2.0	(3.5)	2.7	2.3	0.9	
	RBOB Gasoline	165.6	163.5	169.9	161.3	148.8	160.0	139.0	166.5	163.6	140.0	159.6	
	Change, %		1.3	(2.5)	2.7	11.3	3.5	19.2	(0.5)	1.2	18.3	3.8	
	Coal	99.8	99.6	97.8	95.8	79.5	78.8	70.0	88.4	59.0	65.5	84.1	
	Change, %		0.2	2.0	4.1	25.6	26.7	42.5	12.8	69.2	52.4	18.6	
Metal	Gold	1,331.8	1,327.5	1,339.7	1,289.4	1,265.9	1,204.7	1,327.8	1,152.3	1,160.6	1,248.5	1,249.0	
	Change, %		0.3	(0.6)	3.3	5.2	10.5	0.3	15.6	14.8	6.7	6.6	
	Silver	17.9	17.8	17.9	17.1	17.0	17.0	19.1	15.9	15.7	17.1	17.2	
	Change, %		0.6	0.1	4.6	5.6	5.1	(6.3)	12.5	13.9	4.7	4.2	
	Copper	6,668.0	6,748.0	6,900.0	6,411.0	5,772.0	5,732.0	4,648.0	5,535.5	5,503.1	4,872.0	5,942.0	
	Change, %		(1.2)	(3.4)	4.0	15.5	16.3	43.5	20.5	21.2	36.9	12.2	
	Nickel	760.8	753.3	768.2	681.4	564.0	660.5	672.3	682.0	759.5	646.4	653.0	
	Change, %		1.0	(1.0)	11.7	34.9	15.2	13.2	11.6	0.2	17.7	16.5	
	Zinc	3,061.0	3,083.0	3,140.0	2,896.5	2,495.0	2,705.0	2,262.0	2,576.0	1,941.9	2,097.5	2,763.1	
	Change, %		(0.7)	(2.5)	5.7	22.7	13.2	35.3	18.8	57.6	45.9	10.8	
	Lead	2,281.3	2,248.0	2,308.3	2,305.8	2,035.5	2,258.5	1,874.5	2,003.5	1,791.2	1,868.3	2,245.2	
	Change, %		1.5	(1.2)	(1.1)	12.1	1.0	21.7	13.9	27.4	22.1	1.6	
	Aluminum	16,355.0	15,925.0	16,375.0	15,880.0	13,620.0	13,580.0	12,530.0	12,765.0	12,184.0	12,373.5	14,157.6	
	Change, %		2.7	(0.1)	3.0	20.1	20.4	30.5	28.1	34.2	32.2	15.5	
	Cobalt	60,650.0	60,850.0	60,750.0	56,750.0	56,350.0	52,250.0	26,750.0	32,734.0	28,444.4	25,480.1	52,402.2	
	Change, %		(0.3)	(0.2)	6.9	7.6	16.1	126.7	85.3	113.2	138.0	15.7	
	HR Coil	633.0	638.0	644.0	621.0	598.0	625.0	550.0	633.0	461.5	519.3	621.6	
	Change, %		(0.8)	(1.7)	1.9	5.9	1.3	15.1	0.0	37.2	21.9	1.8	
	Scrap	373.0	374.9	372.0	360.0	357.1	365.2	234.1	302.0	252.9	275.7	345.0	
	Change, %		(0.5)	0.3	3.6	4.4	2.1	59.3	23.5	47.5	35.3	8.1	

자료: Bloomberg

참고) NYMEX, ICE, LME 중 대표지수를 사용

## Refining Price Data

Daily Price		09/12	1D	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Crude Oil	<b>WTI</b>	48.2	48.1	48.7	47.6	46.5	47.7	44.9	53.7	48.8	43.4	49.3
	<i>Change, %</i>		0.3	(0.9)	1.4	3.8	1.1	7.4	(10.2)	(1.1)	11.2	(2.2)
	<b>Dubai</b>	52.2	53.2	51.0	49.3	47.3	49.8	43.7	53.8	50.8	41.3	50.8
	<i>Change, %</i>		(1.9)	2.3	5.9	10.3	4.7	19.4	(3.1)	2.7	26.3	2.7
Crude Oil Product	<b>Gasoline(휘발유)</b>	70.2	70.4	70.5	66.6	60.6	62.7	58.4	69.8	69.5	56.3	65.8
	<i>Change, %</i>		(0.3)	(0.4)	5.5	16.0	12.1	20.4	0.6	1.0	24.9	6.8
	<b>Kerosene(등유)</b>	66.0	66.6	65.5	62.1	57.3	60.2	54.8	66.4	64.7	52.9	62.3
	<i>Change, %</i>		(0.9)	0.7	6.4	15.2	9.7	20.5	(0.6)	2.0	24.8	5.9
	<b>Diesel(경유)</b>	67.2	67.9	66.7	62.5	58.0	61.6	54.7	65.5	64.8	52.1	63.0
	<i>Change, %</i>		(0.9)	0.7	7.6	15.9	9.2	22.9	2.6	3.8	29.0	6.8
	<b>Bunker-C</b>	49.2	49.3	48.2	47.4	45.7	44.7	39.1	52.1	45.3	35.5	47.6
	<i>Change, %</i>		(0.3)	1.9	3.6	7.7	9.9	25.8	(5.6)	8.6	38.4	3.3
	<b>Naphtha</b>	53.8	53.7	52.0	49.1	45.6	49.8	41.9	53.5	52.6	42.6	50.5
	<i>Change, %</i>		0.1	3.4	9.6	17.9	8.1	28.3	0.7	2.3	26.3	6.5
Dubai Spread	<b>Gasoline(휘발유)</b>	18.1	17.2	19.5	17.3	13.3	12.8	14.7	16.0	18.7	14.9	15.0
	<i>Change</i>		0.8	(1.4)	0.7	4.8	5.2	3.4	2.1	(0.7)	3.1	3.1
	<b>Kerosene(등유)</b>	13.9	13.4	14.5	12.8	10.0	10.4	11.1	12.6	14.0	11.6	11.6
	<i>Change</i>		0.4	(0.7)	1.0	3.8	3.5	2.7	1.2	(0.1)	2.3	2.3
	<b>Diesel(경유)</b>	15.0	14.7	15.7	13.2	10.7	11.8	11.0	11.7	14.0	10.8	12.2
	<i>Change</i>		0.4	(0.6)	1.8	4.4	3.3	4.1	3.4	1.1	4.2	2.9
Dubai Spread	<b>Bunker-C</b>	(3.0)	(3.9)	(2.8)	(1.8)	(1.7)	(5.1)	(4.6)	(1.8)	(5.5)	(5.8)	(3.2)
	<i>Change</i>		0.9	(0.2)	(1.2)	(1.4)	2.1	1.6	(1.3)	2.5	2.8	0.2
	<b>Naphtha</b>	1.6	0.5	1.0	(0.2)	(1.7)	(0.0)	(1.8)	(0.4)	1.8	1.3	(0.3)
<i>Change</i>		1.1	0.6	1.8	3.3	1.7	3.4	2.0	(0.2)	0.3	1.9	
Refining Margin	<b>Simple(단순)</b>	4.6	3.9	5.1	4.5	3.1	1.8	2.2	3.8	3.3	1.9	3.1
	<i>Change</i>		0.7	(0.5)	0.1	1.4	2.8	2.4	0.8	1.3	2.7	1.4
	<b>Complex(복합)</b>	10.0	9.4	10.7	9.2	7.0	6.7	6.9	8.3	9.3	7.0	7.9
	<i>Change</i>		0.7	(0.7)	0.8	3.0	3.4	3.1	1.8	0.8	3.1	2.2
Refining Margin	<b>Complex(lagging)</b>	10.6	11.3	10.9	12.4	4.7	2.7	7.7	18.0	7.3	8.5	7.7
	<i>Change</i>		(0.7)	(0.3)	(1.8)	5.9	7.9	2.9	(7.4)	3.3	2.1	2.9

자료 : Petronet, SK증권

참고 1) Crude Oil 가격은 현물(spot) 기준으로 선물(future) 가격과 다를 수 있음

참고 2) Gasoline은 95RON, 경유는 L/P 0.5%, Bunker-C는 380cst/4.0% 기준임

## Petrochemical Price Data

Daily Price			09/12	09/11	09/08	09/07	09/06	09/05	09/04	09/01	08/31	08/30
Spot Price	<b>Naphtha</b>	CFR Japan	501.0	500.8	511.5	508.8	501.0	487.0	487.3	473.3	473.3	479.4
	<b>Ethylene</b>	CFR SE Asia	1,200.0	1,200.0	1,185.0	1,175.0	1,165.0	1,165.0	1,165.0	1,155.0	1,155.0	1,125.0
	<b>Propylene</b>	FOB Korea	945.0	945.0	950.0	900.0	900.0	881.0	872.0	870.0	870.0	870.0
	<b>Butadiene</b>	FOB Korea	1,470.0	1,470.0	1,470.0	1,360.0	1,360.0	1,360.0	1,360.0	1,360.0	1,360.0	1,310.0
	<b>HDPE</b>	CFR FE Asia	1,190.0	1,190.0	1,195.0	1,195.0	1,190.0	1,180.0	1,175.0	1,170.0	1,170.0	1,170.0
	<b>LDPE</b>	CFR FE Asia	1,240.0	1,240.0	1,245.0	1,245.0	1,240.0	1,230.0	1,210.0	1,205.0	1,205.0	1,200.0
	<b>LLDPE</b>	CFR FE Asia	1,200.0	1,205.0	1,210.0	1,210.0	1,210.0	1,180.0	1,170.0	1,160.0	1,160.0	1,160.0
	<b>MEG</b>	CFR China	949.0	939.0	965.0	973.0	959.0	960.0	952.0	927.0	927.0	908.0
	<b>PP</b>	CFR FE Asia	1,135.0	1,125.0	1,130.0	1,130.0	1,140.0	1,140.0	1,140.0	1,110.0	1,110.0	1,110.0
	<b>PX</b>	CFR China	828.0	828.7	830.3	826.0	824.5	825.5	826.0	811.7	811.7	815.7
	<b>PTA</b>	CFR China	655.0	650.0	650.0	650.0	652.0	653.0	650.0	635.0	635.0	635.0
	<b>Benzene</b>	FOB Korea	783.0	794.0	801.0	804.0	810.0	824.0	830.0	805.0	805.0	794.0
	<b>Toluene</b>	FOB Korea	665.0	665.0	661.0	656.0	655.0	648.0	656.0	633.5	633.5	635.5
	<b>Xylene</b>	FOB Korea	663.0	671.0	674.5	664.5	669.0	662.0	669.0	658.0	658.0	657.5
	<b>SM</b>	FOB Korea	1,346.0	1,374.0	1,389.0	1,383.0	1,389.0	1,422.0	1,438.0	1,354.5	1,354.5	1,338.0

Weekly Price			Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.
Spot Price	<b>Naphtha</b>	CFR Japan	510.0	470.0	459.0	411.5	441.5	410.0	484.5	493.0	399.5	466.1
	<i>Change, %</i>			8.5	11.1	23.9	15.5	24.4	5.3	3.4	27.7	9.4
	<b>Ethylene</b>	CFR SE Asia	1,225.0	1,190.0	1,125.0	855.0	1,045.0	1,085.0	990.0	1,103.7	1,040.9	1,040.3
	<i>Change, %</i>			2.9	8.9	43.3	17.2	12.9	23.7	11.0	17.7	17.8
	<b>Propylene</b>	CFR SE Asia	870.0	800.0	775.0	725.0	747.5	790.0	815.0	770.0	705.7	865.0
	<i>Change, %</i>			8.7	12.3	20.0	16.4	10.1	6.7	13.0	23.3	0.6
	<b>Butadiene</b>	CFR SE Asia	1,450.0	1,325.0	1,015.0	875.0	1,125.0	1,140.0	2,100.0	877.5	1,116.8	1,613.5
	<i>Change, %</i>			9.4	42.9	65.7	28.9	27.2	(31.0)	65.2	29.8	(10.1)
	<b>Benzene</b>	CFR SE Asia	822.5	817.5	772.5	762.5	732.5	665.0	822.5	690.0	646.7	837.0
	<i>Change, %</i>			0.6	6.5	7.9	12.3	23.7	0.0	19.2	27.2	(1.7)
	<b>Toluene</b>	CFR SE Asia	685.0	660.0	655.0	650.0	655.0	637.5	690.0	700.8	630.5	681.2
	<i>Change, %</i>			3.8	4.6	5.4	4.6	7.5	(0.7)	(2.3)	8.6	0.6
<b>Xylene</b>	CFR SE Asia	635.0	635.0	635.0	625.0	630.0	610.0	675.0	699.3	627.7	665.7	
<i>Change, %</i>			0.0	0.0	1.6	0.8	4.1	(5.9)	(9.2)	1.2	(4.6)	

Spread	<b>Ethylene</b>	-Naphtha	715.0	720.0	666.0	443.5	603.5	675.0	505.5	610.6	641.4	574.3
	<i>Change, %</i>			(0.7)	7.4	61.2	18.5	5.9	41.4	17.1	11.5	24.5
	<b>Propylene</b>	-Naphtha	360.0	330.0	316.0	313.5	306.0	380.0	330.5	277.0	306.2	398.9
	<i>Change, %</i>			9.1	13.9	14.8	17.6	(5.3)	8.9	30.0	17.6	(9.8)
	<b>Butadiene</b>	-Naphtha	940.0	855.0	556.0	463.5	683.5	730.0	1,615.5	384.5	717.3	1,147.5
	<i>Change, %</i>			9.9	69.1	102.8	37.5	28.8	(41.8)	144.5	31.0	(18.1)
	<b>Benzene</b>	-Naphtha	312.5	347.5	313.5	351.0	291.0	255.0	338.0	197.0	247.2	371.0
	<i>Change, %</i>			(10.1)	(0.3)	(11.0)	7.4	22.5	(7.5)	58.6	26.4	(15.8)
	<b>Toluene</b>	-Naphtha	175.0	190.0	196.0	238.5	213.5	227.5	205.5	207.8	231.0	215.2
	<i>Change, %</i>			(7.9)	(10.7)	(26.6)	(18.0)	(23.1)	(14.8)	(15.8)	(24.2)	(18.7)
	<b>Xylene</b>	-Naphtha	125.0	165.0	176.0	213.5	188.5	200.0	190.5	206.3	228.2	199.7
	<i>Change, %</i>			(24.2)	(29.0)	(41.5)	(33.7)	(37.5)	(34.4)	(39.4)	(45.2)	(37.4)

자료 : Cischem, Platts, Bloomberg, SK증권

참고 : Spread는 Polymer와 Naphtha의 가격차이임

Weekly Price		Last Week	1W	1M	3M	6M	12M	YTD	2015avg.	2016avg.	2017acc.	
Spot Price	HDPE	CFR SE Asia	1,167.5	1,137.5	1,087.5	1,087.5	1,137.5	1,125.0	1,142.5	1,230.1	1,134.6	1,120.5
	Change, %			2.6	7.4	7.4	2.6	3.8	2.2	(5.1)	2.9	4.2
	MEG	CFR SE Asia	970.0	930.0	852.5	777.5	682.5	650.0	847.5	780.8	660.8	828.0
	Change, %			4.3	13.8	24.8	42.1	49.2	14.5	24.2	46.8	17.1
	PVC	CFR SE Asia	945.0	935.0	870.0	880.0	880.0	860.0	920.0	820.8	823.4	900.7
	Change, %			1.1	8.6	7.4	7.4	9.9	2.7	15.1	14.8	4.9
	PP	CFR SE Asia	1,147.5	1,127.5	1,097.5	1,047.5	1,037.5	1,005.0	1,032.5	1,109.8	978.4	1,074.4
	Change, %			1.8	4.6	9.5	10.6	14.2	11.1	3.4	17.3	6.8
	2-EH	CFR Korea	990.0	990.0	960.0	940.0	850.0	780.0	865.0	930.1	772.4	952.5
	Change, %			0.0	3.1	5.3	16.5	26.9	14.5	6.4	28.2	3.9
	ABS	CFR SE Asia	2,030.0	2,010.0	1,850.0	1,640.0	1,620.0	1,395.0	1,635.0	1,431.1	1,347.1	1,781.2
	Change, %			1.0	9.7	23.8	25.3	45.5	24.2	41.9	50.7	14.0
	SBR	CFR SE Asia	1,790.0	1,690.0	1,510.0	1,500.0	1,750.0	1,380.0	2,000.0	1,332.1	1,483.0	2,098.5
	Change, %			5.9	18.5	19.3	2.3	29.7	(10.5)	34.4	20.7	(14.7)
	SM	CFR SE Asia	1,440.0	1,355.0	1,170.0	1,135.0	1,032.5	1,055.0	1,205.0	1,100.7	1,064.6	1,237.8
	Change, %			6.3	23.1	26.9	39.5	36.5	19.5	30.8	35.3	16.3
	Caustic	FOB NEA	477.0	471.0	472.5	437.5	437.5	320.0	422.5	296.8	316.6	444.7
	Change, %			1.3	1.0	9.0	9.0	49.1	12.9	60.7	50.7	7.3
	PX	CFR SE Asia	837.5	812.5	817.5	785.0	797.5	802.5	855.0	842.9	790.4	833.3
	Change, %			3.1	2.4	6.7	5.0	4.4	(2.0)	(0.6)	6.0	0.5
PO	CFR China	1,887.5	1,992.5	1,587.5	1,427.5	1,312.5	1,497.5	1,562.5	1,683.4	1,396.8	1,543.0	
Change, %			(5.3)	18.9	32.2	43.8	26.0	20.8	12.1	35.1	22.3	
Caprolactam	CFR SE Asia	1,720.0	1,740.0	1,800.0	1,600.0	1,700.0	1,410.0	1,850.0	1,581.5	1,344.9	1,900.9	
Change, %			(1.1)	(4.4)	7.5	1.2	22.0	(7.0)	8.8	27.9	(9.5)	
PTA	CFR SE Asia	667.5	657.5	657.5	635.0	632.5	622.5	642.5	648.0	613.7	657.7	
Change, %			1.5	1.5	5.1	5.5	7.2	3.9	3.0	8.8	1.5	
Spread	HDPE		657.5	667.5	628.5	676.0	696.0	715.0	658.0	737.1	735.1	654.4
	Change, %			(1.5)	4.6	(2.7)	(5.5)	(8.0)	(0.1)	(10.8)	(10.6)	0.5
	MEG		460.0	460.0	393.5	366.0	241.0	240.0	363.0	287.8	261.3	362.0
	Change, %			0.0	16.9	25.7	90.9	91.7	26.7	59.8	76.1	27.1
	PVC		435.0	465.0	411.0	468.5	438.5	450.0	435.5	327.8	423.9	434.7
	Change, %			(6.5)	5.8	(7.2)	(0.8)	(3.3)	(0.1)	32.7	2.6	0.1
	PP		637.5	657.5	638.5	636.0	596.0	595.0	548.0	616.8	578.9	608.3
	Change, %			(3.0)	(0.2)	0.2	7.0	7.1	16.3	3.4	10.1	4.8
	2-EH		480.0	520.0	501.0	528.5	408.5	370.0	380.5	437.0	372.9	486.4
	Change, %			(7.7)	(4.2)	(9.2)	17.5	29.7	26.1	9.8	28.7	(1.3)
	ABS		1,520.0	1,540.0	1,391.0	1,228.5	1,178.5	985.0	1,150.5	938.1	947.6	1,315.2
	Change, %			(1.3)	9.3	23.7	29.0	54.3	32.1	62.0	60.4	15.6
	SBR	BD spread	340.0	365.0	495.0	625.0	625.0	240.0	(100.0)	454.7	366.2	485.0
	Change, %			(6.8)	(31.3)	(45.6)	(45.6)	41.7	(440.0)	(25.2)	(7.2)	(29.9)
	SM		930.0	885.0	711.0	723.5	591.0	645.0	720.5	607.7	665.1	771.8
	Change, %			5.1	30.8	28.5	57.4	44.2	29.1	53.0	39.8	20.5
	Caustic											
	Change, %											
	PX		327.5	342.5	358.5	373.5	356.0	392.5	370.5	349.9	390.9	367.3
	Change, %			(4.4)	(8.6)	(12.3)	(8.0)	(16.6)	(11.6)	(6.4)	(16.2)	(10.8)
PO	propylene spread	1,017.5	1,192.5	812.5	702.5	565.0	707.5	747.5	913.4	691.1	678.0	
Change, %			(14.7)	25.2	44.8	80.1	43.8	36.1	11.4	47.2	50.1	
Caprolactam	benzene spread	897.5	922.5	1,027.5	837.5	967.5	745.0	1,027.5	891.6	698.2	1,063.9	
Change, %			(2.7)	(12.7)	7.2	(7.2)	20.5	(12.7)	0.7	28.5	(15.6)	
PTA	px spread	81.3	88.8	85.3	85.5	74.3	60.8	44.0	58.0	60.4	74.4	
Change, %			(8.5)	(4.7)	(5.0)	9.4	33.7	84.7	40.1	34.5	9.2	

자료 : Cischem, Platts, SK증권

참고 : Spread는 Naphtha spread로 일괄적용

## Global peers

	Currency	09/12	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER		PBR		EV/EBITDA		
											17E	18E	17E	18E	17E	18E	
<b>Petrochemical</b>																	
DowDuPont	USD	68.5	2.5	5.4	8.3	7.0	7.3	29.5	19.7	151,091	18.2	15.4	2.7	2.6	11.4	9.8	
Eastman	USD	86.2	0.7	1.1	3.6	3.8	11.0	32.3	14.6	12,290	11.3	10.5	2.5	2.3	8.7	8.3	
BASF	EUR	85.9	0.4	4.4	7.5	(0.3)	(3.7)	19.6	(2.7)	92,391	14.4	14.2	2.3	2.2	7.9	7.7	
Akzo Nobel	EUR	78.2	0.1	(0.2)	3.0	1.8	2.6	30.5	31.6	23,961	18.2	17.6	3.1	3.1	10.1	9.7	
Arkema	EUR	96.4	1.1	3.4	3.0	1.3	8.5	17.4	3.7	8,511	13.7	12.6	1.7	1.6	6.2	5.9	
Lanxess	EUR	65.2	1.7	5.5	2.5	(6.5)	3.3	40.1	4.6	6,901	16.5	14.3	2.2	2.0	7.4	7.5	
Sumitomo Chemical	JPY	674	1.4	4.7	7.5	12.5	2.9	42.8	21.2	10,039	10.3	9.7	1.2	1.1	7.5	7.2	
Mitsubishi Chemical	JPY	1,029	0.2	2.7	10.4	17.7	14.7	68.1	35.7	13,854	9.2	9.1	1.2	1.1	6.2	6.1	
Shin-Etsu Chemical	JPY	9,810	0.3	2.6	2.8	(1.9)	1.4	39.2	8.2	38,352	19.4	17.3	1.8	1.7	8.2	7.2	
Asahi Kasei	JPY	1,334	1.0	4.5	3.8	15.8	23.1	61.7	30.8	16,437	14.9	14.1	1.4	1.3	7.2	6.9	
JSR	JPY	2,134	1.0	3.0	11.4	13.4	9.5	38.6	15.8	4,372	15.9	15.1	1.2	1.2	8.3	7.7	
Nitto Denko	JPY	9,541	0.5	1.5	(2.7)	6.1	4.4	45.7	6.4	15,193	18.7	17.2	2.2	2.0	8.3	7.7	
SABIC	SAR	100.7	0.8	1.8	2.6	1.7	5.5	19.6	10.1	79,684	14.9	14.4	1.8	1.7	7.5	7.4	
Yansab	SAR	56.5	(0.7)	0.2	2.9	2.6	(2.4)	25.1	3.7	8,460	14.4	13.6	2.4	2.3	8.9	8.5	
Formosa Plastics	TWD	95.8	(0.1)	0.5	4.1	7.3	8.9	25.1	7.4	20,382	14.6	15.0	1.9	1.8	19.0	19.5	
Formosa Fiber	TWD	96.0	0.4	0.5	4.9	6.7	4.3	17.8	(0.3)	18,728	12.9	13.3	1.7	1.7	10.3	10.7	
Nan Ya Plastics	TWD	75.5	0.0	0.3	0.9	5.9	8.5	25.4	6.0	20,013	15.4	15.9	1.7	1.7	16.3	15.8	
Sinopec Shanghai	CNY	6.31	(0.9)	(1.4)	(5.4)	(4.5)	(2.0)	5.5	(2.0)	9,314	12.1	11.5	2.4	2.1	6.7	6.7	
Sinopec Yizheng(Fiber)	CNY	3.20	0.0	0.0	0.0	(9.3)	(16.7)	(17.1)	(22.0)	6,297	#N/A	N/A	47.1	6.9	7.2	38.3	17.7
Reliance	INR	824	0.7	0.9	6.5	24.9	28.5	57.4	52.2	83,176	18.8	15.4	1.8	1.6	11.9	9.6	
Industries Qatar	QAR	87.4	(0.1)	(4.0)	(6.4)	(10.8)	(23.4)	(18.3)	(25.6)	14,568	14.3	12.5	1.6	1.5	50.5	46.0	
PTT Chemical	THB	77.5	1.3	1.6	9.2	14.8	6.9	38.4	23.0	10,395	10.4	10.5	1.3	1.2	5.5	5.3	
Petronas	MYR	7.5	(0.3)	2.1	6.1	3.5	1.4	11.5	6.7	14,061	16.3	16.3	2.0	1.9	8.9	8.8	
LG화학	KRW	390,000	(0.5)	6.6	14.9	34.7	46.3	58.9	49.4	23,166	15.2	14.6	1.9	1.7	6.6	6.2	
롯데케미칼	KRW	415,000	(0.4)	0.9	9.8	19.6	11.6	54.3	12.5	12,342	6.4	6.4	1.3	1.1	4.3	3.8	
한화케미칼	KRW	37,050	0.0	8.0	9.9	25.4	51.8	56.0	50.0	5,218	6.3	6.6	1.0	0.9	7.8	7.3	
금호석유	KRW	80,200	(1.1)	1.8	9.9	4.7	10.6	20.8	(2.2)	2,127	15.3	13.4	1.5	1.4	10.1	8.8	
SKC	KRW	39,900	0.1	11.5	7.4	28.5	30.6	49.7	20.9	1,268	11.0	9.5	1.0	0.9	9.4	7.8	
국도화학	KRW	50,900	1.6	0.2	(8.0)	(4.0)	3.9	(11.2)	(7.3)	265	8.3	8.9	0.7	0.6	4.8	4.9	
효성	KRW	6,600	(0.8)	(3.8)	10.0	(0.5)	(17.3)	39.2	(2.9)	4,952	9.0	7.8	1.3	1.2	7.3	6.5	
<b>Average</b>			<b>0.4</b>	<b>2.2</b>	<b>4.7</b>	<b>7.4</b>	<b>8.1</b>	<b>30.8</b>	<b>12.3</b>								
<b>Refinery</b>																	
Valero	USD	70.2	0.6	3.4	6.1	6.5	5.5	25.6	2.8	30,413	16.5	12.6	1.6	1.6	6.7	5.8	
Conoco Phillips	USD	44.9	0.0	1.2	0.3	(1.7)	(1.6)	5.3	(10.4)	54,897	223.3	36.8	1.8	1.9	9.1	6.8	
Formosa Petrochemical	TWD	107.0	0.9	(0.9)	2.9	0.5	3.4	18.5	(4.5)	34,067	16.4	18.9	3.2	3.2	9.7	11.3	
Andeavor	USD	103.4	1.2	4.0	9.5	13.4	26.2	26.8	18.3	15,808	18.4	13.7	1.6	1.5	9.2	7.0	
Marathon Petroleum	USD	53.8	0.0	3.8	3.1	(1.3)	7.8	24.1	6.8	26,644	19.4	15.6	2.1	2.1	8.7	7.5	
Devon Energy	USD	32.2	1.1	0.1	1.8	(1.7)	(20.1)	(25.5)	(29.6)	17,024	19.0	15.7	2.4	2.1	8.3	7.5	
Hollyfrontier	USD	33.0	0.8	7.7	15.5	27.6	20.1	26.0	0.7	5,653	23.7	15.1	1.2	1.2	9.0	6.8	
Phillips 66	USD	85.7	0.6	3.0	2.7	6.9	8.7	8.7	(0.8)	42,987	20.4	15.2	1.9	1.9	10.1	8.4	
Murphy Oil	USD	24.4	4.1	3.9	(4.5)	(4.6)	(8.1)	(13.7)	(21.6)	4,278	#N/A	N/A	387.3	0.9	1.0	4.6	4.5
JX Holdings	JPY	539.1	0.2	0.3	4.4	9.8	(3.2)	34.7	9.0	16,964	8.4	7.9	0.8	0.8	8.3	7.9	
Idemitsu	JPY	2,756.0	(0.8)	0.7	4.4	(15.3)	(28.9)	42.9	(11.2)	5,324	6.3	6.3	0.7	0.7	8.1	7.8	
Nesteoil	EUR	36.5	0.7	1.1	4.9	5.9	7.9	(1.4)	(0.1)	0	13.9	13.9	2.2	2.1	7.9	8.3	
Ashland	USD	63.7	0.1	3.7	4.7	(3.9)	7.9	8.0	19.1	3,827	14.8	18.8	1.0	1.0	8.4	9.2	
Fuchs Petrolub	EUR	49.1	0.6	3.5	4.3	(1.2)	13.1	24.3	23.1	7,402	24.6	23.2	4.9	4.4	14.1	13.3	
SK이노베이션	KRW	191,500	0.3	2.4	11.3	20.1	26.0	25.6	30.7	15,336	7.9	7.7	1.0	0.9	4.7	4.2	
S-Oil	KRW	122,500	(1.2)	0.8	6.1	25.8	40.6	64.7	44.6	12,232	13.0	9.9	2.2	2.0	10.0	7.3	
GS	KRW	67,400	(0.4)	1.0	(7.2)	(3.7)	24.4	33.2	24.6	5,439	6.3	6.0	0.8	0.7	7.3	6.9	
<b>Average</b>			<b>0.5</b>	<b>2.3</b>	<b>4.1</b>	<b>4.9</b>	<b>7.6</b>	<b>19.3</b>	<b>6.0</b>								

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임

\* 국내업체의 multiple은 Dataguidepro 기준임



## Global peers

	Currency	09/12	1D	1W	1M	3M	6M	12M	YTD	MKT CAP (mil USD)	PER		PBR		EV/EBITDA	
											17E	18E	17E	18E	17E	18E
<b>E&amp;P/Shale</b>																
Exxon Mobil	USD	80	0.3	3.0	1.6	(4.1)	(2.6)	(8.9)	(11.9)	334,858	23.2	20.5	1.9	1.9	9.8	9.4
BP	GBP	449	(0.0)	0.5	0.3	(4.7)	(4.6)	4.7	(11.9)	116,158	20.9	16.2	1.2	1.2	6.0	5.4
Shell	EUR	2,136	(0.4)	0.2	0.0	0.2	1.0	15.0	(4.8)	234,492	16.5	14.7	1.2	1.2	6.4	5.9
Chevron	USD	112	(0.0)	2.8	3.0	4.1	1.7	10.0	(4.4)	211,861	27.9	23.7	1.4	1.4	8.1	7.3
Total	EUR	45	0.3	1.4	4.1	(2.1)	(5.8)	2.5	(8.6)	132,967	13.4	12.4	1.2	1.2	6.3	5.5
Sinopec	CNY	6	(0.3)	0.2	(0.7)	(2.5)	8.2	20.6	10.2	107,431	13.9	13.0	1.0	0.9	4.5	4.3
Petrochina	CNY	8	(0.6)	(0.6)	0.8	5.1	1.3	9.8	1.0	215,337	59.9	34.4	1.2	1.2	6.8	6.6
CNOOC	CNY	11	(0.7)	(0.3)	2.9	(2.1)	(13.2)	(6.4)	(12.9)	52,908	12.4	10.8	0.9	0.8	3.7	3.5
Gazprom	RUB	122	0.8	5.2	4.3	1.2	(5.3)	(12.2)	(21.1)	48,990	4.3	3.8	0.2	0.2	3.7	3.4
Rosneft	RUB	315	0.1	3.9	3.5	2.8	(0.1)	(14.3)	(21.9)	56,898	9.4	6.7	0.8	0.7	4.9	4.2
Anadarko	USD	42	1.8	0.7	(4.1)	(13.5)	(32.5)	(27.7)	(40.1)	23,630	#N/A	#N/A	1.6	1.6	6.7	6.0
Petrobras	BRL	15	(0.8)	3.2	14.8	15.3	3.9	6.6	0.0	64,260	11.4	8.8	0.6	0.6	5.4	4.9
Lukoil	USD	2,962	1.8	2.7	3.5	6.8	(2.2)	(2.8)	(14.1)	43,039	5.8	5.4	0.6	0.6	N/A	N/A
Kinder	USD	19	(0.4)	0.1	1.5	1.2	(10.0)	(13.6)	(6.5)	47,497	29.6	27.3	1.2	1.2	11.5	11.1
Statoil	NOK	150	0.7	0.1	2.7	0.4	1.1	16.2	(5.6)	63,098	16.7	17.9	1.6	1.6	3.4	3.3
BHP	AUD	27	1.2	(1.8)	6.1	15.2	14.6	36.0	8.2	110,721	18.4	19.2	2.0	1.9	6.8	6.9
PTT E&P	THB	88	(1.1)	0.0	2.9	0.6	(1.1)	16.6	(8.8)	10,856	13.6	12.5	0.9	0.9	3.2	3.0
Petronas gas	MYR	19	3.5	2.0	(0.2)	(2.4)	(4.4)	(14.7)	(12.0)	8,554	20.3	19.0	2.9	2.7	11.6	10.7
Chesapeake	USD	4	3.0	1.1	(9.7)	(26.1)	(27.4)	(53.5)	(46.7)	3,515	5.6	4.9	#N/A	#N/A	16.8	7.2
Noble Energy	USD	25	0.3	3.1	1.9	(15.4)	(26.3)	(31.5)	(34.0)	12,246	#N/A	#N/A	1.2	1.2	8.3	6.9
<b>Average</b>		<b>0</b>	<b>0.5</b>	<b>1.4</b>	<b>2.0</b>	<b>(1.0)</b>	<b>(5.2)</b>	<b>(2.4)</b>	<b>(12.3)</b>							
<b>PV</b>																
WACKER	EUR	112.8	0.5	2.3	12.0	20.4	9.6	45.3	14.1	7,015	30.5	23.2	1.9	1.8	7.0	6.6
GCL-Poly	HKD	0.9	0.0	1.1	2.3	14.1	(11.9)	(21.9)	(4.3)	2,069	6.6	6.3	0.6	0.5	6.1	5.7
SunPower	USD	8.4	0.8	(8.2)	(9.4)	6.3	19.1	(10.4)	27.5	1,314	#N/A	#N/A	1.8	1.9	41.5	13.7
Canadian Solar	USD	16.5	(0.9)	3.1	(4.1)	28.7	22.5	26.7	35.5	948	10.3	6.8	0.9	0.9	9.5	8.4
JA Solar	USD	8.2	2.6	19.7	34.0	30.4	68.9	21.3	72.1	352	16.1	16.1	1.7	1.7	4.0	3.2
Yingli	USD	2.3	2.7	0.9	1.8	22.2	1.8	(39.2)	(11.2)	43	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
First Solar	USD	47.5	0.7	(0.8)	(0.1)	30.4	46.5	26.9	48.0	4,955	22.7	42.4	0.9	0.9	8.3	9.3
한화큐셀	USD	7.6	0.0	2.7	2.7	14.4	(3.9)	(34.5)	(7.5)	608	73.0	42.9	#N/A	#N/A	7.4	7.4
OCI	KRW	101,500	(1.9)	2.3	13.4	13.0	22.4	26.4	29.0	2,179	16.1	21.6	0.7	0.7	8.0	7.5
웅진에너지	KRW	9,320	1.1	(0.3)	19.6	49.4	88.5	31.3	96.8	215	N/A	0.7	0.7	8.0	7.5	9.0
신성솔라에너지	KRW	2,160	5.6	6.1	1.4	15.2	12.8	(0.9)	(2.3)	318	N/A	0.7	8.0	7.5	9.0	7.8
<b>Average</b>			<b>1.0</b>	<b>2.6</b>	<b>6.7</b>	<b>22.2</b>	<b>25.1</b>	<b>6.5</b>	<b>27.1</b>							
<b>Gas Company</b>																
Towngas China	HKD	5.1	(1.2)	(2.1)	(1.5)	8.0	10.8	19.8	26.0	1,828	11.7	10.8	1.0	0.9	11.4	10.6
Kulun	HKD	7.4	(1.2)	0.0	(0.4)	11.6	9.3	27.4	27.4	7,841	11.6	10.9	1.3	1.2	5.9	5.8
Beijing Enterprise	HKD	42.4	(0.5)	1.6	7.6	12.6	3.8	5.5	15.7	6,735	8.1	7.5	0.8	0.8	15.1	14.1
ENN Energy	HKD	53.3	(1.3)	3.1	4.1	29.9	26.0	34.8	66.9	7,330	13.7	12.2	2.7	2.3	8.7	7.9
China Resources Gas	HKD	26.7	(1.3)	(2.2)	(5.8)	12.2	1.5	5.1	22.5	7,713	15.4	13.8	2.9	2.6	9.2	8.4
China Gas Holdings	HKD	20.9	(0.7)	8.8	10.8	66.3	67.3	71.7	98.2	12,748	18.3	15.6	4.0	3.4	14.6	12.6
Shenzen Gas	HKD	14.9	2.1	4.8	9.3	9.7	32.4	17.9	31.5	3,704	11.8	11.3	1.3	1.3	9.3	8.8
Shann Xi	CNY	8.6	(0.8)	(1.3)	1.3	(0.7)	(9.8)	(15.6)	(10.1)	1,495	18.4	16.5	1.8	1.6	#N/A	#N/A
Suntien	HKD	1.9	4.4	14.5	14.5	25.0	31.0	72.7	90.0	837	6.8	5.8	0.6	0.6	9.6	8.2
China Oil & Gas	HKD	0.6	(1.8)	1.8	5.7	3.7	(5.1)	(1.8)	(8.2)	417	9.7	8.4	0.9	0.8	6.3	5.7
<b>Average</b>			<b>(0.2)</b>	<b>2.9</b>	<b>4.5</b>	<b>17.8</b>	<b>16.7</b>	<b>23.8</b>	<b>36.0</b>							
<b>EV</b>																
LG화학	KRW	390,000	(0.5)	6.6	14.9	34.7	46.3	58.9	49.4	23,166	13.7	13.4	1.8	1.6	6.5	6.2
삼성SDI	KRW	200,000	(1.2)	5.0	18.3	35.1	58.1	107.3	83.5	11,771	19.9	12.9	1.2	1.1	22.9	14.3
Panasonic	JPY	1538.0	3.8	6.2	4.2	4.0	19.7	49.2	29.3	33,518	19.3	14.8	2.0	1.8	6.2	5.4
GS Yuasa	JPY	573.0	5.5	7.5	3.8	13.2	5.7	37.1	17.9	2,047	16.2	14.9	1.3	1.2	7.3	6.8
NEC	JPY	291.0	0.7	0.3	(2.7)	0.0	1.7	9.0	(6.1)	6,938	18.1	16.2	0.9	0.8	6.8	6.1
BYD Auto	CNY	55.8	7.6	14.2	16.6	10.5	11.2	(3.2)	12.3	19,379	26.2	19.3	2.5	2.2	12.2	10.0
Tesla Motors	USD	362.8	(0.3)	3.8	1.4	1.0	48.9	82.9	69.8	58,512	#N/A	#N/A	11.7	10.2	74.4	26.0
Kandi Technologies	USD	4.4	10.1	8.7	20.0	8.7	2.4	(24.5)	(11.2)	190	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
<b>Average</b>			<b>3.2</b>	<b>6.5</b>	<b>9.6</b>	<b>13.4</b>	<b>24.3</b>	<b>39.6</b>	<b>30.6</b>							

\* Bloomberg 기준 / valuation multiple 또한 Bloomberg consensus 기준임